

InterregVI– A Italy - Austria

EDU-CIRC

Cross-border Network for circular economy training and decarbonisation in manufacturing

Interreg
Italia-Österreich



Co-funded by
the European Union

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Interreg VI –A Italy - Austria
Cooperation programme
2021-2027

Life Cycle Assessment Fundamentals (LCA)

STEP 2

Meetings at ESEV CPT Verona

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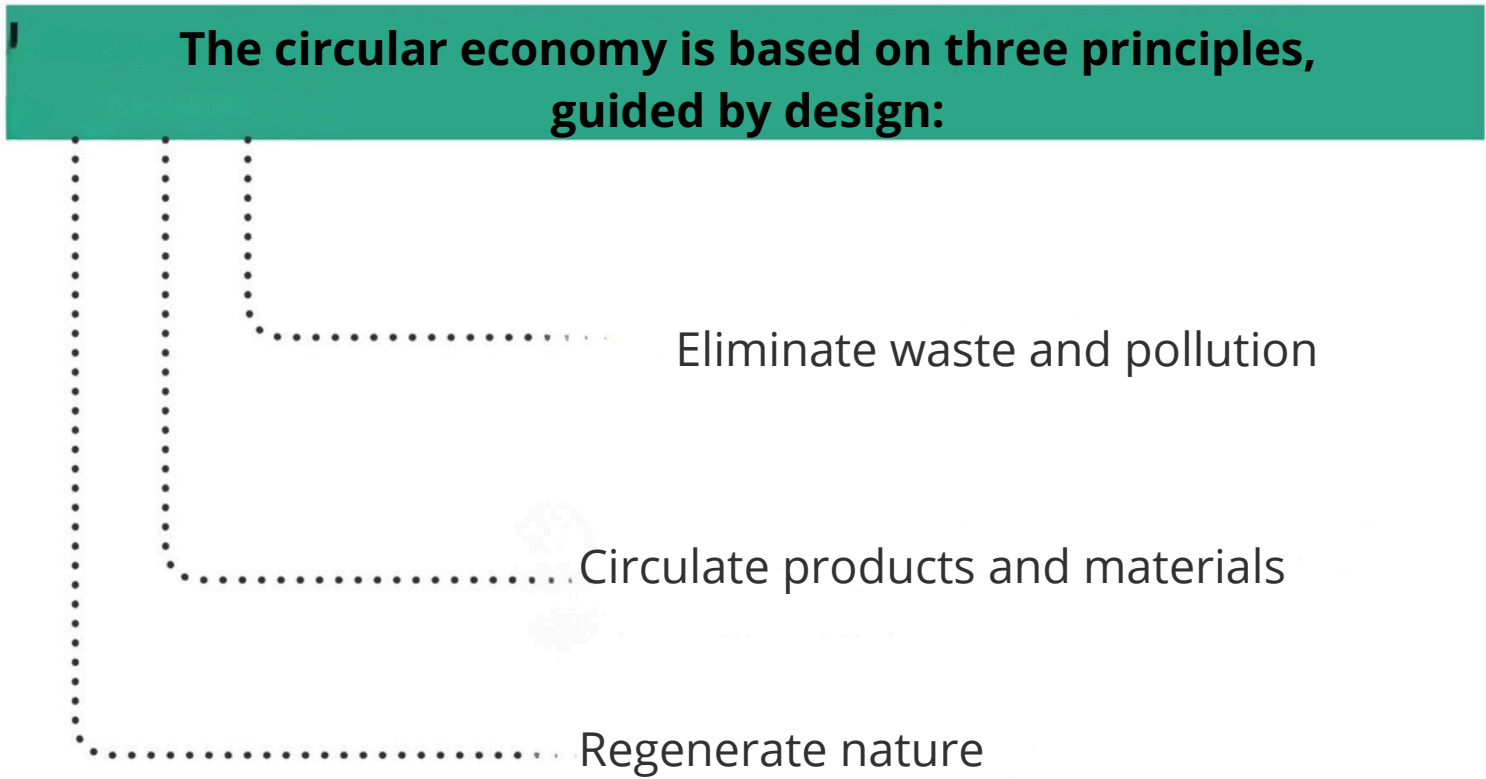
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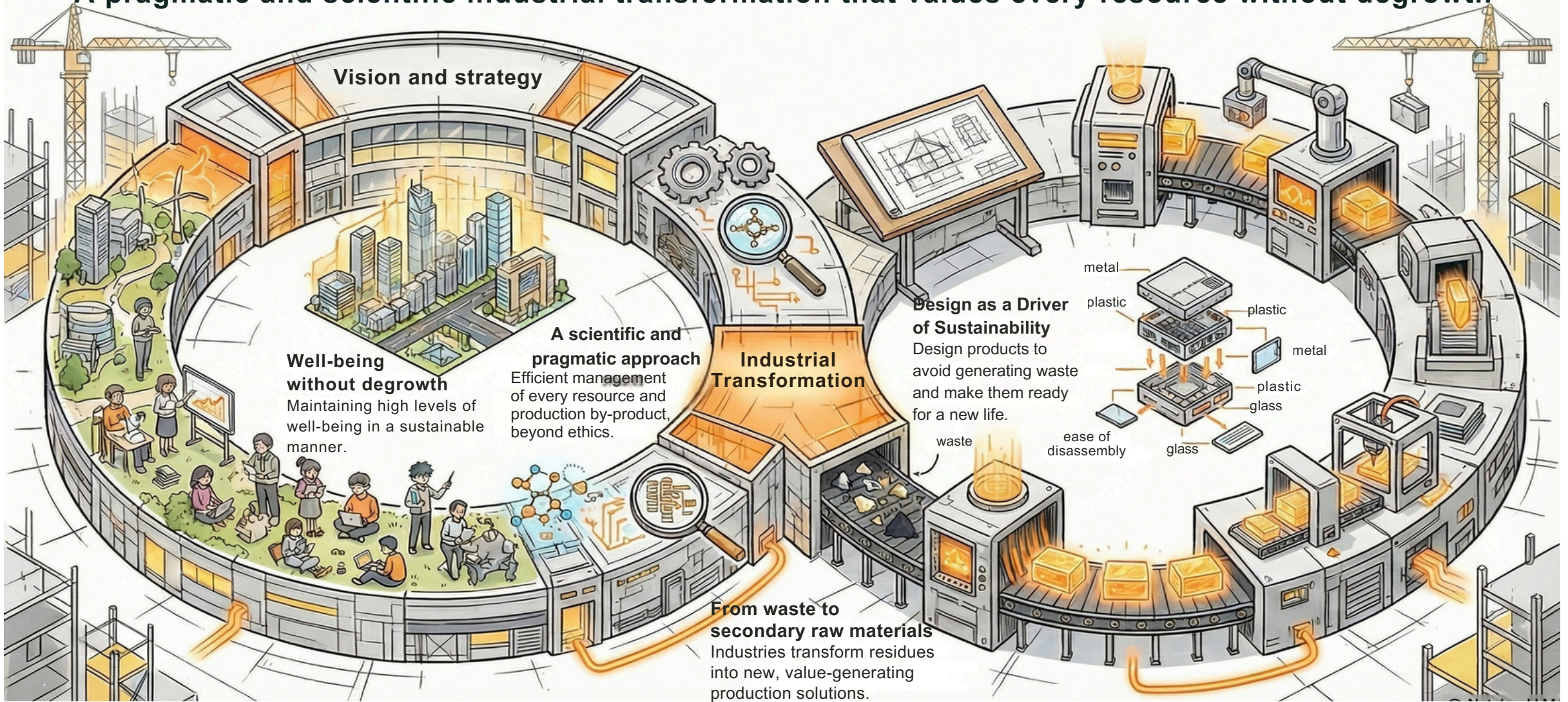
Let's take it step by step

The circular economy is a framework of system solutions that addresses global challenges such as climate change, biodiversity loss, waste and pollution.



The 4 laws of the **Circular Economy**: a new development model

A pragmatic and scientific industrial transformation that values every resource without degrowth



Circular Economy: Designing the Future without Waste

Comparison of the traditional linear economic model and the design-driven system for life-cycle extension and waste elimination

The Linear Model (the old system)

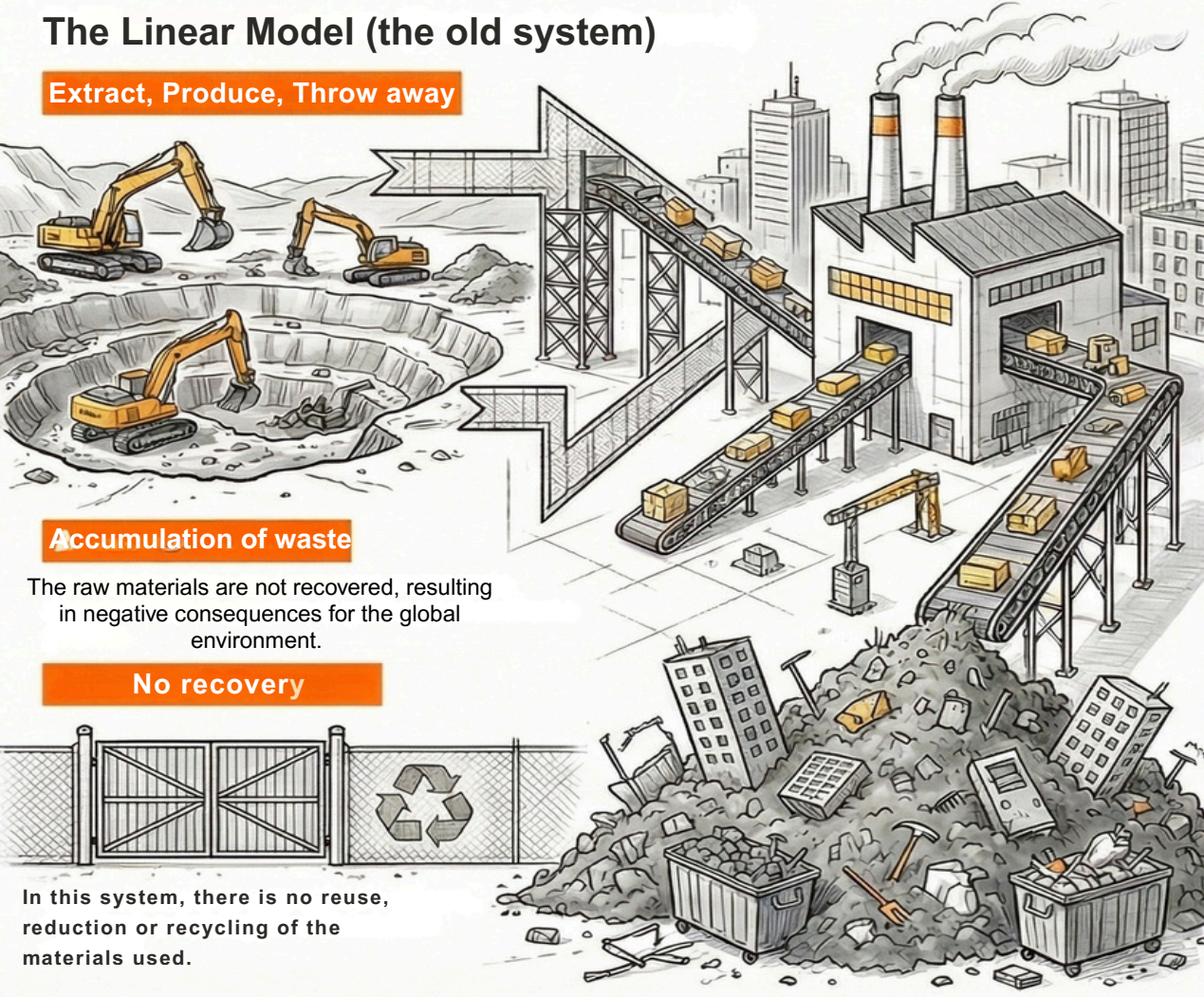
Extract, Produce, Throw away

Accumulation of waste

The raw materials are not recovered, resulting in negative consequences for the global environment.

No recovery

In this system, there is no reuse, reduction or recycling of the materials used.

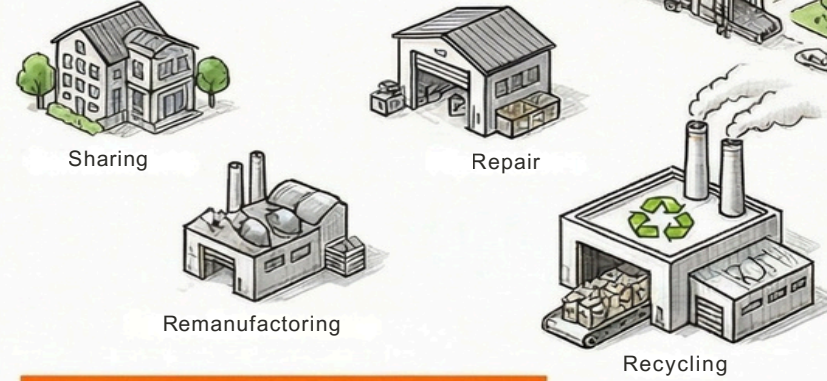


The Circular Model (the new system)

The 3 pillars of design

Eliminating pollution and waste, maximizing the value of circulating products and regenerating nature.

Extension of the life cycle



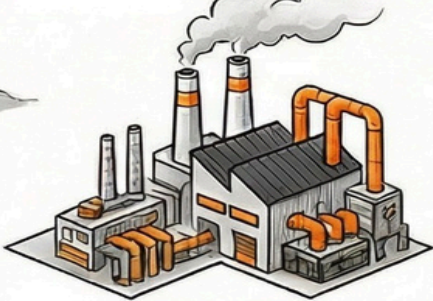
Continuous value generation

Once their function is complete, materials are reintroduced into the production cycle through recycling

THE LINEAR MODEL

(THE OLD PARADIGM)

A rigid scheme that transforms raw materials into unrecovered waste



Produce



Use



Low-priced resources

The model depends on the availability of large amounts of energy and cheap materials

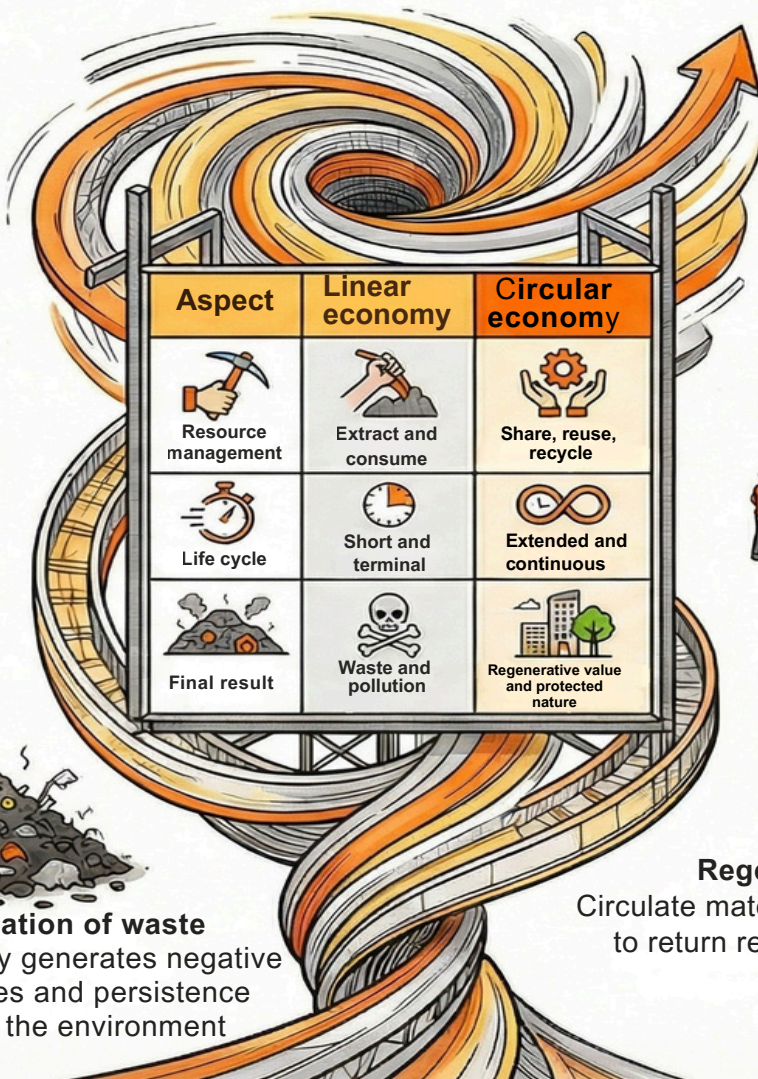
Throw away



Accumulation of waste

lack of recovery generates negative consequences and persistence damage to the environment

From Waste to Value: the shift to Circular Economy



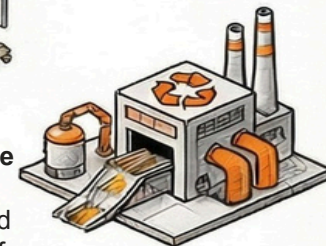
THE CIRCULAR ECONOMY

(THE NEW FUTURE)

Design to eliminate waste
A structure of solutions to address climate, pollution and biodiversity loss



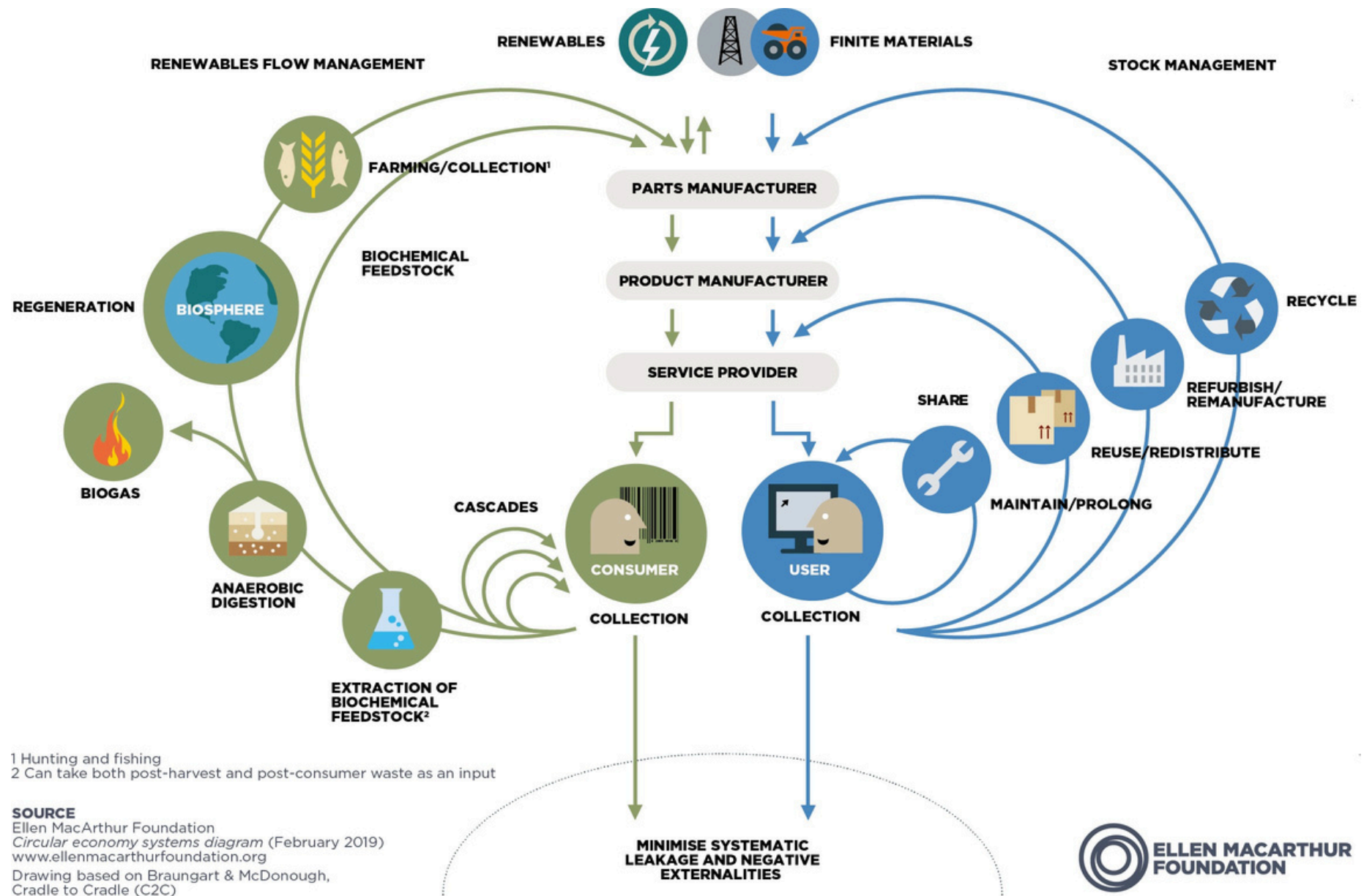
Reintroduction of the production cycle
Sharing, repairing and recycling extend the life cycle of products



Regenerate nature

Circulate materials at maximum value to return resources to the planet





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DEFINITION OF WASTE AND ITS TRANSFORMATION INTO A BY-PRODUCT

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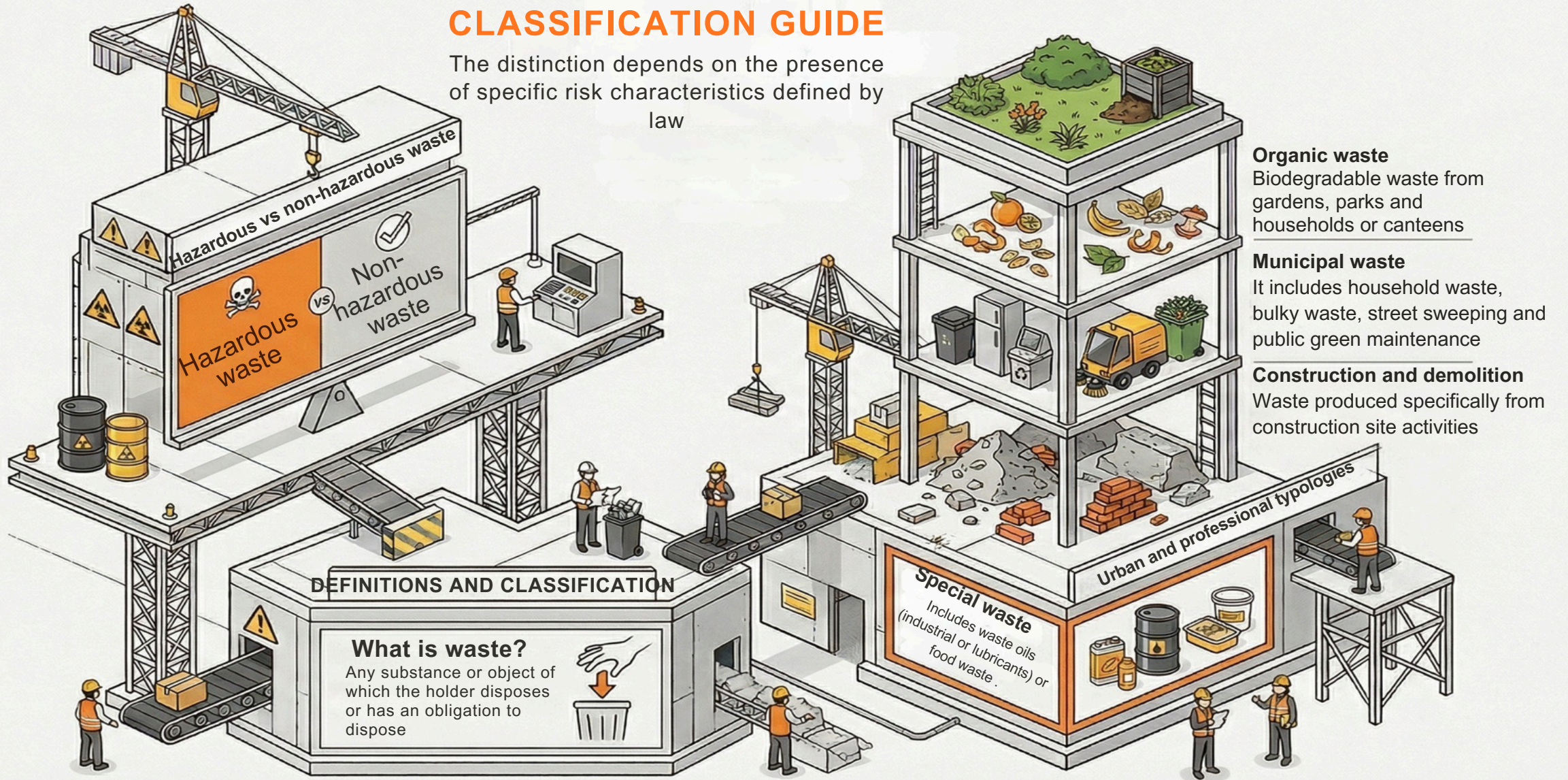
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WASTE

CLASSIFICATION GUIDE

The distinction depends on the presence of specific risk characteristics defined by law



Organic waste
Biodegradable waste from gardens, parks and households or canteens

Municipal waste
It includes household waste, bulky waste, street sweeping and public green maintenance

Construction and demolition
Waste produced specifically from construction site activities

Special waste
Includes waste oils (industrial or lubricants) or food waste.

Urban and professional typologies

THE CLASSIFICATION AND THE HAZARD OF WASTE

Waste is distinguished by its origin (urban/special) and dangerousness. The correct attribution of hazard codes is the responsibility of the manufacturer, based on the chemical-physical and toxicological characteristics defined by the legislation (Annex 1)

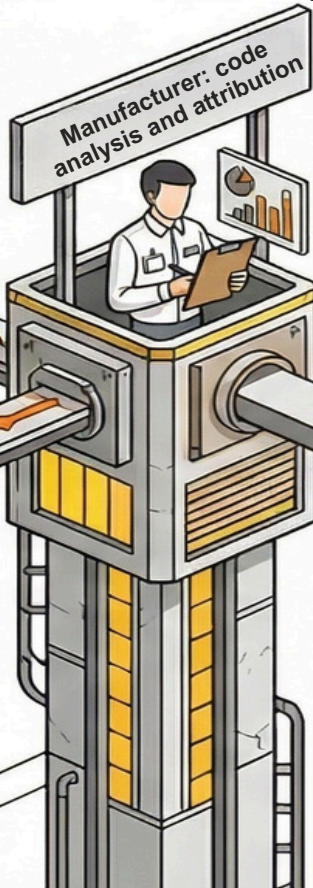
WASTE ORIGIN



MUNICIPAL WASTE (domestic)



SPECIAL WASTE (productive activities)



Manufacturer: code analysis and attribution

DANGEROUS STATE

NOT DANGEROUS (no risks)



DANGEROUS (toxic substances or inherent risks)



HAZARD CHARACTERISTICS (ANNEX 1)

PHYSICAL RISKS (H1, H2, H3)

- Explosive, oxidizing or easily flammable substances
- React upon contact with air, water or flames

HEALTH RISKS (H4-H13)

Irritating, harmful, toxic, carcinogenic, corrosive or infectious substances

- Damage tissues or DNA

ENVIRONMENTAL RISKS (H14, H15)

- Ecotoxic waste that poses risks to ecosystems. May release hazardous substances after disposal

End of refusal qualification: from the construction site to the product

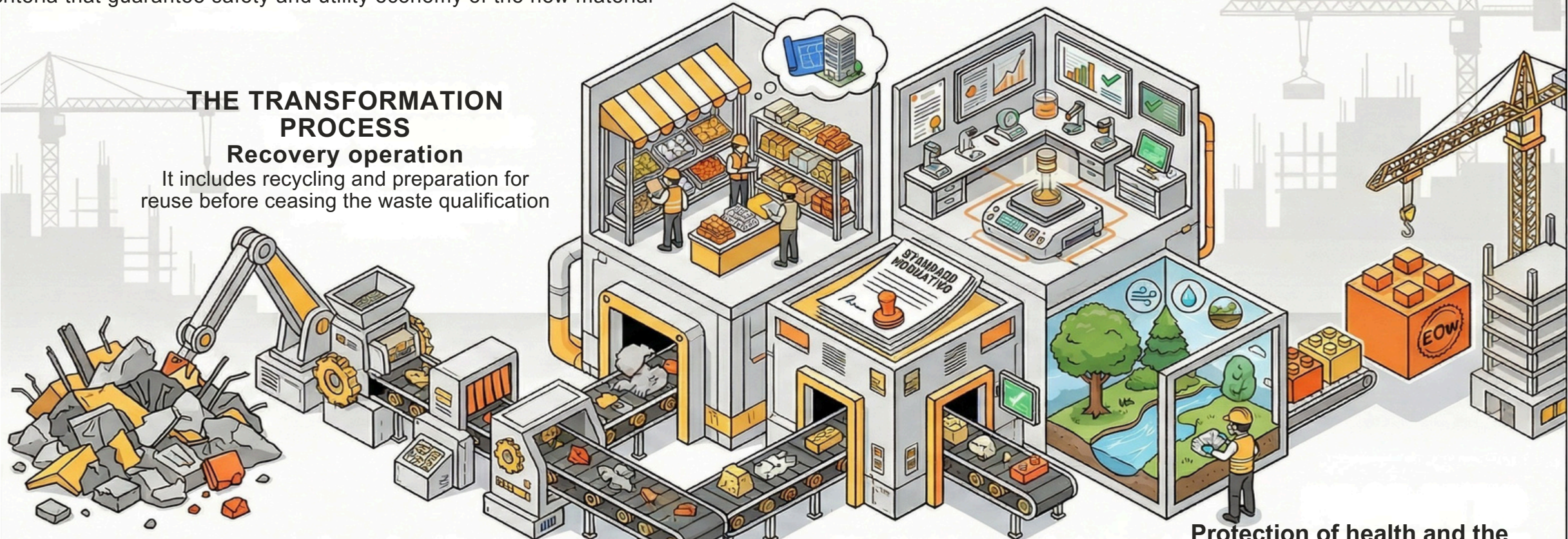
The change from "waste" to "secondary raw material" is not automatic. It only occurs after a recovery process and upon satisfaction of four legal criteria that guarantee safety and utility economy of the new material

THE TRANSFORMATION PROCESS

Recovery operation

It includes recycling and preparation for reuse before ceasing the waste qualification

THE 4 COMPLIANCE CRITERIA



WASTE

Specific purpose and market demand

The object must serve a specific purpose and respond to a real commercial request

Compliance with technical requirements

Must meet the regulatory standards and laws applicable to fine products

Protection of health and the environment

The use of the substance must not produce any significant negative impacts on human or nature

Waste or By-product?

A Guide to Circular Management on Construction Sites

The Definition of Waste

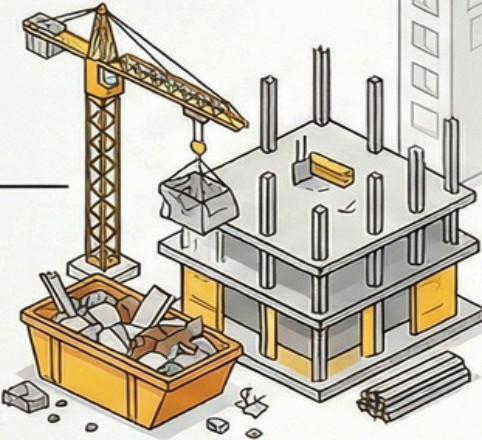


What constitutes waste?

Any substance that the holder discards or is required to discard

Construction and Demolition Waste

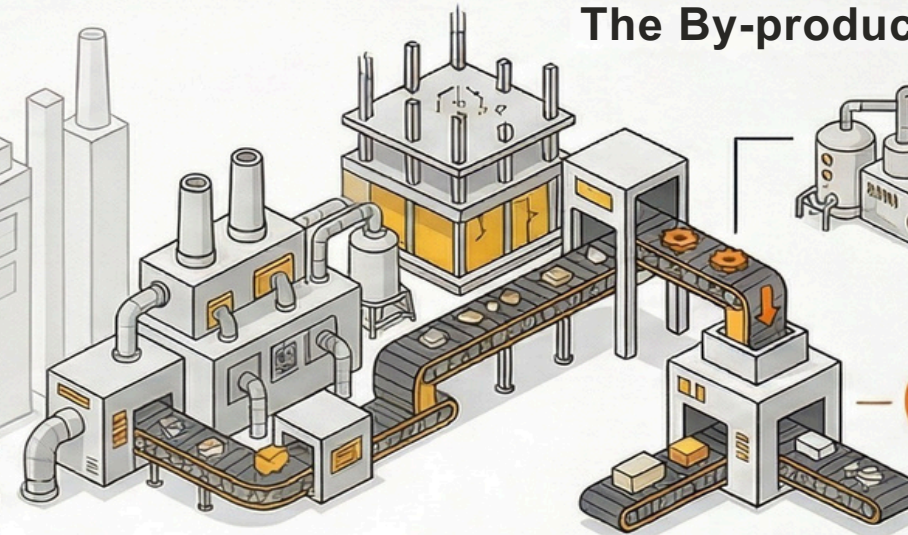
It includes waste specifically generated by construction activities, distinct from municipal or household waste.



Hazard Classification

Waste is divided into Hazardous and Non-hazardous categories based on its chemical and physical characteristics

The By-product: a direct resource



The 4 Conditions for Reuse

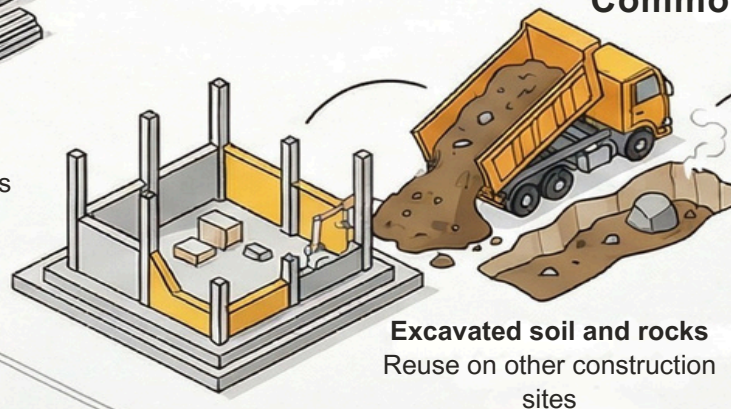
It must originate from a production process, with certain, direct and lawful use



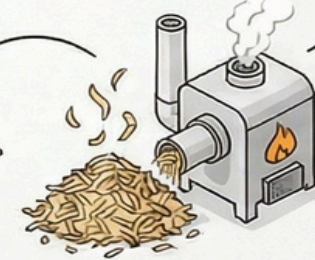
No Prior Treatment

The by-product must be usable without any treatment other than normal industrial practice

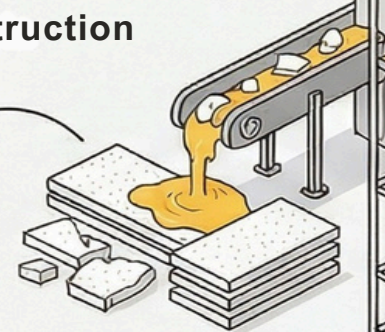
Common examples in Construction



Excavated soil and rocks
Reuse on other construction sites



Wood shavings
Use as biomass for energy production



Polystyrene scraps
Production of new polystyrene products