MACRAMÉ

Advanced Characterisation Methodologies to assess and predict the Health and Environmental Risks of Advanced Materials

Regulatory Risk Assessor Summit

BAuA, Berlin

27. – 28. November 2023

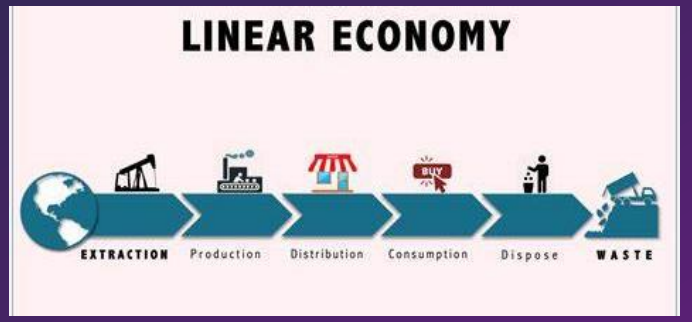
Consumers Views

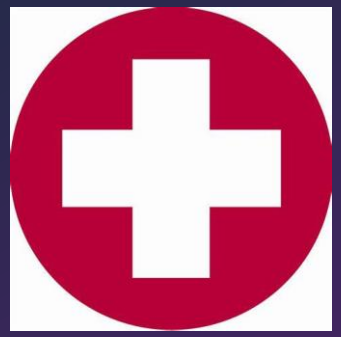
Blanca@temasol.org

The MACRAME project has received funding from the European Union's Horizon Europe Research and Innovation programme under grant agreement No. 101092686.

Consumer perception of risk

The linear economy take-make-dispose model has been leading to climate change, resource depletion and biodiversity loss.





Consumers start to perceive the growing risks caused by these major impacts, on human health:

- ✓ Food contaminated by microplastics coming from a polluted environment and entering the food chain.
- ✓ Respiratory diseases due to bad air quality caused by fossil-based transportation particles emission, aggravated by frequent heat waves.
- ✓ Health risk caused by the presence of certain harmful chemicals (PFAs) in the environment

Responsible consumption to support circularity

We are consuming at a rate of 1.8x planets – but we only have one!

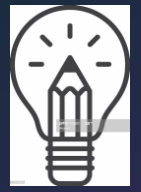
Consumers need to have a more responsible consumption by modifying their purchasing behaviour to buy goods with the lowest environmental footprint. For example:

- ❑ Recyclable goods vs non-recyclable
- ❑ Goods with recycled/renewable content
- ❑ Goods with no substances of concern (e.g., no BPA, no PFAS)
- ❑ Goods with no substances inhibiting circularity

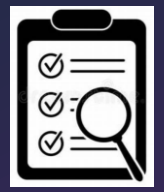
Consumers need to make informed choices to favour goods and services safe and sustainable by design **promoting the circular economy**

Some key principles to help consumers making responsible consumption

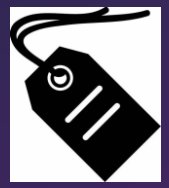
Assess the life cycle of products and materials to identify/quantify their negative impact on human health and the environment.



Design new products and materials to minimize negative impacts on human and environment health along their life cycle and especially at the end of life.



Revision of the textile labelling Regulation. By 2030, textiles on the EU market should be durable and recyclable, free of hazardous substances and produced in an environmentally friendly way while respecting social rights.



Communicate science based and standardized product information to consumer. (e.g., product passport, ecolabel) to improve transparency on product environmental footprint

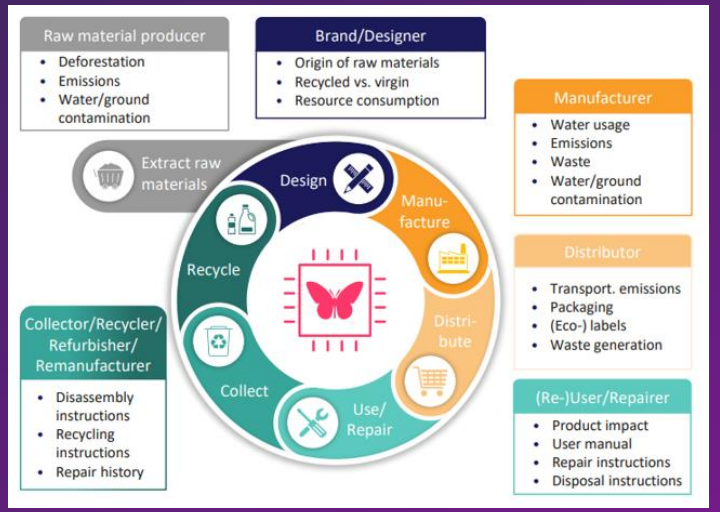
The Digital Product Passport

The European Commission (EC) proposes Digital Product Passports (DPPs) that share product information across the entire product lifecycle. Final approval expected in 2024 and implementation for the first product groups in 2026/7

Also on imported products

The Digital Product Passport Functionalities

- ❑Structure collection of product information across the product life cycle
- ❑ Digitally store data (e.g., in the cloud)
- ❑ Provide easy data access to stakeholders of the value chain including the consumers



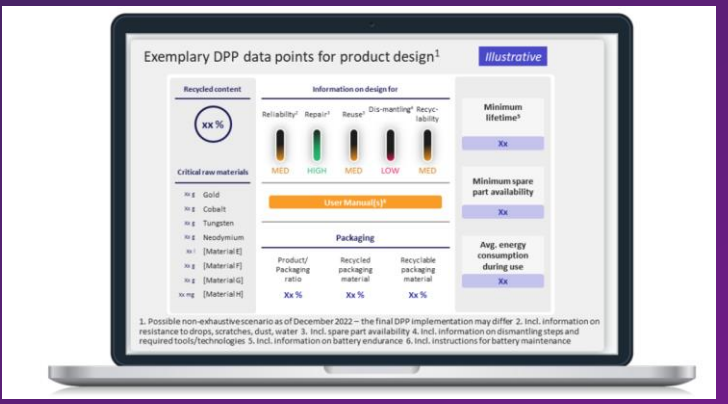
Priority industries: electronics, vehicles, textiles, plastics, construction and buildings, furniture, and chemicals

MACRAMÉ

The Digital Product Passport: Data Requirement

The EC currently suggests overarching data categories related to the life cycle of the product, for examples:

- ❑ Critical raw materials
- ❑ Presence of substances that inhibit circularity
- ❑ Energy consumption
- ❑ Ease of repair, maintenance, upgrading, re-use, remanufacturing, and refurbishment)



European Commission

Eco-labels

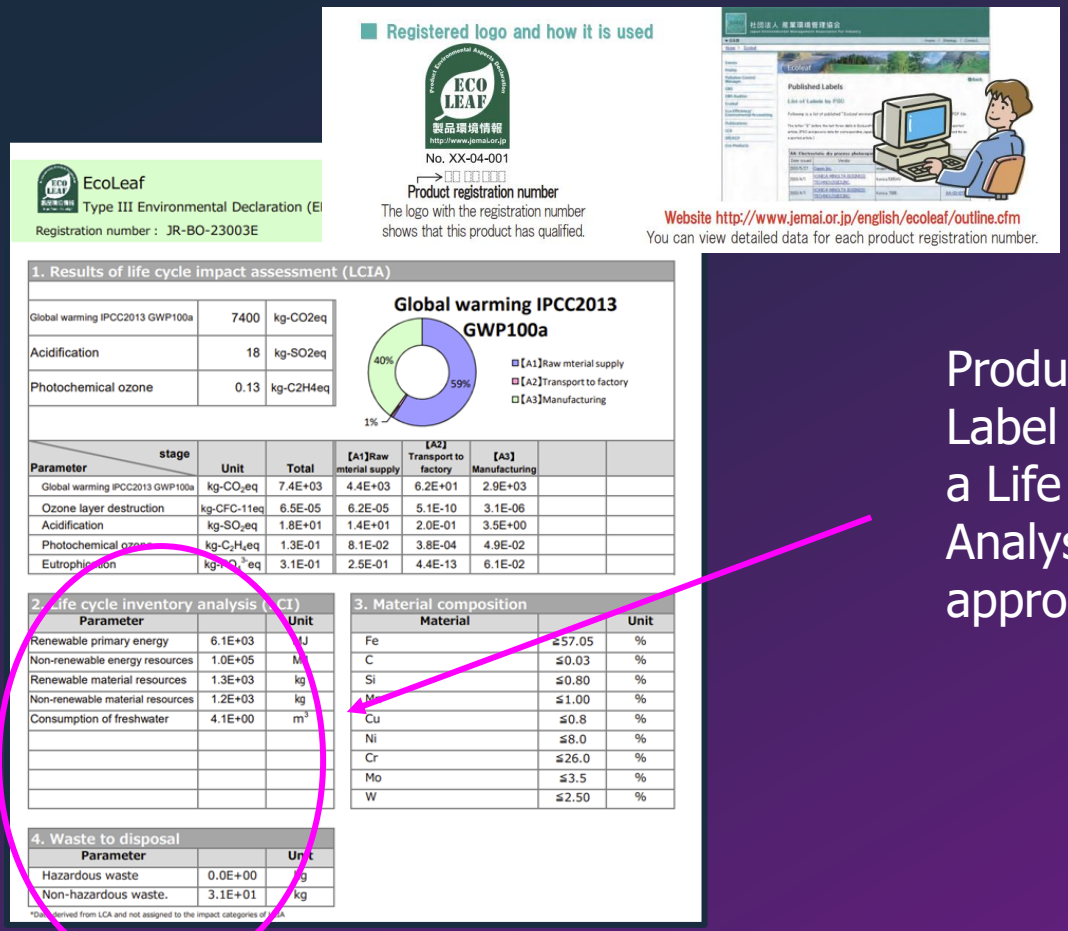
Sustainability

ISO standard	Definition	Examples
Type I - Ecolabels (ISO 14024)	• Seal or logo based on a set of multi-attribute criteria • Third-party-certified, voluntary schemes focusing on non-food products • Typically aimed at consumers	Nordic Swan Japanese Eco-Mark Canadian Environmental Choice
Type II – Self-declared environmental claims (ISO 14021)	• Claims made privately by companies describing a product based on characteristics following general guiding principles • Not third-party certified, but expected to be verifiable and accurate	Recyclable content Biodegradable
Type III – Environmental declarations (ISO 14025)	• Quantitative indicators of environmental performance based on LCA for objective comparisons between products fulfilling the same function • Generally B2B, or used in public procurement	Eco-Leaf Korean Environmental Declaration of Products

Three standard types under ISO14024

Such approach could be extended to B2C to provide more quantified information to consumers based on life cycle assessment

Examples: Japan Eco leaf and Korean Eco Label



Product Label with a Life Cycle Analysis approach

4 Environment related criteria

Environment related items considering the whole process of plastic product given in the **Table 1**.

Table 1 — Environment related items considering the whole process of plastic products

Step	Environment related item	Effects on improving the environment
Acquiring raw materials	—	—
Manufacture	• Usage rate of synthetic resin	• Saves resources
	• Usage rate of waste synthetic resin	• recycles available resources
	• Foaming agent	• Reduced of effect from ozone layer depletion
	• Flame retardant	• Reduced use of harmful substances
	• Stabilizer or activator	• Reduced use of harmful substances
Distribution, usage, consumption	—	—
Discard	• The indicator of material classification	• Improvement of recycling
Recycle	—	—

CE Mark

- In the EU Economic Area manufacturers are responsible for checking that their products meet EU safety, health, and environmental protection requirements
- Manufacturer's must:
  - Identify the applicable directive(s) and harmonised standards
  - Verify product specific requirements
  - Identify whether an independent conformity assessment (by a notified body) is necessary
  - Test the product and check its conformity
  - Draw up and keep available the required technical documentation
  - Affix the CE marking and draw up the EU Declaration of Conformity (27 KB)

https://single-market-economy.ec.europa.eu/single-market/ce-marking/manufacturers_de

How could it be extended to Advanced Materials

- New standards or methodologies on AdMa:
  - To measure the potential negative impact on the environment during the life cycle of the product containing AdMa
  - Evaluate the potential risks posed by these innovative materials

Explore specific regulation to legislate how to communicate to consumers the safety & sustainability impacts of these new materials

Identify safety and sustainability information on product containing AdMa that are valuable for the consumers to make responsible purchase / consumption

Thank you

Blanca@temasol.org