

Evento Finale Progetto *C.Alp.Med GREEN DEAL*

**We mine the e-waste
not the Earth !**



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Camera di Commercio
Genova



Comune di Genova



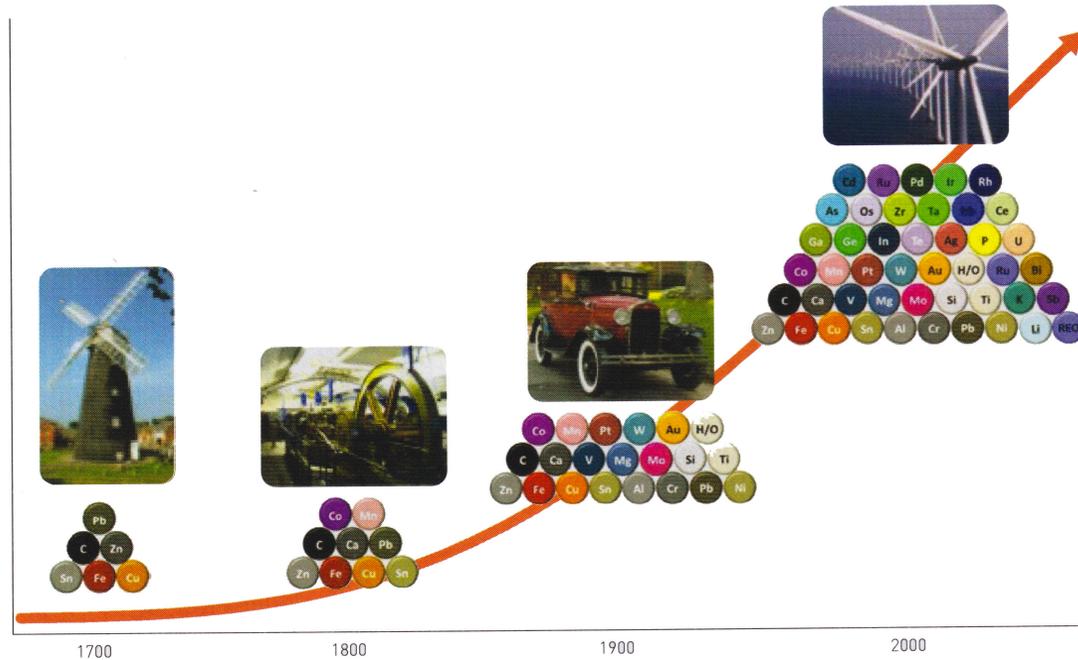
Sinergie locali per un economia sostenibile

NEW MATERIALS... NEW PROBLEMS

In the Fourth industrial revolution, many new different materials have become in common use.

Currently, the electronics industry is one that mostly depends on such a large number of materials, which are poorly recovered. The dramatically increasing number of end-of-life products pose people and the environment with unprecedented challenges.

Metal/Element Use Intensity in Products



Every year, up to 50 million tons of electronic waste are produced in industrialized countries.

At-the-state-of-art recycling methods fail to provide cost-effective recovery opportunities.

Extensive digitization and Industrial symbiosis will allow us to remove, select and recover almost all every materials present in e-waste

The scale of the values of electronic waste (e-waste) requires attention

While e-waste is still smaller overall than plastic waste (about 300 million metric tons annually) and textile waste (about 90 million metric tons),

WEEE represents the fastest growing waste stream in the world at 3 to 5 percent annual growth.

The biggest difference between WEEE and its plastic and textile counterparts ?

The value of the materials that live within if they can be recovered efficiently.

Which is to say, e-waste can be incredibly valuable.

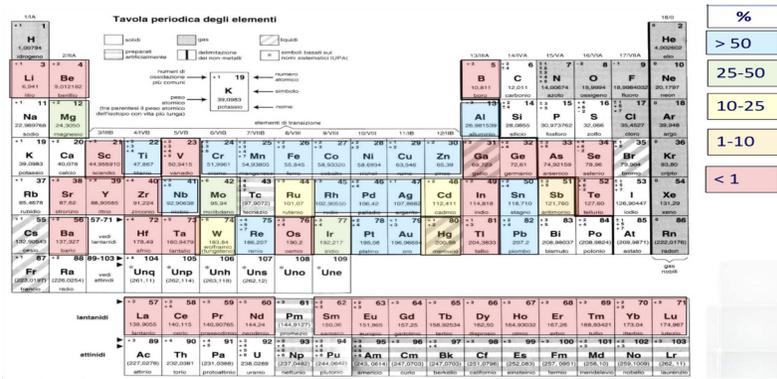


MARKET OVERVIEW

Ecological transition depends on the fact that raw materials are to be regularly available in the necessary quantity.

The electronics industry uses more than 40 different materials; about 20 are classified as critical because they are fundamental and indispensable.

Lack of these could block entire production chains.



Out of 30 CRM's there are 14 with a very low global end-of-life recycling rate of 0% to 5%.

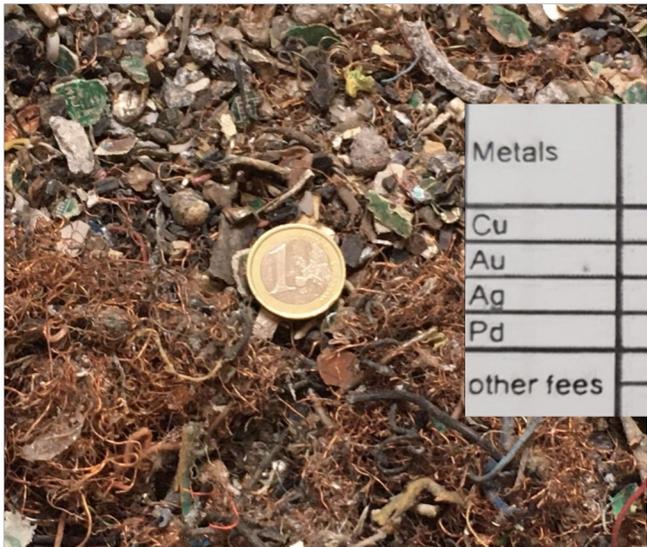
Figure 1: biggest supplier countries of CRMs to the EU



Source: European Commission report on the 2020 criticality assessment

Today shredding, followed by separation of the various elements is the first way for raw material salvage from large amount of e-waste.

At the end of selection remaining a mixture of 40 and more different materials, but only 4-8 from those present in larger quantities are actually recovered.



Metals	Assay	
Cu	28.13	%
Au	22.5	g/t
Ag	445	g/t
Pd	4.1	g/t
other fees		

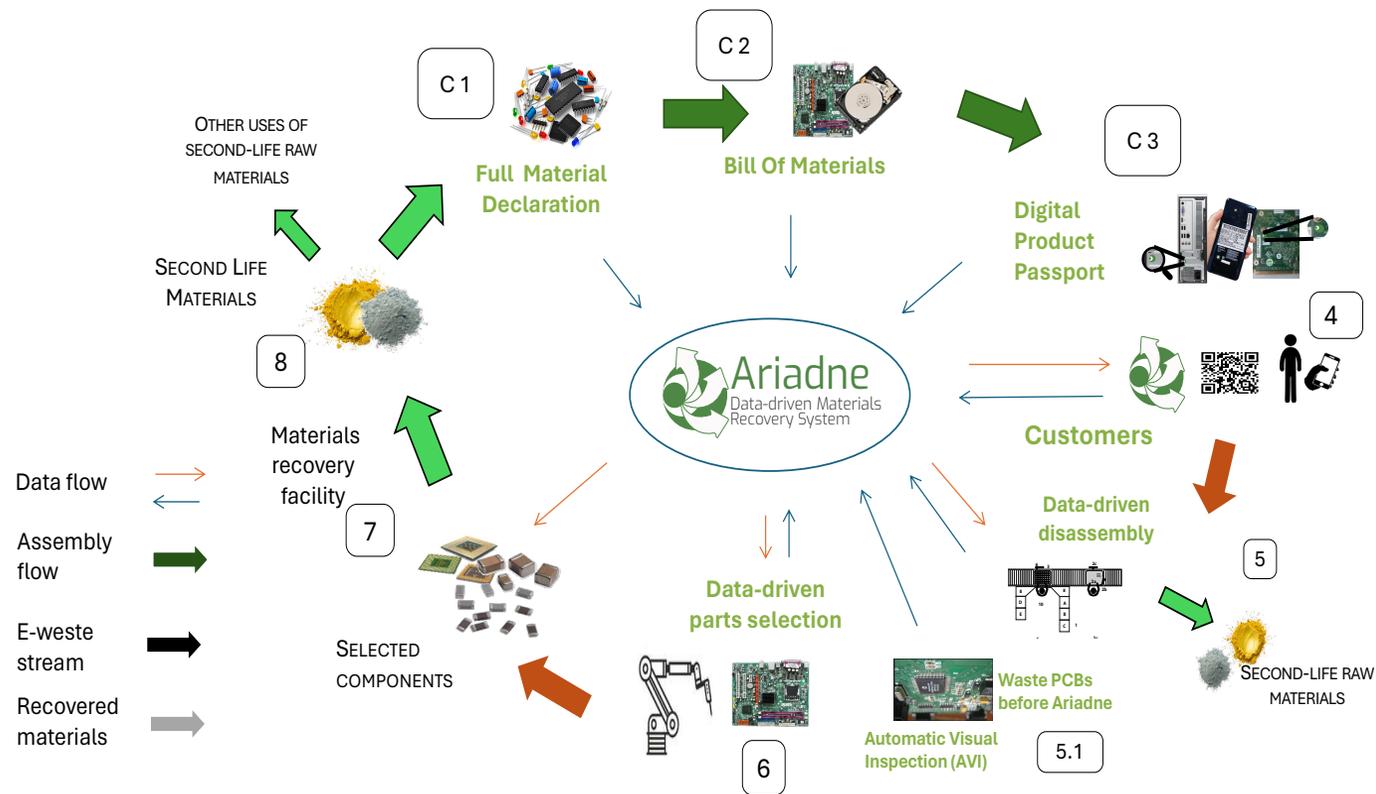
In this way a lot of metals present is are lost forever because this further dilution makes their recovery and refining technically very difficult and economically unsustainable.

Incomplete material selection and liberation from End-of-Life (EoL) products is the kay reason of resource loss.

THE ARIADNE MODEL

Ariadne is based on a digital platform which can handle data necessary to determine: **which, where and how much** of various materials are present in a new Electric and Electronic Equipment (EEE) and at its EoL

Thank a wide use of the ICT this data is used to improve dismantling, selection and recovery of materials therein.

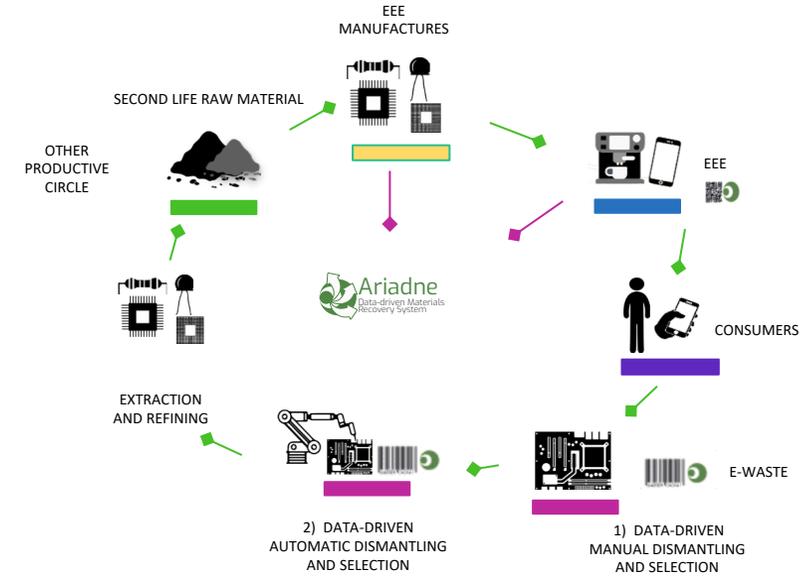
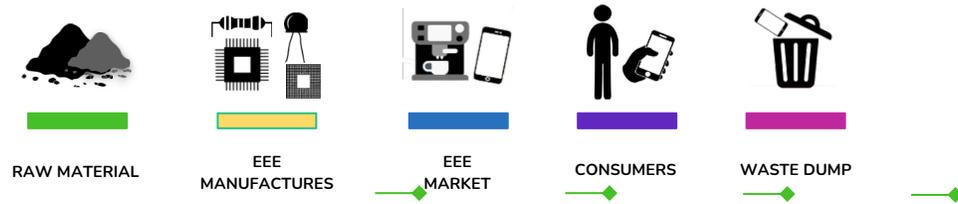


It lays the foundations for the development of the circular economy in the electronics industry with producers collaboration and without public financing.

BENEFITS

Think of this as a few extra tons of profit

From a linear to a circular model



Ariadne allows the transition from a linear and insurmountable model to a circular, sustainable and resilient one.

The Ariadne logo  communicates to market that on the web platform are taken the information for disassembly and fine material recovery.

The Qr code refers to the websites of the project and the manufacturer.

So consumers will thus be informed of the manufacturer's efforts to make its appliances easier to disassemble and recycle: therefore more sustainable



For a better recycling, every part has a material equivalent color code.

Here an example of coffee machine at the first step of dismantling.

LINEA MINI

ISTRUZIONI DI SMONTAGGIO:

ID BOM	Nome	CODICE_SAP	DESCRIZIONE	MATERIALE_DB	Peso (config)
1	LM0002125	I.1.099	VITE MAX10 TP8 A TAGLIO INOX	AISI 304 1.4301	1.8
2	LM0002055	I.1.006	VITE MAX8 TP8 A CROCE INOX A2	AISI 304 1.4301	1.6
3	LM0000247	A.7.003.R	SERBATOIO ACQUA LINEA MINI	PE Marlex® HXM 50100 Chevron Phillips	92.1
4	LM0000079	C.1.189.**	PANNELLO	AISI 430 1.4016	-
5	LM0018152	C.1.204.01	STAFFA SCHEDA ELETTRONICA	AISI 430 1.4016	168.7
6	LM0001719	F.1.017	COPERCHIO PER SERBATOIO G33	PC Makrolon® 2456 550115 Covestro	24.0
7	LM0000248	A.7.003.R	SERBATOIO ACQUA LINEA MINI	PC Makrolon® 2456 550115 Covestro	330.8

PROCEDIMENTO:

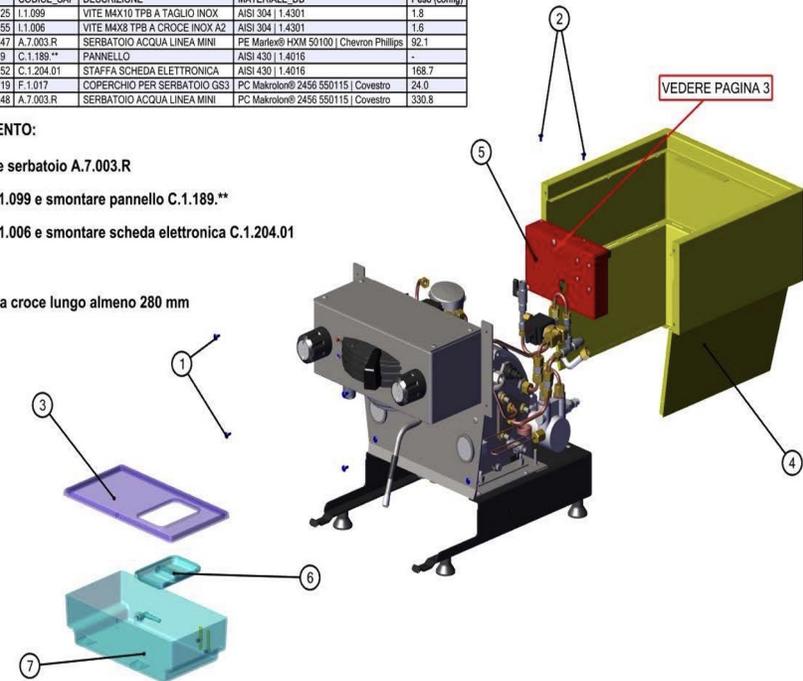
40) Smontare serbatoio A.7.003.R

50) Svitare I.1.099 e smontare pannello C.1.189.**

60) Svitare I.1.006 e smontare scheda elettronica C.1.204.01

UTENSILI:

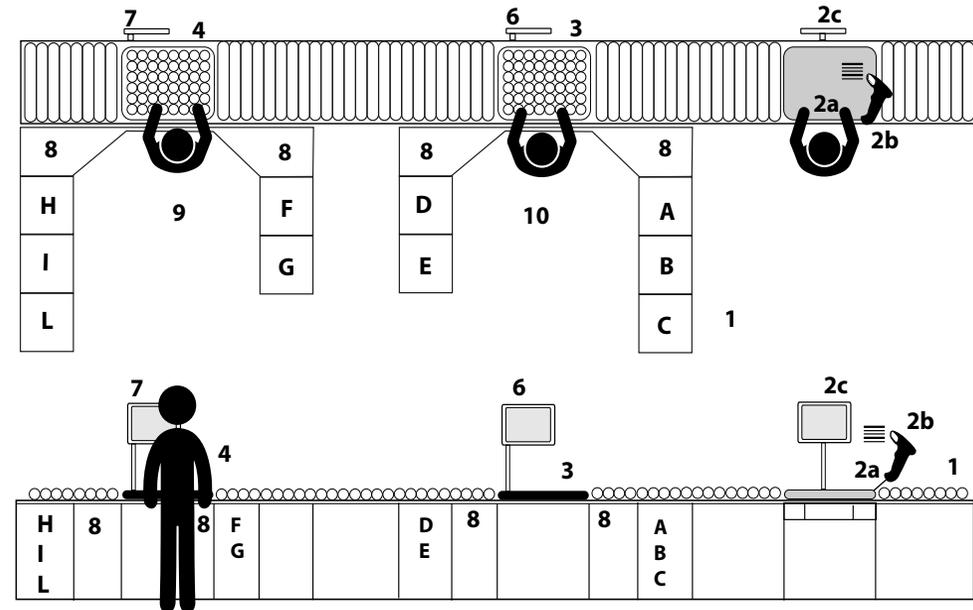
-Cacciavite a croce lungo almeno 280 mm



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Disassembly and manual selection are made in a specially prepared structure and linked to the web platform for the acquisition of the information that the operator receives on the screen in front of him.

- A-L Containers for the selected materials
(on demand with balance)
- 1 Roller conveyor
- 2 Workstation for identifying the e-waste to be disassembled
- 2.a table top with balance
- 2.b bar code scanner
- 2.c data entry panel
- 3 - 4 Rotating dismantling workstation
- 6 - 7 Guide panel for disassembly and material selection
- 8 Support table for manual dismantling
- 9 - 10 - 11 Space for operators

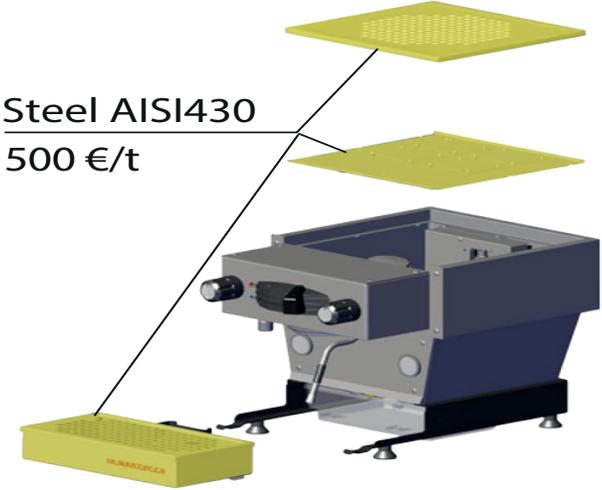


BNEFITS

The exact identification and selective disassembly allows to attribute the right value for each component of the device



Linea Mini





**E-waste contains valuable resources
which offers opportunities for urban
mining and job creation**



Thanks for your attention !