



Social, environmental and economic viability of the preparation for the reuse of small electrical and electronic appliances

January 2024



Fundació
Deixalles

Maria Suau Font
Alicia Marqués Prieto

Àrea ambiental de la Fundació Deixalles



G CONSELLERIA
O EMPRESA, OCUPACIÓ
I I ENERGIA



CONTEXT

PROJECT GOALS

The aim of the study is to carry out an analysis of the social, environmental and economic feasibility of the preparation for the reuse of the FR5 in Mallorca



Fundació
Deixalles

Funded by 



G CONSELLERIA
O MEDI AMBIENT
I TERRITORI
B
/



**Illes
Sostenibles**



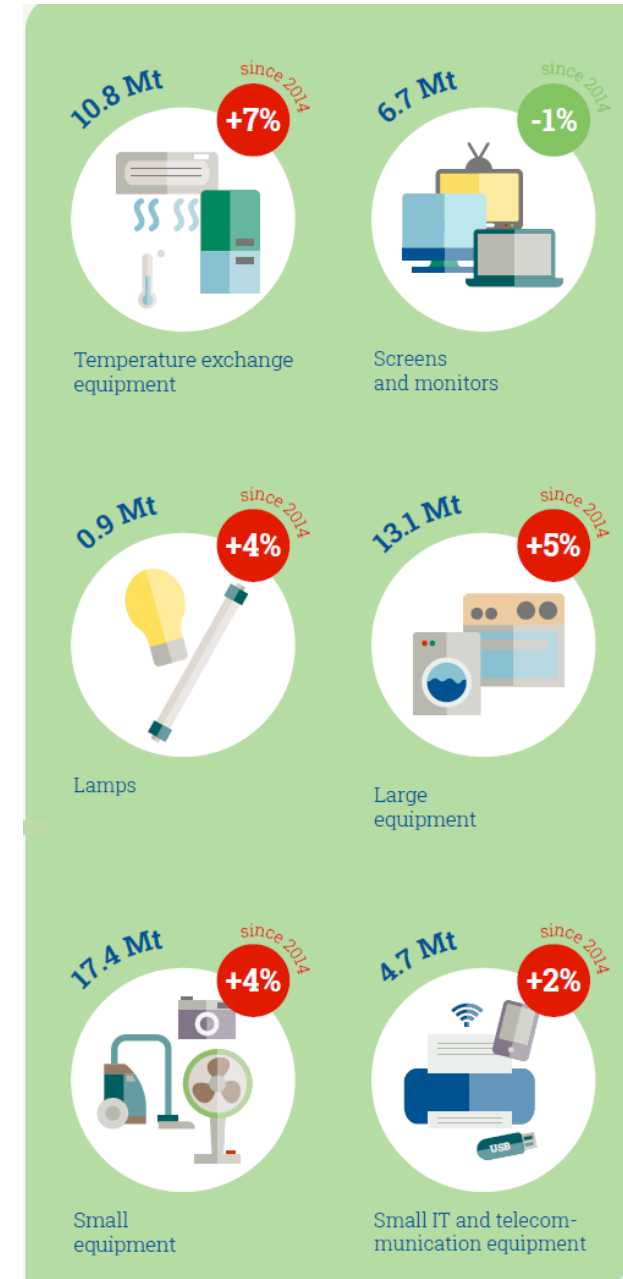
Fundació
Deixalles

CONTEXT

THE PROBLEM

WEEE is one of the fastest growing waste streams in the world (2 Mt per year). In 2019, 53,6 Mt were produced, 17,4 of which correspond to FR5.

At the level of the Spanish state, this trend is confirmed, according to the Recyclia report, in 2019, 734 million electrical and electronic devices were put on the market, more than half (54%) were small devices.



CONTEXT

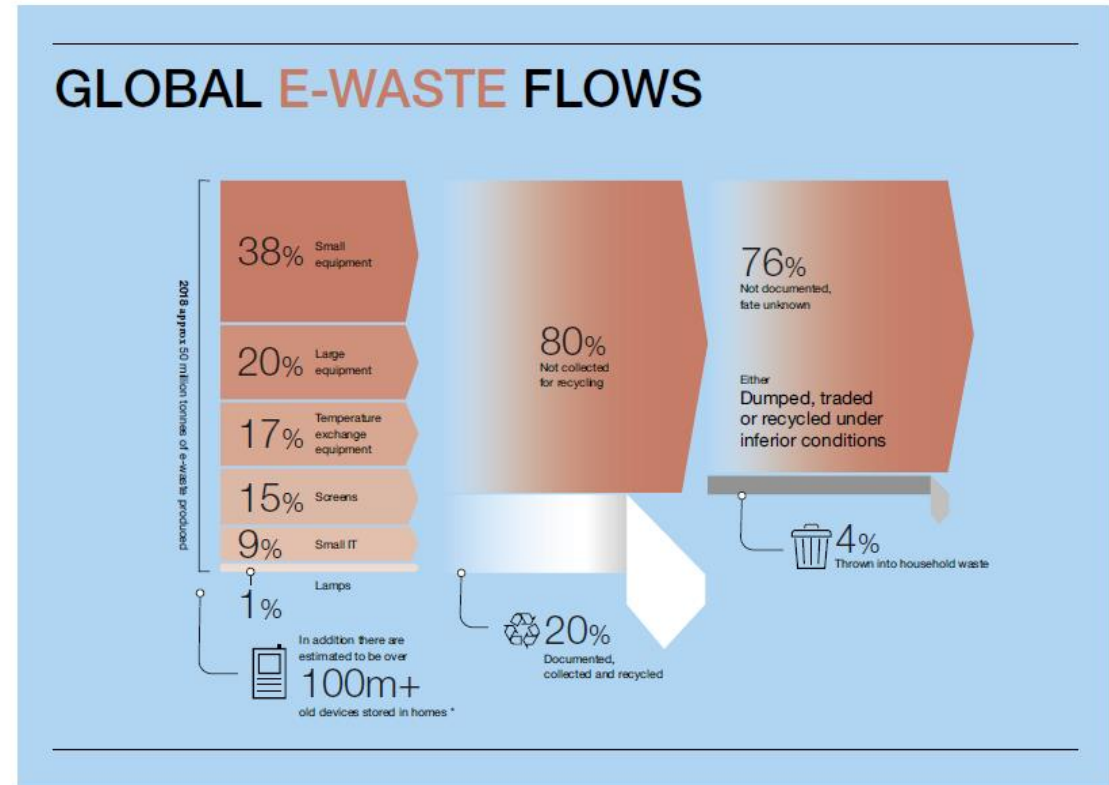
THE PROBLEM

Despite being one of the fractions with more devices placed on the market and the importance of extending their useful life, RD 110/2015 does not establish specific objectives for the FR5, but it does set a joint objective of PXR and R:

For WEEE included in categories 5 or 6:

- 75% will be valued, and
- 55% will be prepared for reuse and recycled

There are few data on WEEE going to PXR.



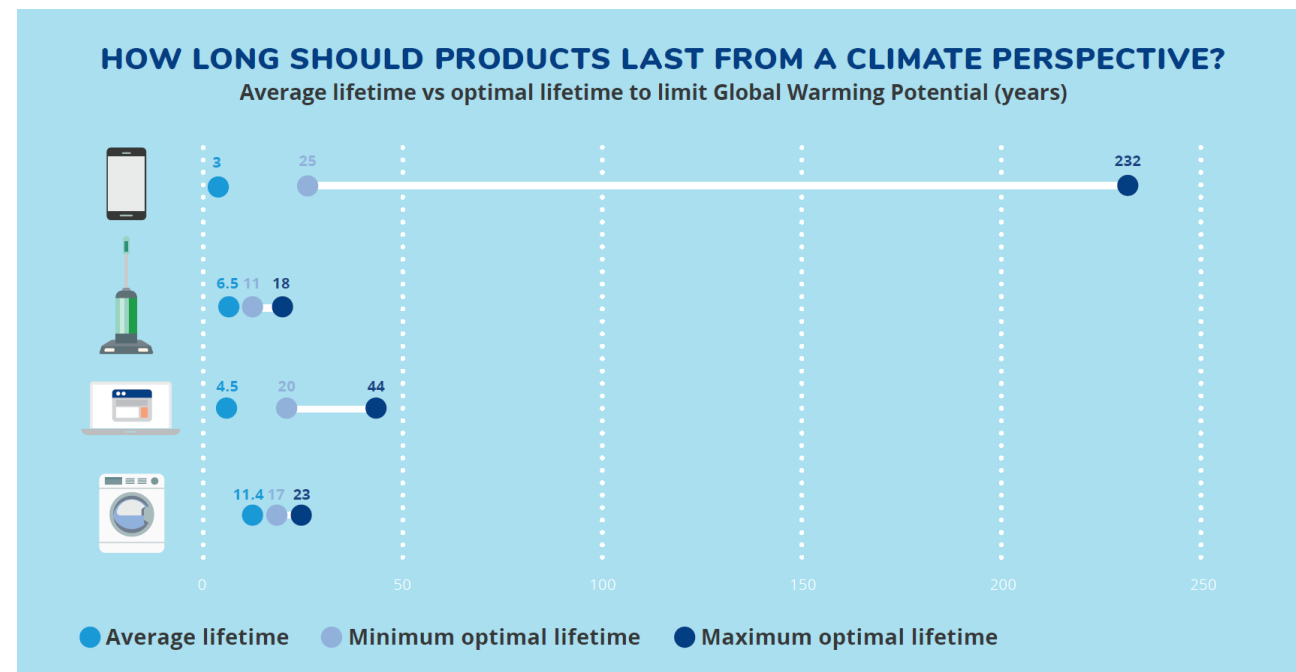
Source: Global E-waste Monitor, 2017

CONTEXT

THE PROBLEM

According to the report "Coolproducts don't cost the Earth" under normal circumstances it always makes more sense to extend the useful life of our devices beyond the useful life established by the manufacturers.

In the case of FR5 there is a phenomenon of compulsive buying, due to the fact that its retail price is low compared to other fractions, and this may be the reason that people buy and discard to buy new ones more often than for example in the case of large electrical and electronic devices.



CONTEXT

POTENTIAL FOR JOB CREATION FOR VULNERABLE GROUPS

According to the RREUSE report, social enterprises that carry out activities included in the circular economy create between 3 and 140 jobs for every 1000 tons of material collected.

The lower limits of the range correspond to recycling activities, and the higher to PXR activities. The PXR has a higher job creation potential because we find non-mechanized tasks there:

- Reception of the devices (identification, 1st visual inspection, selection)
- storage
- Repair (repair, function tests, cleaning, quality control)
- Traceability and labeling

JOB CREATION IN THE RE-USE SECTOR: INSIGHTS FROM SOCIAL ENTERPRISES



≈70 JOBS CREATED
PER 1,000 TONNES COLLECTED

LOWER BOUND: ≈20 JOBS
CREATED PER
1,000 TONNES COLLECTED



UPPER BOUND: ≈140 JOBS
CREATED PER
1,000 TONNES COLLECTED

Most organisations create between 40 and 100 jobs per 1,000 tonnes of products collected for re-use oriented activities. This wide range is due to several factors, including labour intensity required for different product categories, workforce composition and policies on work integration.

© RREUSE 2021, www.rreuse.org

GOALS

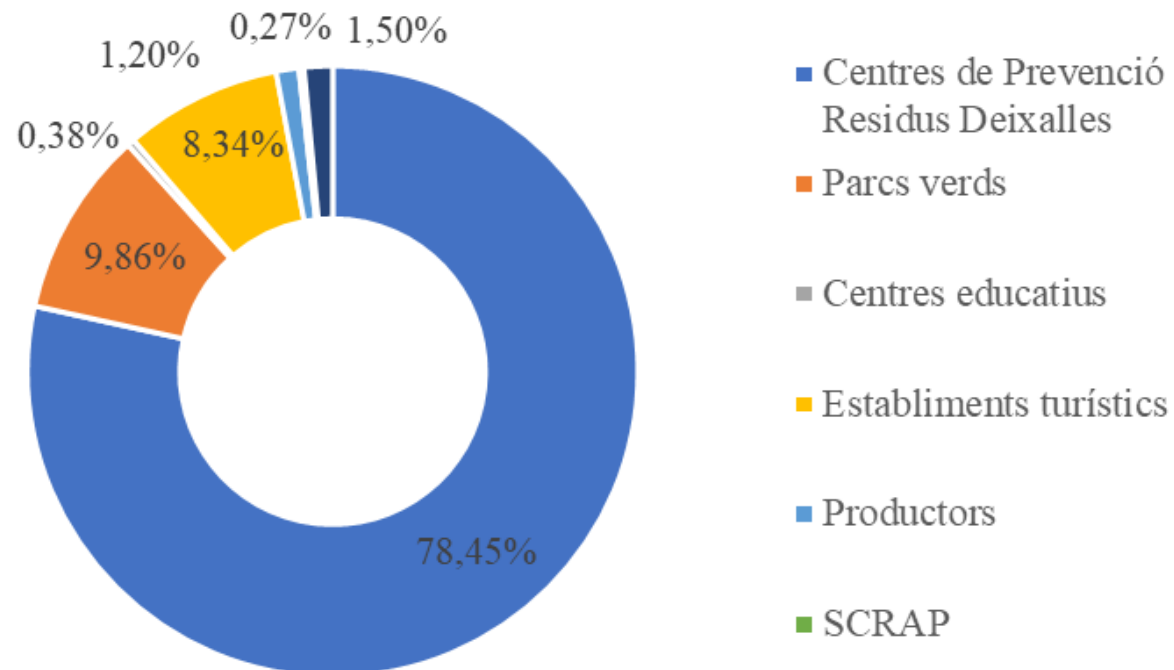
GENERAL OBJECTIVE

Evaluate the economic, environmental and social viability of the preparation for the reuse of small electrical and electronic appliances

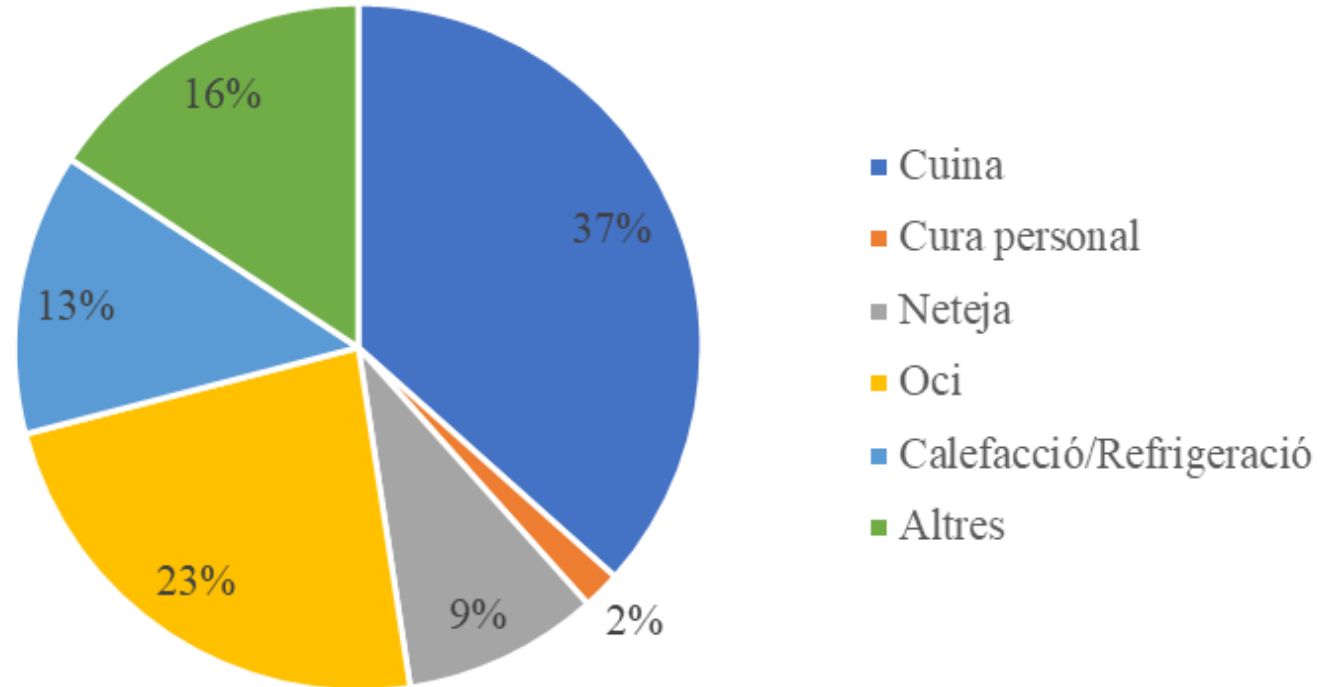


ELECTRICAL AND ELECTRONIC DEVICES COLLECTION

From July 1 2022 to June 30, 2023



ELECTRICAL AND ELECTRONIC DEVICES COLLECTION



PREPARING FOR REUSE CENTER

The WEEE arrives at the CPR and a technical sheet is created for each one of them

- Origin
- Collection date
- Date of entry into the CPR
- Type of device or fraction
- Weight
- Repair status
- CPR departure date
- Final price



Improve traceability

WEEE's REVISION

The revised WEEE have been classified into 4 groups:

- **Repaired and finished devices, ready to be introduced to the market.**
- **Appliances repaired but the cost of repair is higher than the cost of sale.**
- **Recycled devices, as they could not be repaired.**
- **Recycled devices, due to their high cost of repair**

STUDY METHODOLOGY

100 small household appliances were selected and the time invested in each of the activities and the cost of the staff who carried them out were calculated:

Taula 1: Fases del procés de PXR i persona encarregada de cada una de les tasques.

Fases del procés PXR	Personal
Recollida	Xofer monitor
Descàrrega	Operari (contracte d'inserció)
1a inspecció visual	Encarregat del CPR
Test de seguretat electrònica	Operari (contracte d'inserció)
Proves de seguretat funcionament elèctric	Operari (contracte d'inserció)
Reparació	Operari (contracte d'inserció)
Control de qualitat	Encarregat del CPR
Servei postvenda (garantia d'un any)	Encarregat del CPR

ECONOMIC VIABILITY

Taula 2: Temps i cost de reparació d'un RAEE a cada fase de la PXR.

	Mitjana de temps (min)	Mitjana de cost
Recollida	5,2	1,34 €
Descàrrega	4,9	0,90 €
1a Inspecció visual	5,5	1,61 €
Test de seguretat electrònica	4,7	0,86 €
Proves de seguretat del funcionament elèctric	9	1,66 €
Reparació	8	1,48 €
Control de qualitat	4	1,03 €
Garantia 1 any	6,1	4,36 €
Total reparació	55,9	13,24 €

Total staff cost: 1.324,23 €.

ECONOMIC VIABILITY

100 small devices sample

Income: 1.974€



40 % marketing expenses: 789,60 €

16 % indirect cost: 315,84 €

Personnel expenses: 1.324,23 €

Result: - 455,67 €

ECONOMIC VIABILITY

7.242 small appliances collected

Income: 130.702 €



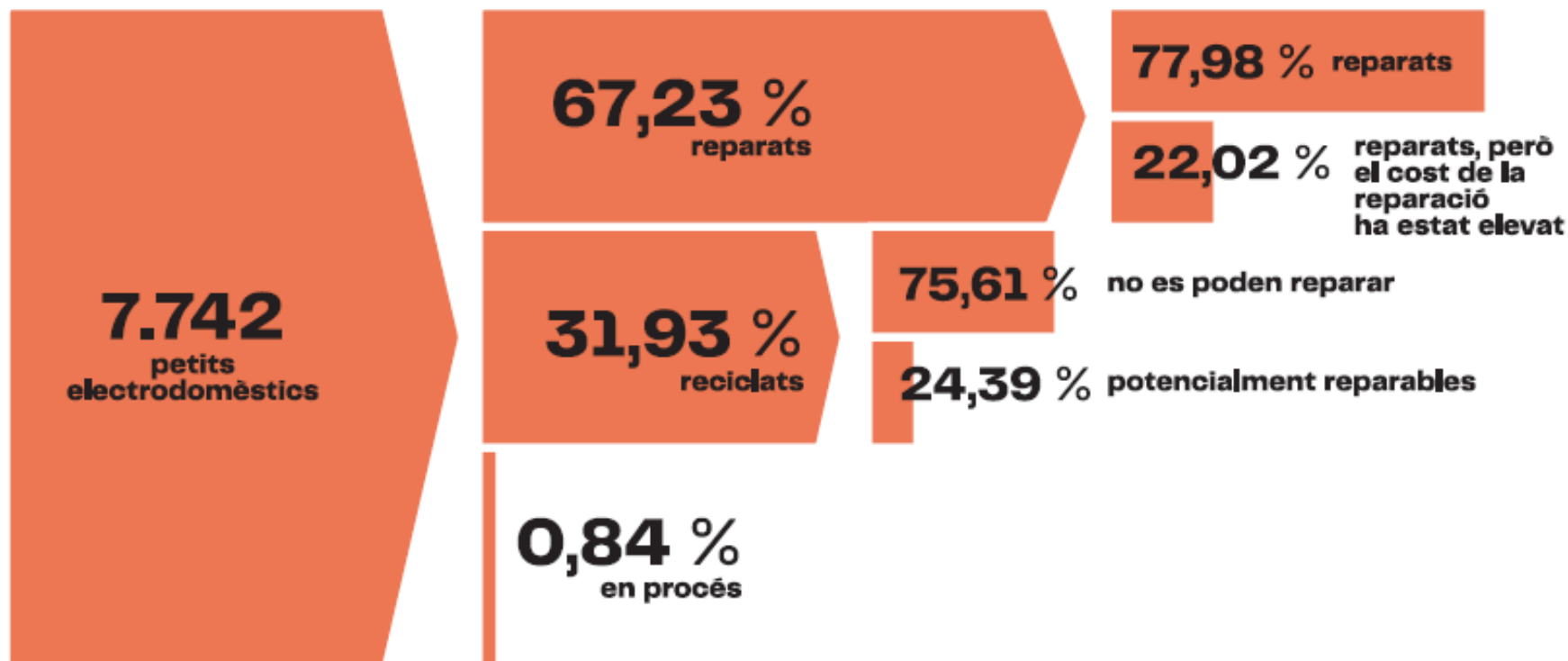
40 % marketing expenses: 52.280,80 €

16 % indirect costs: 20.912,32 €

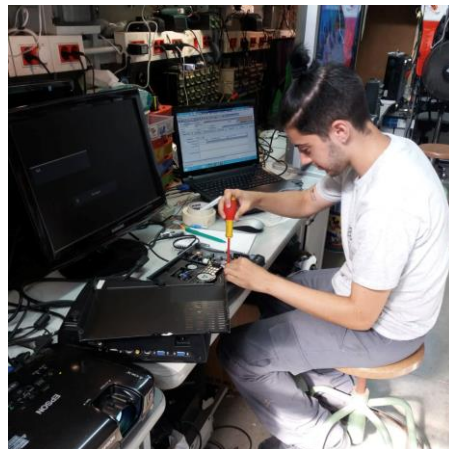
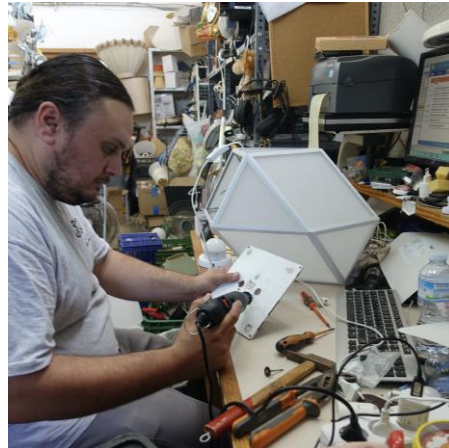
Personnel expenses: 86.041,49€

Results: **-28,532,61€**

ENVIRONMENTAL VIABILITY



SOCIAL VIABILITY



Preparing for reuse contributes to generating jobs for people at risk of social exclusion

In this study have participated:

- 3 people with structure contracts
- 4 people with employment contracts (3 operators in the CPR and 1 collection operator)

SOCIAL VIABILITY

During this project, different socio-labor skills have been worked on with the people who participate in an insertion process:

Skills:

- Hygiene and image
- Responsibility
- Communication
- Teamwork
- Health and security
- Initiative
- Willingness to work
- Socio-environmental sensitivity
- Productivity

**Improving their self-esteem
and their work skills**

SOCIAL VIABILITY



RESULTS

CONCLUSIONS

The preparation for reuse of the FR5 is environmentally viable

If we had funding we could reach:

75% PXR

RESULTS

CONCLUSIONS

The preparation for the reuse of the FR5 at the social level is feasible

7

Jobs

37

Tons treated

0,19

Jobs/ton

190

Jobs for 1000 tons

SOCIAL VIABILITY



Fundació
Deixalles

PAULA MANSO
RUBIO

"ANIM A TOT HOM
A REUTILITZAR,
GRÀCIES A
AQUEST TREBALL
HE TORNAT A
TENIR VIDA"

The preparation for the reuse of FR5 is economically viable if the EPR schemes finance the PXR of this fraction

INCOMES	130,702 €
PERSONNEL EXPENSES	- 86,041,49 €
INDIRECT COSTS	- 20,912,32 €
COMERCIALIZATION EXPENSES	- 55,280,8 €
TOTAL	-28.532,61€

CONCLUSIONS

28.532,61 €

Deficit

37

Tons treated

**771,15
€/ton**

**Contribution that the EPR
schemes
should make**

**The preparation for the
reuse of FR5 is economically
viable if the EPR schemes
finance the PXR of this
fraction**

Thank you for your attention!



Fundació
Deixalles



G CONSELLERIA
O MEDI AMBIENT
I TERRITORI
B
/

Maria Suau Font

areaambiental@deixalles

Alicia Marqués Prieto

tallers@deixalles.org

www.deixalles.org

Àrea ambiental de la Fundació Deixalles