



life13 env/it/000620

Extending the life of computer equipment, reuse and carbon footprint

revertia <

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Revertia: Spanish Company founded in 2010. Main purpose: to provide services in the management of WEEE. Authorized as a center for preparation for reuse. Many of these equipments can often have a second life so we try to recover them and make them reusable. 2015: 140 tons of WEEE. 24 tons reused. This management service includes:



- ✓ WEEE collection in customer facilities, transport and transfer.
- ✓ Certified elimination of all the data contained in each hardware.
- ✓ Repair of equipment. When this not possible: we recycle them.
- ✓ Finally, there is a reused EEE. Destination: sencondary market / donation to social projects.



Innovative service: carbón footprint analysis for reusing activities. We try to transform a legal mandatory on waste management in an opportunity to obtain positive impacts on sustainability and RC. 2015: 250 tons emissions avoided.



For a correct reuse, it's essential an appropriate selective collection and also an appropriate storage avoiding WEEE can be damaged. Environmental and social benefits:

- ✓ Reducing waste generated and extraction of natural resources and raw materials.
- ✓ Saving the emissions of greenhouse gases.
- ✓ Promoting responsible consumption.
- ✓ Generating investments and creating new centers and networks for reusing and, therefore, Green Jobs.
- ✓ Accessing to people with fewer economic resources to computer hardware reducing technological gap.



We assume commitments and principles derived from the European legislative framework: European Directive 2012/19 EU, transposed into the Spanish law by the Royal Decree 110/2015.

The Spanish law promotes preparation for reusing treatments and establishes specific targets separated from recycling. For computer equipments and small telecommunication devices: 3% for 2017 and 4% for 2018. First country with the Belgian Region of Flanders.



Key principles in the management of waste:

- ✓ Hierarchy in waste management.
- ✓ Extended producer responsibility.



The sixth of the 35 EU-Projects selected from the 2011 LIFE + Program. 2012 – 2015. 1.269155 €.

Partners: University of Vigo, Energylab and Revertia.

This Project arose with the purpose to offer solutions to help improve the problem of a category of WEEE (the derivative of computer equipment) from a feasible way.



General aim: characterising and demonstrating an industrial process for reusing electronic equipment to promote standards that guarantee the correct implementation of European law and contribute to a high level of separation of WEEE.

Our rol in this Project was to show the economic feasibility of the processes of reuse of computer equipment from a private business point of view and demonstrate it,s replicability.

Participating in the rest of the actions of the Project: LCA.

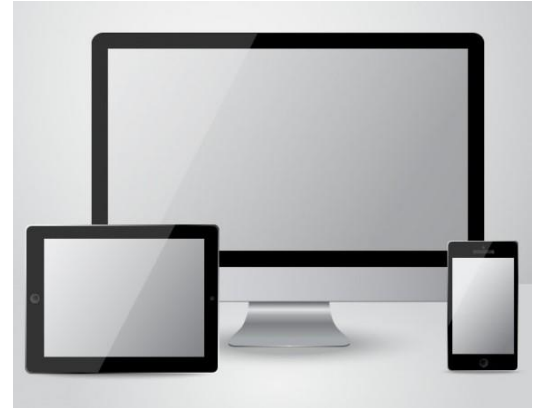


Specific objectives:

- ✓ Compare the environmental impact of a reuse vs a non reuse scenario.
- ✓ Define a reuse preparation process and ascertain the resources needed.
- ✓ Establish the mandatory requirements during the reuse preparation process, outlined in a guide of proposed regulatory improvements and technical standards to be applied.
- ✓ Assess technical and economic feasibility through four demonstration processes, as well as evaluating environmental and policy implications.
- ✓ Raise awareness among all those involved in the process regarding the preference for WEEE reuse over recycling.
- ✓ Ensure correct implementation of European regulations regarding WEEE reuse, increasing application.



An important part of this Project was the life-cycle assessment of a complete computer equipment (CPU, screen, keyboard, mouse) following the ISO 14040 series in order to demonstrate that the reuse process can result in a reduction in CO2 emissions and, therefore, being a better option than recycling.



The scope of this study includes all stages of life of a product from the extraction of raw materials to the time that the product life ends, becoming a waste that must be managed properly.



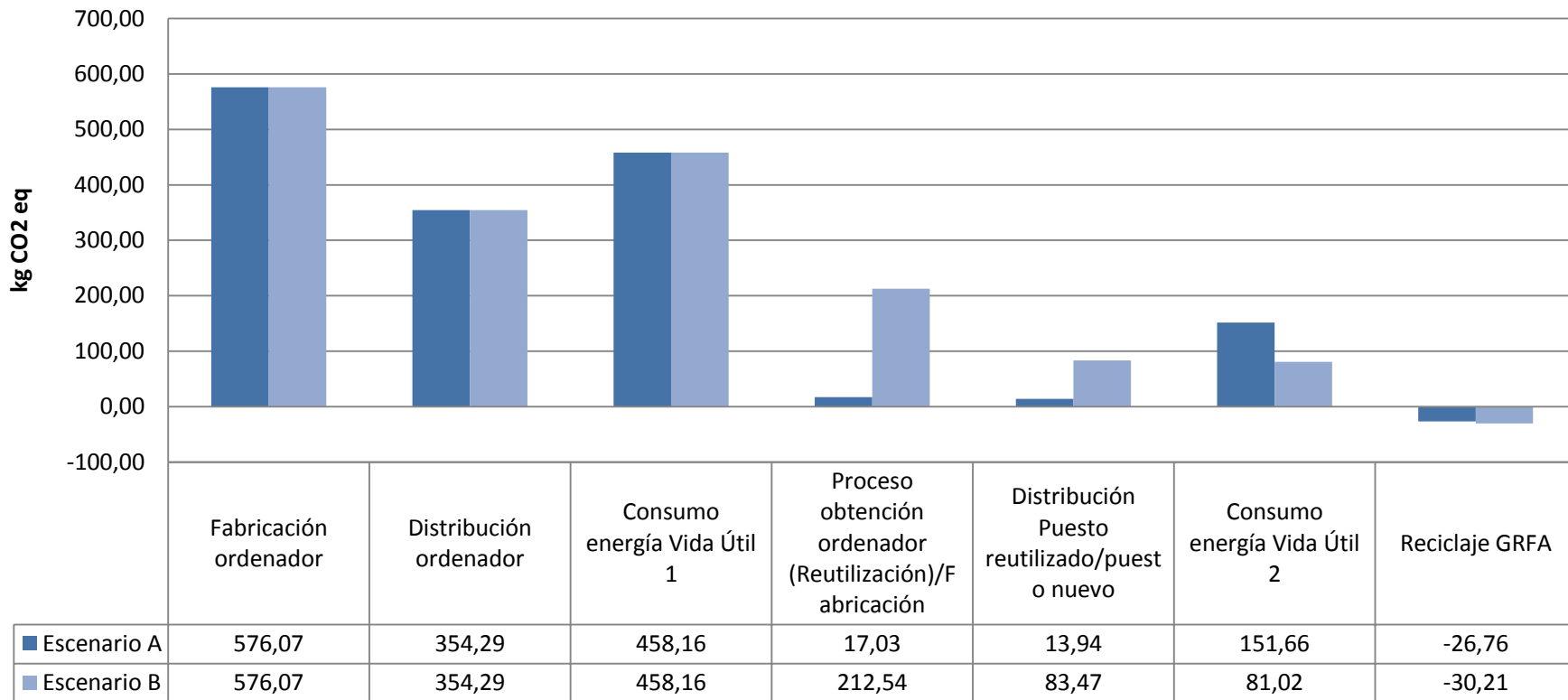
The specific objectives of the study focused on:

- ✓ Assess the environmental impacts of each of the stages of the LC of a complete computer equipment destined to reuse.
- ✓ Identify, quantify and characterize potential environmental impacts of each stages.
- ✓ Compare two scenarios: a reuse and a no reuse, in order to evaluate wich one is preferable:

A. In the scenario of reuse, where the computer equipment, at the end of what is considered his first life, undergoes a process of preparation for reuse.

B. And a B scenario in which after the first use of a new computer, it is discarded, recycled and a new one with similar functionality, manufactured from virgin raw materials is acquired.



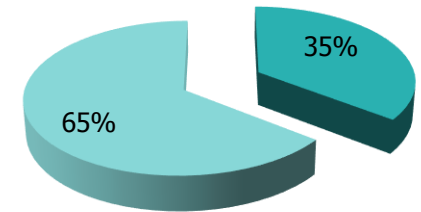


In the category of climate change, a reuse scenario allows a reduction of 191 kg CO2 equivalent per reused computer against a new one.

Direct costs (direct workforce, transportation, consumption)

The direct costs reach 6.1 € per complete computer equipment. Transportation costs suppose the 65% of total direct costs, so an aspect to improve is the optimization of logistics. Essential to identify the source of the potentially reusable material avoiding unnecessary waste transfer.

- Direct workforce
- Transportation costs



Regarding **indirect costs**, we estimated that these would total 21.41 € per complete computer equipment.

Thus, the total cost of a reused computer equipment will reach 27.5 € (direct + indirect).



Of course, there are more variables involved but in general, regarding the calculation of income an average selling price of 42.2 € per reused computer is estimated.

This shows a positive margin of 14.7 € per reused computer.

Economic Balance

- Income in €/equip.: 42,2 €
- Expenses in €/equip: 27,5 €



Clear conclusion

Reusing computer equipment is an economical, environmental and social feasible activity.





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**Thanks for your
attention**

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