

# LIFE RE-WEEE

Development and Demonstration of Waste Electrical  
& Electronic Equipment (WEEE) Prevention  
and Reuse Paradigms - LIFE RE-WEEE

**LIFE14 ENV/GR/000858**

## LAYMAN'S REPORT

ReWeee



ΠΡΑΣΙΝΟ ΤΑΜΕΙΟ

Athens 2020

The LIFE RE-WEEE project was 60% co-funded by the LIFE+ programme of European Commission. With the financial contribution of Green Fund.



# Contents

The LIFE RE-WEEE project at a glance .....	3
What about WEEE? .....	4
Report on the current state-of-the-art .....	5
Best practices – facilitations and barriers .....	5
WEEE mapping in Greece .....	5
Two WEEE Sorting Centres in Greece .....	6
Specifications and technical requirements .....	7
Monitoring and assessment .....	7
Consultation Forum .....	8
Development of an integrated methodology .....	8
Promotion of the WEEE prevention and preparing for reuse culture in Greece .....	8
The RE(W)EEE Platform .....	8
Repair events .....	9
Repair guides .....	9
Networking and dissemination activities .....	9
Proposals for policy makers .....	11

## The LIFE RE-WEEE project at a glance

While both European and Greek National Legislation state that prevention and preparing for reuse of waste electrical and electronic equipment (WEEE) are in the top tiers of the waste hierarchy, few have incorporated them in their daily lives. Beginning in January 2016, this gap of know-how and daily practice was what the LIFE RE-WEEE project attempted to fill, based on the concept of Circular Economy.

The main objective of the project was to promote WEEE prevention and preparing for reuse in Greece, by developing proper infrastructures, an integrated methodology for the quantification and reporting of electrical and electronic equipment (EEE) reuse and preparing for reuse, as well as the implementation of dissemination and raising public awareness actions.

To achieve this goal, the staff of the project envisaged and launched for the first time in Greece, the operation of two WEEE Sorting Centres – one in the Attica prefecture and one in the Central Macedonia prefecture. The main activities of these centres is the collection, selection, and sorting of WEEE, in order to prepare for reuse the sorted devices.

However, the project was not limited to this. It produced a strong strategy for raising public awareness and set the basis for the development of a (W)EEE prevention and preparing for reuse culture. It developed a web-based platform for exchange and donation of EEE, produced dissemination material which was distributed to the public, while it established a strong network of contacts with waste management stakeholders, Local Authorities, academia, and key actors in other relevant projects, with the aim to exchange knowledge and experience on WEEE prevention and preparing for reuse.



In parallel, the LIFE RE-WEEE project developed a Consultation Forum, which investigates, analyses and promotes through social media issues related to WEEE waste prevention, preparing for reuse, and their monitoring. The Consultation Forum is comprised and attended by organizations, bodies stakeholders and actors in Greece, related to WEEE.



## What about WEEE?

The last two decades, technological progress has led to the increasing design and development of electrical and electronic equipment (EEE), resulting in the rapid growth of new, innovative products. In parallel, the lifespan of EEE has been shortened, leading to the continuous increase of WEEE, which in turn lead to the rapid consumption of resources and significant negative environmental impacts.

WEEE is one of the fastest growing waste streams in European Union (EU). Its volume is growing three times faster than the average amount of municipal waste in the EU, while it is estimated that in the forthcoming decades, WEEE amounts will grow at an annual rate of 3-5%.



Waste prevention includes all actions taken before a material, product or commodity becomes waste. Therefore, prevention is different from recycling. According to the European waste policy, prevention does not just concern decrease of the quantity of waste, but it also includes actions and measurements taken to reduce the harmful compounds in materials, products and commodities, as well as the negative effects of waste on public health and the environment.

The Circular Economy policy, which comes to meet the vision of EU for sustainable development, covers all stages of a product lifetime: from production and consumption, to waste management and the market of secondary raw materials.

# The current State of play

## Best practices – facilitations and barriers

The first work package of the LIFE RE-WEEE Tool project involved recording of the state-of-the-art on WEEE reuse (prevention) and preparing for reuse. It was a quite significant task, since its outcomes were the main source of information for the implementation of the rest of the on-going project activities. The report on the current state-of-the-art covered the following issues:

1. The identification of initiatives and good practices in EU-28.
2. The investigation of legislative facilitators and barriers, at national and EU level.
3. The recording of the available economic instruments that promote EEE reuse and WEEE preparation for reuse.

### **The report indicates:**

- 21 best practices for WEEE prevention, implemented in 10 countries.
- 4 categories of barriers for the implementation of EEE reuse or WEEE preparing for reuse actions:
  1. Lack of legislation regarding the provision of access to adequate quantity of WEEE, 2. Insufficient regulation for the integration of the informal recycling sector, 3. Legislation about the improvement of Electrical and Electronic Equipment design, and 4. Lack of economic motivation.

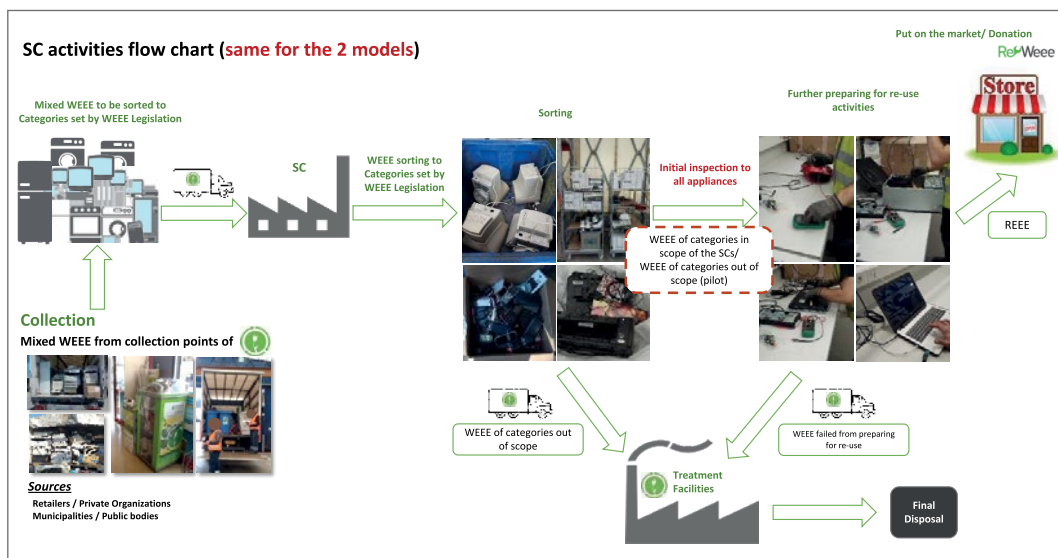
## Mapping EEE prevention & WEEE preparing for reuse in Greece

In the framework of the LIFE RE-WEEE project the reuse and preparing for reuse practices and initiatives were identified and mapped for the first time in Greece, in order to enable reliable assessment of the baseline situation. The big challenge was met by collecting reliable primary data on the EEE put on market quantities, WEEE amounts, and reuse rates. The activity, as well as the opinion of the professionals in the Greek service sector was best captured through 105 semi-structured interviews.

## Two WEEE Sorting Centres in Greece

The main objective of the project involved the design, construction, and operation of two WEEE Sorting Centres (SCs), for the first time in Greece, in the wider region of the Attica prefecture by ECORESET S.A, and the Central Macedonia (Oraiokastro) prefecture by HERMES P.C. The core activity of these SCs is to provide the ground for sorting and preparing for reuse discarded repairable WEEE, offering a new more sustainable alternative approach of WEEE management.

These SCs operate in collaboration with the largest Producer Responsibility Organization (PRO) system for WEEE in Greece (Appliances Recycling S.A.), inaugurating a new approach in WEEE preparing for reuse, where PROs support the preparing for reuse process, create the suitable infrastructures, and provide the centres with resources. The aforementioned SCs operate upon two different models: private sector in synergy with a WEEE management unit, and a public-private model, with the contribution of the Municipality of Oraiokastro.



### The operation of WEEE Sorting Centres in figures

- 416 tons of WEEE were repaired up to the end of the LIFE RE-WEEE project implementation (9,767 items)
- 106 tons of repaired EEE (REEE) were sold or donated (3,169 items)

## Specifications and technical requirements

Throughout the implementation of the project, the development of specifications and technical requirements for the entire “preparing for reuse” cycle was achieved. An ultimate aim of the project is the incorporation of these specification and technical requirement in national legislation, in order to set the **framework for preparing for reuse in Greece** and lead to the establishment of a **sound and reliable market** for prepared for reuse WEEE.

In addition, **specialized issues** were developed, incorporating technical requirements for the management of the reuse process for the main categories of WEEE: temperature exchange equipment, small equipment, large equipment, equipment containing screens, and information and communication equipment. Lastly, the “[Guide for WEEE prevention and sound management practices for citizens](#)” was delivered, offering among other information, instructions for the elongation of EEE lifetime.

## Monitoring and assessment

The progress and the results of the LIFE RE-WEEE project were assessed in terms of the environmental, economic, and social effects of the preparing for reuse processes, through the implementation of specific indicators, and the environmental and social Life Cycle Assessment methodologies.

Environmental impact	Social impact
<ul style="list-style-type: none"> <li>• Throughout the implementation of the project, <b>416 tn</b> of REEE were diverted from the treatment/recycling process, preventing the generation of <b>10,526 kg</b> of hazardous materials.</li> <li>• The devices donated or exchanged via the platform RE(W)EEE and the devices repaired in the «Learn to Repair” Events, prevented the generation of <b>64 kg</b> of hazardous materials.</li> <li>• The implementation of the Life Cycle Assessment methodology for the environmental assessment of the SCs operation, indicates a substantial avoided environmental impact.</li> <li>• Regarding Global warming, the environmental benefit reaches around – <b>7,800 kg CO2 eq</b> for the period under examination (ECORESET: February 2019 – February 2020 / HERMES: July 2019 – April 2020), while in Terrestrial ecotoxicity an impressive benefit of around -57,100 kg 1,4-DCB eq. was estimated.</li> </ul>	<ul style="list-style-type: none"> <li>• Creation of new jobs in safe and decent working conditions, which effectively cover health and safety issues, remuneration, work-life balance, a predictable schedule, and minimization of occupational stress.</li> <li>• <b>12.11 FTEs</b> (Full-time equivalent) of “green-jobs” positions were created by the operation of the two SCs. The calculation was based on a study of RREUSE (Study on WEEE recovery targets, preparation for re-use targets and on the method for calculation of the recovery targets (BiPRO, BIO by Deloitte, UNU, 2015)</li> <li>• <b>143</b> devices were donated by the SCs to public bodies and organizations to cover their needs, especially those induced by the COVID-19 pandemic (i.e., remote working, distant education).</li> <li>• Enhanced ICT use among less privileged social groups, by providing REEE at lower cost, and donating; this is of the utmost importance, given the country’s underperformance in ICT use and diffusion, as described in the Greek National Digital Strategy 2016-2021.</li> <li>• NGOs have access to the exchange/donation platform Re(W)eee.</li> </ul>



## Consultation Forum

A Consultation Forum was launched and established, with the aim to investigate, analyze, and promote issues regarding WEEE prevention, preparing for reuse, and monitoring.

- 10 Consultation Fora were organized (4 thematic fora and 6 open consultation fora)
- More than 1,000 participants, representing more than 230 different organizations/bodies, significantly contributed in the tasks of the project – specifically in the development of the 2 Sorting Centres.



## Development of an integrated methodology

The LIFE RE-WEEE project attempted to fill one of the major gaps in the field of waste prevention and waste management: the development of an integrated methodology for the reliable and comparative reporting of WEEE prevention and preparing for reuse. On that ground, the project working team collected data from different EU – Member States, studied and compared the most prevailing methodologies, while developed and applied a series of methodologies and a corresponding calculation tool.

## Promotion of the WEEE prevention and preparing for reuse culture in Greece

### The RE(W)EEE Platform

The collaborative web-based RE(W)EEE platform facilitates the donation and exchange of electrical and electronic equipment, linking Greek households and NGOs. The aim of the platform is to strengthen the concept of exchange or donation of EEE that is unwanted and not being used by its current owner. To register and use the platform, you may either type <https://reweee.hua.gr/el> or visit the website of the LIFE RE-WEEE project.



## “Learn to Repair events”

The concept of repairing electrical and electronic equipment was promoted through the organization of the «Learn to Repair » events (Repair Café). In total, 7 such events were organized in Athens and Thessaloniki, with the participation of a large number of citizens, aiming at repairing of EEE and learning simple repair techniques. The devices that were mainly repaired during these events were: kettles, radios, coffee makers, hair dryers and toasters.



## Repair guides

To facilitate the integration of preparing for reuse into daily households lives, two Quick Guides for repairing [electronic devices](#) and [small electrical devices](#) were produced. The Guides include examples of troubleshooting for home appliances.

# Networking and dissemination activities

## Networking with other projects

In view of the important goal to transfer and incorporate the projects results into a strategy for waste management resources, the project working team contacted more than 150 projects, while developed a wide network of communication and cooperation with more than 30 other projects, within and beyond Greek borders. Of great significance is the networking and the investigation of synergy potential with the H2020 COLLECTORS and the LIFE-IP CEI Greece projects.

## Publications

During the project implementation, printed and/or electronic leaflets with informative material were produced. Moreover, 3 videos were produced, with the aim to present the [project](#), the [web-based platform](#), and the [Sorting Centres](#), respectively.

The publications and videos are available on the project website.

The videos are also available through the [LIFE RE-WEEE YouTube channel](#).



## Because knowledge should be shared



The project consortium carried out 153 information and raising awareness activities for public administrations (municipalities) in the Attica and Central Macedonia prefectures, regarding their potential contribution in the development and operation of the sorting centres as well as their participation in the relevant tender procedures of the Green Fund. The aforementioned activities involved visits and/or mailing/e-mailing of relevant information material.

Furthermore, in the framework of the education plan of the coordinator, information activities were organized in 7 more municipalities in prefectures other than those of Attica and Central Macedonia, and in 2 companies. These activities also included sharing information on the LIFE RE-WEEE project, and the presentation of best practices for WEEE management and storage practices, to improve the preparing for reuse capacity.

Furthermore, in the framework of the education plan of the coordinator, information activities were organized in 7 more municipalities in prefectures other than those of Attica and Central Macedonia, and in 2 companies. These activities also included sharing information on the LIFE RE-WEEE project, and the presentation of best practices for WEEE management and storage practices, to improve the preparing for reuse capacity.

## Conferences and Journal publications

The transfer of knowledge produced by the LIFE RE-WEEE project towards the scientific community was achieved through presentations in 22 specialized international conferences, and more than 10 relevant events. Part of the project results has been recorded in two papers, which are anticipated to get published in scientific journals of equal number. The LIFE RE-WEEE project consortium organized two seminars – in Slovenia and Poland, respectively – with target groups of professionals in the EEE/WEEE sector and wider waste management sectors. In November 2020, two Final Conferences were organized, one for the Greek audience, and one to attract organizations/companies from EU Member States with over 130 participants.



## Proposals for policy makers

- The integrated methodology for the quantification of preparing for reuse, which was developed during the implementation of the LIFE RE-WEEE project may serve as a useful tool for the reporting requirements of the EU-Member States.
- Technical Specifications developed within the LIFE RE-WEEE project could be integrated into national standardization procedures.
- Flexibility to the EU -Member States to adjust the technical specifications for preparing for reuse activities to their conditions.
- Availability of the guides, which were produced by the LIFE RE-WEEE project, to the EU citizens, for the promotion of prevention and repair activities.
- Promotion of economic incentives, such as VAT reduction for reuse and repair activities.

The full title of the LIFE RE-WEEE project is “Development and Demonstration of Waste Electrical & Electronic Equipment (WEEE) Prevention and Reuse Paradigms”.

The project was implemented in Greece and Belgium, from January 2016 to November 2020, with the co-financing of the European Commission through the LIFE+ funding programme. Appliances Recycling S.A. is the Project Coordinator, with partners the Hellenic Recycling Agency, the Ecological Recycling Society, the Green Fund, the Harokopio University and the RREUSE.

The LIFE RE-WEEE project was 60% co-funded by the LIFE+ programme of European Commission. With the financial contribution of Green Fund.

**Coordinator:**



ανακύκλωση  
συσκευιών α.ε.

Appliances Recycling S.A.  
Coordinator  
[www.electrocycle.gr](http://www.electrocycle.gr)

**Project beneficiaries:**



Hellenic Recycling Agency  
[www.eoan.gr](http://www.eoan.gr)



Ecological Recycling Society  
[www.ecorec.gr](http://www.ecorec.gr)



Green Fund  
[www.prasinotameio.gr](http://www.prasinotameio.gr)



ΧΑΡΟΚΟΠΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ  
HAROKOPIO UNIVERSITY

Harokopio University  
[www.hua.gr](http://www.hua.gr)



RREUSE - [www.rreuse.org](http://www.rreuse.org)

For further information, please visit:  
<http://reweee.gr>

Follow:  
<https://www.facebook.com/reweeeGR/>  
<https://twitter.com/LRweeee>

The paper used for this publication  
is 100% recycled and chlorine free.