

## Έκθεση / Report

Τεχνικές δημοσιεύσεις σε επιστημονικά περιοδικά και συνέδρια  
Technical publications in scientific journals and conferences

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## « Technical Publications in Scientific Journals and Conferences»

(Action D.7)

### Data Project

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### Data Beneficiary

<b>Name Beneficiary</b>	Ανακύκλωση Συσκευών ΑΕ
<b>Contact person</b>	Χάρης Αγγελακόπουλος
<b>Postal address</b>	Λεωφ. Συγγρού 196 & Χαροκόπου 2 17671
<b>Telephone</b>	2105319762-5
<b>Fax:</b>	2105319766
<b>E-mail</b>	<a href="mailto:hagelakopoulos@electrocycle.gr">hagelakopoulos@electrocycle.gr</a>
<b>Project Website</b>	<a href="http://www.reweee.gr/el">http://www.reweee.gr/el</a>

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## 1. Introduction

The report on “Technical Publications in Scientific Journals and Conferences” is produced to facilitate the monitoring and assessment of the impact of the LIFE RE-WEEE dissemination actions to academia, central and local authorities, as well as to other interested official body. As such, it includes basic information about all the publications regarding the results of LIFE RE-WEEE project in both scientific Journals and Conferences: the title, authors, and abstract. Relevant supporting material (i.e. agendas, presentations, proceedings etc.) is provided as annexes.

By the end of the project (November 2020), the LIFE RE-WEEE project, its objectives and results have been presented in one scientific journal, and 23 international/national conferences corresponding to 28 presentations/posters.

Two of the International Conferences (SLCA 2020 and ICED 2020) were held virtually due to the confinement measures due to COVID-19 outbreak.

## 2. Scientific Journals

Throughout the implementation of the LIFE RE-WEEE project, one (1) paper was published in a peer-reviewed journal. More specifically:

### 2.1. Waste and Biomass Valorization

Abeliotis K., Boikou K., Chroni C., Kalafata K., Angelakopoulos H., K. Lasaridi (2021). WEEE preparing for reuse in Greece: potential and initiatives. *Waste and Biomass Valorization*, <https://doi.org/10.1007/s12649-021-01381-6>

#### Abstract

Repair and preparing for reuse are included among the alternatives for the prevention of the generation of waste from electrical and electronic equipment, a stream which is a rapidly rising environmental issue globally. The main goal of this research was to identify and report the structure and operational problems faced by the electrical and electronic equipment (EEE) repair sector in Greece. At first, the drivers and drawbacks of repair reported in the literature were reviewed and identified. The research took place in the first months of 2018, via the use of a structured questionnaire, sent to and completed by 105 people, representing various stakeholders involved in repair activities. The results indicate that the EEE repair sector in Greece is dominated by small and medium-sized enterprises, established during the past ten years. Moreover, the repairers report that the availability of spare parts is adequate and that consumers have a positive attitude towards EEE repair.

The paper is provided as Annex D.7.1 SD Publication (in the Final Report).

### 3. Conferences

The ReWEEE project and part of its (major) results were communicated to the academia and waste management stakeholders through oral and poster presentations in 22 International and National Conferences. The full papers of the presentations are included in the Proceedings of each Conference. More specifically:

#### 3.1.RECIS 2016: Η ανακύκλωση στις νησιωτικές περιοχές / 2<sup>nd</sup> International Conference Recycling in insular regions), 13-14 May 2016, Santorini, Greece

- **Angelakopoulos Ch. (2016). Καλές πρακτικές διαχείρισης ΑΗΗΕ (Good practices of WEEE management)**

#### Abstract

Η συνεχής πρόοδος της τεχνολογίας, η συντόμευση του κύκλου ζωής των προϊόντων Ηλεκτρικού και Ηλεκτρονικού Εξοπλισμού (ΗΗΕ) και το υψηλό κόστος επισκευής έχουν ως αποτέλεσμα την επιτάχυνση της αντικατάστασης των ΗΗΕ, καθιστώντας τα ΑΗΗΕ το γρηγορότερα αυξανόμενο ρεύμα αποβλήτων στην Ε.Ε. Η διαχείριση των ΑΗΗΕ είναι ύψιστης σημασίας, λόγω της περιεκτικότητάς τους (κατασκευαστικά μέρη) σε επικίνδυνες ουσίες και στοιχεία (π.χ. Hg, Cd, Pb, Cr, PBDE, HFC's), που μπορεί να προκαλέσουν σοβαρούς κινδύνους στην ανθρώπινη υγεία και το περιβάλλον μέσω της ανεξέλεγκτης απόρριψής τους.

Η «Ανακύκλωση Συσκευών Α.Ε.» , το μοναδικό εγκεκριμένο για όλες τις κατηγορίες ΑΗΗΕ Σύστημα Εναλλακτικής Διαχείρισης στην Ελλάδα, στα 11 χρόνια λειτουργίας της έχει επιδείξει σημαντικό έργο. Μόνο το 2015, το οργανωμένο σύστημα συλλογής, μεταφοράς και επεξεργασίας που συντονίζει διαχειρίστηκε με ορθό περιβαλλοντικά τρόπο 48.000 τη ΑΗΗΕ, επιτυγχάνοντας παράλληλα τους εθνικούς στόχους συλλογής και ανάκτησης. Μέσα στο πλαίσιο της δράσης της η «Ανακύκλωση Συσκευών ΑΕ», εφαρμόζει επίσης στοχευμένες δράσεις για την επίλυση τοπικών και περιφερειακών προβλημάτων, δίνοντας την ευελιξία να εφαρμοστούν οι δράσεις αυτές και στην νησιωτική Ελλάδα. Λόγω του καινοτομικού χαρακτήρα τους, δύο από τις δράσεις αυτές συγχρηματοδοτούνται ήδη από το Πρόγραμμα (πλαίσιο) LIFE της Ευρωπαϊκής Επιτροπής και αποτελούν Έργα καλών πρακτικών και υποδειγμάτων (σε συνεργασία με σημαντικούς συνδικαιούχους).

Το Infocycle, αποσκοπεί στην αντιμετώπιση του προβλήματος της μη περιβαλλοντικά ορθής διαχείρισης των ΑΗΗΕ από τα εμπλεκόμενα μέρη, μέσω της ενημέρωσής τους για τις βλαπτικές επιπτώσεις από αυτήν, αλλά και της εκπαίδευσής τους για την ορθή διαχείριση των ΑΗΗΕ στις Περιφέρειες Θεσσαλίας και Ηπείρου. Αυτό επιτυγχάνεται με την πραγματοποίηση ημερίδων, roadshows με επί τόπου συλλογή παλαιών συσκευών και εκθεσιακό χώρο επεξεργασίας συσκευών αλλά και στοχευμένων εκπαιδευτικών σεμιναρίων σε όλους τους εμπλεκόμενους φορείς.

Τις άνωθεν δράσεις έρχεται να συμπληρώσει το REWEEE, το οποίο εκτός των δράσεων εκπαιδευτικού και ενημερωτικού περιεχομένου, στοχεύει, για πρώτη φορά στην Ελλάδα, στη λειτουργία δύο Κέντρων Διαλογής και Ταξινόμησης (ΚΔΤ) για τη συγκέντρωση, τη διαλογή και την ταξινόμηση των ΑΗΗΕ, ανάλογα με την κατάστασή τους, με σκοπό να ακολουθήσει προετοιμασία για επαναχρησιμοποίηση ή επεξεργασία. Σκοπός του REWEEE είναι η ενθάρρυνση της πρόληψης παραγωγής ΑΗΗΕ και της προετοιμασίας επαναχρησιμοποίησης μεταχειρισμένων ΗΗΕ, με αποτέλεσμα αφενός τη σημαντική μείωση των ΑΗΗΕ και αφετέρου την ορθή περιβαλλοντικά διαχείρισή τους.

#### Oral presentation

The agenda, the abstract (in Greek) and the presentation of the event, are Annexed as D.7.2 SD RECIS Programme, D.7.2 SD RECIS abstract, D.7.2 SD presentation, respectively in the Final report.

### 3.2.Cyprus 2016: 4<sup>th</sup> International Conference on Sustainable Solid Waste Management, 23 – 25 June 2016, Limassol, Cyprus

- **Lasariidi K., Chroni C., Abeliotis K., Intzeler M. and Angelakopoulos Ch. (2016). The LIFE RE-WEEE Project -Development and Demonstration of Waste of Electrical and Electronic Prevention and Reuse Paradigm.**

#### Abstract

Waste of Electrical and Electronic equipment (WEEE) is considered one of the fastest growing waste streams worldwide. In 2005 the Member – States of European Union disposed 8.3 to 9.1 million tonnes of WEEE, while it is estimated that by 2020, this amount could be as high as 12.3 million tonnes, corresponding to an annual increase of 2.5% to 2.7%. In order to tackle the growing WEEE generation, policies providing robust guidelines on reuse (prevention) and preparation for reuse, are considered a necessity. Against this background, this paper presents the co-funded by the European Commission LIFE programme “LIFE-REWEEE” (full title: “Development and Demonstration of Waste Electrical & Electronic Equipment Prevention and Reuse Paradigms), which has been elaborated in order to reduce WEEE through the implementation of prevention and preparation for reuse actions. The Project facilitates the development and demonstration of efficient sorting and preparation for reuse processes for a variety of WEEE, leading to the increase of acceptance of Used Electrical and Electronic Equipment (UEEE) by the consumer.

The “LIFE-REWEEE” project will promote and facilitate the implementation of the relevant legislation, the reliable and socially sensitive preparation for reuse in Greece, and the development of the implementation of models and assessment tools of EU-wide applicability, especially for those member-States that do not yet have well established systems in place.

The main objectives of the Project are:

- The set-up and the integration of preparation for reuse activities;
- The development of specifications and technical requirements based on Best Available Techniques (BAT) for the entire “preparation for reuse” cycle, to be adopted by the relevant regulatory body in Greece, to facilitate permitting and assure quality of UEEE and prepare recommendations for policy measures, at all relevant levels – retailer management, local authority, national and EU legislation;
- The development of reliable tools, at the EU level, for the accurate measurement of WEEE reuse and preparation for reuse that would facilitate the relevant discussion for target setting;
- The assessment of the level of WEEE reuse in Greece, before and after the project intervention, using the abovementioned tools;
- The investigation and improvement of public attitudes towards EEE prevention and reuse;
- The promotion of WEEE prevention culture in Greece; and
- The monitoring the link of environmental, economic and social benefits associated with WEEE reuse and preparation for reuse.

The main expected results of the project are the following:

- The development and operation of two WEEE sorting facilities, the first of their kind in Greece, one in the Greater Athens Area and one in Thessaloniki, to sort 1,000 tn and 500 tn of WEEE per year, respectively (categories 5 and 6 of the new WEEE directive).



- The pilot operation of the abovementioned sorting facilities with category 4 WEEE.
- The development of an EU-wide applicable methodology and tools for measuring WEEE reuse and preparation for reuse, that could assist Member States in national reporting and the EU in setting relevant compulsory standards, in future legislation.
- The accurate mapping of the baseline situation on WEEE reuse and preparation for reuse in Greece;
- A set of specifications, protocols, technical requirements and Guides based on Best Available Techniques (BAT) for the entire “preparation for reuse” cycle.

### Oral presentation

The full paper was published in the Proceedings of the Cyprus 2016. The agenda, the submitted abstract, the presentation and pictures are Annexed as D.7.2 SD CYPRUS Programme, D.7.2 SD CYPRUS Abstract, D.7.2 SD CYPRUS Presentation, D.7.2 SD CYPRUS Pictures, respectively in the Final report.

### 3.3.CRETE 2016: 5<sup>th</sup> International Conference on Industrial & Hazardous waste management, 27 – 30 September 2016, Chania, Crete, Greece

- **Lasaridi K., Chroni C., Abeliotis K., Intzeler M. and Angelakopoulos Ch. (2016). State-of-the-art review on waste electrical & electronic equipment reuse in the framework of the LIFE-RE-WEEE Project.**

### Abstract

The co-funded by the European Commission LIFE programme “Development and Demonstration fo Waste Electrical & Electronic Equipment (WEEE) Prevention and Reuse Paradigms” (LIFE-REWEEE) started in January 2016, with ultimate aim to reduce WEEE through the implementation of prevention and preparation for reuse actions. In specific, it has been elaborated in order to promote/facilitate the implementation of the relevant legislation, the reliable and socially sensitive preparation for reuse in Greece, and the development and implementation of models and assessment tools of EU-wide applicability, especially for those Member – States that do not yet have well-established systems in place.

This paper presents one of the preparatory, yet basic, deliverables of the LIFE-REWEEE project: the State-of-the-Art Review on the prevention and preparation for reuse of WEEE. The review comprises the following three parts:

1. Identification of the existing initiatives and good practices in EU-28. The different initiatives and good practices, regarding prevention and preparation for reuse of WEEE, that have been developed and implemented in the EU-28 will be identified and evaluated through a desktop study. In case that adequate data are provided, the initiatives and the good practices will be evaluated in respect to certain criteria, such as the difficulty of implementation, their impact on consumers’ behaviour, and the job creation potential
2. Legislative facilitators and barriers, at national and EU level.
3. Registration of various economic instruments available to promote WEEE prevention and preparation for reuse, with emphasis on the role of Extended Producer Responsibility (EPR).

The State-of-the-Art Review forms the main informational tank for: the development and implementation of the LIFE – REWEEE project, the assessment of the project’s pilot actions, and the promotion/dissemination of the project’s results. For its completion the following methods were employed: bibliographic review, web-based search, search on technical reports, scientific journals and (published and unpublished) databases, desk studies, and analysis of unpublished data.

### Oral presentation

The full paper was published in the Proceedings of the Crete 2016. The conference-submitted abstract, the presentation and the programme are Annexed as D.7.2 SD CRETE2016 abstract 1, D.7.2 SD CRETE2016 presentation 1 and D.7.2 SD CRETE2016 Programme, respectively, in the Final report.

- **Lasaridi K., Chroni C., Abeliotis K., Intzeler M. and Angelakopoulos Ch. (2016). Development and demonstration of Waste Electrical and Electronic Equipment (WEEE) prevention and reuse paradigms**

#### Abstract

As a basis for discussion towards a better management of Waste of Electrical and Electronic Equipment (WEEE), this paper presents a new project, co-funded by the European Commission LIFE programme, entitled “Development and Demonstration of Waste Electrical & Electronic Equipment Prevention and Reuse Paradigms”; short title: LIFE-REWEEE. The “LIFE-REWEEE project has been elaborated in order to reduce WEEE through the implementation of prevention and preparation for reuse actions. More specifically, it facilitates the development and demonstration of efficient sorting and preparation for reuse processes for a variety of WEEE, leading to the increase of acceptance of Used Electrical and Electronic Equipment (UEEE) by the consumer. The project will promote the implementation of the relevant legislation, the reliable and socially sensitive preparation for reuse in Greece, and the development of the implementation of models and assessment tools of EU-wide applicability, especially for those EU Member-States that do not yet have well-established systems in place.

### Oral presentation

The full paper was published in the Proceedings of the Crete 2016. The conference-submitted abstract and the presentation are Annexed as D.7.2 SD CRETE2016 abstract 2 and D.7.2 SD CRETE2016 presentation 2 in the Final report.

### 3.4.ATHENS 2017: 5<sup>th</sup> International Conference on Solid Waste Management, 21- 24 June 2017, Athens, Greece

- **Lasaridi K., Chroni C., Abeliotis K., Boikou K., Kyrkitsos Ph., Dalamagka A., Rama M., Prototopapas G., Sotiropoulos A., Xydis G., Charitopoulou R., Kalafata K., Intzeler M., Angelakopoulos Ch. (2017). State-of-the-Art review on Waste Electrical & Electronic Equipment reuse in the framework of the LIFE-RE-WEEE project**

#### Abstract

The co-funded by the European Commission LIFE programme “Development and Demonstration of Waste Electrical & Electronic Equipment (WEEE) Prevention and Reuse Paradigms” (LIFE-RE-WEEE) started in January 2016, with ultimate aim to reduce WEEE through the implementation of prevention and preparation for reuse actions. More specifically, it has been elaborated in order to promote and facilitate the implementation of the relevant legislation, the reliable and socially sensitive preparation for reuse in Greece, and the development and implementation of models and assessment tools of EU-wide applicability.

This paper presents one of the preparatory, yet basic, deliverables of the LIFE-RE-WEEE project, the “State-of-the-Art Review on the WEEE prevention and preparation for reuse”, which forms an information tank for the Project’s stakeholders, as well as for the implementation of the rest of the Project actions. For the completion of the aforementioned report, several tools such as interviews – questionnaires, web-based search, search on scientific journals and databases, were employed. The Report consists of three parts:

### *I. The identification of initiatives and good practices in EE-28*

The first part presents twenty one WEEE prevention and preparation for reuse activities (initiatives, practices) that had been developed and implemented in twelve EU member states, up to June 2016. Depending on the data availability, the activities have been evaluated upon environmental, economic and social criteria, such as their diversion potential, the reuse percentage, the difficulty of their implementation, their impact on the citizen’s behaviours, and the number of jobs created. Most of them shared a common principle: the development of WEEE prevention or preparation for reuse activities in order to promote socio-economic solidarity, and fight exclusion and marginalization. The majority of the presented good practices involved the reuse or preparation for reuse of IT/ICT equipment and large household appliances. Three main obstacles for the implementation of the WEEE preparation for reuse actions were highlighted: the “poor” collection systems, the restricted access to WEEE and the obsolescence (technological, style, planned). During the investigation of the aforementioned activities, it became obvious that Greece lacks initiatives on preparation for reuse, indicating the necessity for the implementation of the LIFE REWEEE project.

### *II. The investigation of legislative facilitators and barriers, at national and EU level*

The second part of the State-of-the Art Report involved the investigation, evaluation and presentation of legislation facilitators and barriers at national and EU level. In order to analyse the current situation, forty eight interviews of key-persons in the sector of WEEE management were taken and a desk study was held. The analysis of the collected data indicated four categories of barriers for the implementation of WEEE reuse or preparation for reuse actions: lack of legislation regarding the provision of access to adequate quantity of WEEE, insufficient regulation for the integration of the informal recycling sector, legislation about the improvement of Electrical & Electronic Equipment (EEE) design, and lack of economic motivation.

### *III. The recording of the available economic instruments, that promote the WEEE reuse and the preparation for reuse*

The third part of the report, i.e. the recording of the available economic instruments of Extended Producer Responsibility (EPR) and Individual Responsibility, is expected to facilitate the exploitation of the available data towards the development of more effective tools. The analysis of the available data indicated the following economic instruments of EPR systems: Product taxes, input or materials levies, collection fees, disposal fees, deposit-refund schemes, subsidies, tax or subsidy combinations.

## **Oral presentation**

The full paper was published in the Proceedings of the Athens 2017. The agenda, and the presentation are Annexed as D.7.2 SD ATHENS2017 agenda, and D.7.2. SD ATHENS presentation, the Final report.

### 3.5.CEMEPE: 6<sup>th</sup> International Conference on Environmental Management, Engineering, Planning and Economics and SECOTEX, 25 – 30 June 2017, Thessaloniki, Greece

- **Abeliotis K., Potouridis A., Chroni C., Lasaridi K. (2017). Enviromental impacts of WEEE collection and reuse.**

#### Abstract

Waste of electrical and electronic equipment (WEEE) is the fastest growing waste stream in the industrialized world. It is estimated that about 65% of the EEE currently on the European market is separated from other household waste, but over one half of such quantity probably undergoes improper treatment and is exported illegally. The result of it is the loss of valuable resources and the degradation of the environment.

Even though WEEE encompasses different classes of materials, the environmental impacts of WEEE recycling and treatment have been studied quite extensively. The aim of this study is the review of published peer reviewed literature focusing on the environmental assessment of WEEE collection and reuse life cycle stages. The present review study is placed within the co-funded by the European Commission LIFE programme “Development and Demonstration of Waste Electrical & Electronic Equipment (WEEE) Prevention and Reuse Paradigms” (LIFE-REWEEE), which started in January 2016, with ultimate aim to reduce the generation of WEEE through the implementation of prevention and preparation for reuse actions. The results of the study will feed the information tank for the implementation of LCA and social LCA methodologies and tools within the framework of the LIFE-REWEEE project.

More specifically, it has been elaborated in order to promote and facilitate the implementation of the relevant legislation, the reliable and socially sensitive preparation for reuse in Greece, and the development and implementation of models and assessment tools of EU-wide applicability.

#### Oral presentation

The agenda, the paper and the presentation are Annexed as D.7.2 SD 6th CEMEPE agenda, D.7.2 SD 6th CEMEPE paper and D.7.2 SD 6th CEMEPE presentation in the Final report.

### 3.6.CEST 2017: 15<sup>th</sup> International Conference on Environmental Science and Technology, 31 August – 02 September 2017, Rhodes, Greece

- **Chroni C. Abeliotis K., Angelakopoulos H., Lasaridi K. (2017). Preliminary estimation of WEEE generation in Greece based on the population balance model.**

#### Abstract

The recast European Union Directive on Waste of Electrical and Electronic Equipment (WEEE) requires Member – States to collect 65% of the Electrical and Electronic Equipment (EEE) or the 85% of WEEE generated, by 2019. However, still there is not an established, universally accepted method for the calculation of the quantity of WEEE produced. Most available estimates make use of models based on

the EEE put on the market and the lifespan distribution of different categories of EEE, i.e. the statistical distribution of the time required for EEE items in each category to become waste. However, this lifespan distribution will vary over space and time, as differences in purchasing power and consumption habits will result in differences in the replacement time of the various EEE goods. This preliminary study makes a first attempt to define the lifespan statistics for Greek households, thus refining the results of such population balance models, through the use of a questionnaire study. More specifically, the aim of this study is to estimate the amount WEEE that are and will be generated in Greek households within the next two decades. The estimation is based on the EEE put on the market, a detailed questionnaire-based study, and the lifespan distribution of EEE. This paper presents the preliminary results of approximately 50 questionnaires. In the next step, the study will be expanded to more than 1,000 Greek households.

#### Oral presentation

The agenda, the paper and the presentation are Annexed as D.7.2 SD CEST2017 agenda, D.7.2 SD CEST2017 paper and D.7.2 SD CEST2017 presentation in the Final report.

### 3.7.BPM 2017: 15<sup>th</sup> International Conference on Business Process Management, 10 -15 September 2017, Barcelona, Spain

- **Routis I., Nikolaidou M., and Anagnostopoulos D. (2017). Using CMMN to model Social Processes**

#### Abstract

Adaptive Case Management is an alternative approach to support human-intensive processes. It may be served by Case Management Modeling Notation (CMMN) language for modeling purposes. In this paper, ACM concepts are adopted to support human-intensive processes executed in social environments, referred to as social processes. As a first step, the usage of CMMN language is explored to model them. Corresponding CMMN social processes models could be executable within a social network platform. For this purpose, ACM meta-model is extended to incorporate execution properties within a social environment. To demonstrate the potential of the proposed enhancement an example of a social process is used as a case study.

#### Oral presentation

The full paper was published in the Proceedings of the BPM 2017. The agenda, the paper and the presentation are Annexed as D.7.2 SD BPM2017 agenda, D.7.2 SD BPM2017 paper and D.7.2 SD RECIS presentation in the Final report.

### 3.8.SARDINIA 2017: 16<sup>th</sup> Waste Management and Landfill Symposium, 05-09 October 2017, Santa Margherita di Pula, Italy

- **Lasaridi K. (2017). Development and demonstration of Waste Electrical and Electronic Equipment (WEEE) prevention and reuse paradigms -LIFE14/ENV/GR/000858**

### Abstract

The LIFE REWEEE Project aims to prevent the creation of Waste Electrical and Electronic Equipment (WEEE), through the development and demonstrative operation of 2 WEEE Sorting Centers (SCs), in the region of Attica and Central Macedonia correspondingly. The core activity of the SCs is the sorting of WEEE depending on their condition in order to be addressed for preparing for reuse or treatment.

### Poster

A copy and a picture of the poster is Annexed as D.7.2 SD SARDINIA poster and D.7.2 SD SARDINIA picture in the Final report.

### 3.9. 2<sup>ο</sup> Συνέδριο «Περιβάλλον και Ενέργεια» / 2<sup>nd</sup> Conference “Environment and Energy”, 10-11 October 2017, Athens, Greece

- Angelakopoulos Ch. (2017). Επαναχρησιμοποίηση Ηλεκτρικών Συσκευών – Πρόγραμμα LIFE-REWEEE (Reuse of EEE – LIFE REWEEE Project)

### Oral presentation

The agenda and the presentation are Annexed as D.7.2 SD Environment and Energy agenda and D.7.2 SD Environment and Energy presentation in the Final report.

### 3.10. 5<sup>ο</sup> Διεθνές Συνέδριο ΕΕΔΣΑ: Η Διαχείριση Στερεών Αποβλήτων και η Συμβολή της στην Κυκλική Οικονομία / 5<sup>th</sup> International Conference HSWMA “Solid waste management and its contribution to Circular Economy, 14-15 December 2017, Athens, Greece

- Κ. Λαζαρίδη, Χ. Χρόνη, Κ. Αμπελιώτης, Χ. Αγγελικόπουλος (2017). Ανάπτυξη και επίδειξη μοντέλων πρόληψης και επαναχρησιμοποίησης αποβλήτων ηλεκτρικού και ηλεκτρονικού εξοπλισμού – LIFE RE-WEEE

### Περίληψη

Τις τελευταίες δύο δεκαετίες η τεχνολογική εξέλιξη κινήθηκε τόσο έντονα προς την ανάπτυξη ηλεκτρικού και ηλεκτρονικού εξοπλισμού (ΗΗΕ), ώστε να επηρεάσει τον τρόπο επικοινωνίας, πληροφόρησης και διασκέδασης. Η αυξανόμενη παραγωγή συσκευών, σε συνδυασμό με την αυξανόμενη χρήση τους σε παγκόσμιο επίπεδο, οδηγεί αναπόδραστα στην ραγδαία αύξηση της παραγωγής αποβλήτων ηλεκτρικού και ηλεκτρονικού εξοπλισμού (ΑΗΗΕ). Σύμφωνα με εκτιμήσεις, το ρεύμα των ΑΗΗΕ αυξάνεται τρεις έως πέντε φορές ταχύτερα από το μέσο όρο των αστικών αποβλήτων. Η αύξηση σημειώνεται πιο έντονα στις χώρες του Οργανισμού Οικονομικής Συνεργασίας και Ανάπτυξης (ΟΟΣΑ), δηλαδή σε χώρες με αγορές “κορεσμένες” σε ΗΗΕ. Τα ΑΗΗΕ περιέχουν μία σειρά από διαφορετικές ενώσεις, που μπορεί να έχουν σοβαρές αρνητικές επιπτώσεις στο περιβάλλον και την ανθρώπινη υγεία. Από την άλλη πλευρά, η ανάκτηση αυτών των ενώσεων, όπως και άλλων μη επικίνδυνων υλικών από τα ΑΗΗΕ, μπορεί να συμβάλει σε σημαντικό βαθμό στην εξοικονόμηση πόρων και την προώθηση των αρχών της Κυκλικής Οικονομίας. Στην Ελλάδα, η έλλειψη

δομών και κοινωνικών επιχειρήσεων με αντικείμενο τα ΑΗΗΕ, καθώς και η ελλιπής ενημέρωση του κοινού, λειτουργούν σαν εμπόδια στην επαναχρησιμοποίηση των ΗΕΕ και την προετοιμασία για επαναχρησιμοποίηση των ΑΗΗΕ.

Σε αυτήν τη βάση, αναπτύχθηκε το Ευρωπαϊκό έργο LIFE – REWEEE, το οποίο άρχισε να υλοποιείται από τον Ιανουάριο 2016 και αναμένεται να ολοκληρωθεί τον Ιούνιο του 2019. Κύριος στόχος του έργου είναι η δημιουργία και η πιλοτική λειτουργία δύο Κέντρων Διαλογής και Ταξινόμησης (ΚΔΤ) – ένα σε έναν Δήμο στην ευρύτερη περιοχή της Αθήνας και ένα σε ένα Δήμο Θεσσαλονίκης. Τα ΚΔΤ θα προσφέρουν τη δυνατότητα διαλογής και ταξινόμησης των ηλεκτρικών και ηλεκτρονικών συσκευών που είναι κατάλληλες για επαναχρησιμοποίηση, δημιουργώντας με αυτό τον τρόπο για πρώτη φορά στην Ελλάδα, μία νέα βιώσιμη εναλλακτική προσέγγιση στη διαχείριση ΑΗΗΕ. Επιπλέον, το έργο αποσκοπεί στη διαμόρφωση κατάλληλου θεσμικού πλαισίου, το οποίο θα διέπει όλο το φάσμα της προετοιμασίας για επαναχρησιμοποίηση των ΑΗΗΕ, καθώς και στην ανάπτυξη κατάλληλων μεθοδολογιών και εργαλείων ποσοτικοποίησης και αξιολόγησης των περιβαλλοντικών, οικονομικών και κοινωνικών επιπτώσεων της επαναχρησιμοποίησης.

### Oral presentation

The agenda, the presentation and photos are Annexed as D.7.2 SD HSWMA agenda, D.7.2 SD HSWMA presentation and D.7.2 SD HSWMA pictures in the Final report.

### 3.11. OSS 2018: 14<sup>th</sup> International Conference on Open Source System, 08-10 June 2018, Athens, Greece

- **Routis I., Tsadimas A., and Nikolaidou M. (2018). Building a social platform using FLOSS to support collaborative communities: the ReWeee case study.**

### Abstract

In this paper we present the development of a collaborative community using exclusively open source software. After the definition of the functional requirements of the project, we focus on finding specific software components to satisfy these requirements. The intention was to minimize the development effort and labor, relying on open source software. As a result, the platform was developed writing less than 10% of the required code and reusing more than 20 software components, not counting the software dependencies. The new components developed form our contribution to the community.

### Oral presentation

The full paper was published in the Proceedings of the OSS 2018. The paper, the agenda and the presentation are Annexed as D.7.2 SD OSS paper, D.7.2 SD OSS agenda and D.7.2 SD OSS presentation in the Final report

### 3.12. CAISE 2018: 30<sup>th</sup> International Conference on Advanced Information System Engineering, 11-15 June 2018, Tallinn, Estonia

- **Routis I., Nikolaidou M. and Anagnostopoulos D. (2018). Using CMMN to model Social Processes.**

### Abstract

Adaptive Case Management is an alternative approach to support human-intensive processes. It may be served by Case Management Modeling Notation (CMMN) language for modeling purposes. In this paper, ACM concepts are adopted to support human-intensive processes executed in social environments, referred to as social processes. As a first step, the usage of CMMN language is explored to model them. Corresponding CMMN social processes models could be executable within a social network platform. For this purpose, ACM meta-model is extended to incorporate execution properties within a social environment. To demonstrate the potential of the proposed enhancement an example of a social process is used as a case study.

### Oral presentation

The full paper was published in the Proceedings of the Caise 2018. The agenda, the paper and the presentation are Annexed as D.7.2 SD CAISE agenda, D.7.2 SD CAISE paper and D.7.2 SD CAISE presentation in the Final report

### 3.13. NAXOS 2018: 6<sup>th</sup> International Conference on Sustainable Solid Waste Management, 13-16 June 2018, Naxos, Greece

- **Lasaridi K., Boikou K., Kalafata K., Chroni C., Angelakopoulos Ch. and Abeliotis K. (2018). Mapping EEE reuse and WEEE preparing for reuse practices and initiatives in Greece.**

### Abstract

This paper presents one of the fundamental, deliverables of LIFE-REWEEE project, the “Mapping Electrical and Electronic Equipment (EEE) reuse and WEEE preparing for reuse practices and initiatives in Greece”, which develops – for first time in Greece – a useful information tank for the Project’s stakeholders, crucial for the implementation of the rest of the Project actions. The main goal of this study was the accurate mapping of the baseline situation on (W)EEE reuse and preparing for reuse in Greece (i.e. practices and initiatives), which is currently mainly based on informal, small – scale private entrepreneurial initiatives. The study evolved into two parallel axes: I. Collection, assessment and analysis of data from reliable sources, and II. Investigation of the impact of economic crisis in Greece on WEEE generation.

### Oral presentation

The full paper was published in the Proceedings of the Naxos 2018. The agenda, the paper and the presentation are Annexed as D.7.2 SD NAXOS agenda, D.7.2 SD NAXOS paper 1 and D.7.2 SD NAXOS presentation 1 in the Final report

- **Chroni C., Terzis E., Abeliotis K., Angelakopoulos Ch. and Lasaridi K. (2018). A country specific assessment of EEE lifespan distribution based on a questionnaire-based study.**

### Abstract

In the past two decades, several statistical models have been employed in order to calculate the amount of Electrical and Electronic Equipment (EEE) put on the market and the generated Waste Electrical and Electronic Equipment (WEEE). This lifespan distribution varies over space and time, as differences in purchasing power and consumption habits result in differences in the replacement time



of the various EEE items. To date there is no reliable lifespan estimate of EEE categories in Greece, neither a robust prediction of their stock and WEEE generation rate. This preliminary study aims at the identification and quantification of EEE to define the lifespan statistics for Greek households, thus refining the results of population balance models, through the use of a questionnaire study. The estimation of generated WEEE amounts is based on the EEE put on the market, a detailed questionnaire-based study, and the lifespan distribution of EEE. The questionnaire was targeted to Greek between the age of 18 and 80, and distributed to over 250 households. The analysis of the questionnaires showed that the average amount of EEE (lamps are excluded) in Greek households is 48 items. The age distribution of EEE in Greek households seems to differ from the one reported in the EU Member States of North Europe. The lifespan of EEE stock tends to expand as consumers choose to repair them.

### Oral presentation

The full paper was published in the Proceedings of the Naxos 2018. The paper and the presentation are Annexed as D.7.2 SD NAXOS paper 2 and D.7.2 SD NAXOS presentation 2 in the Final report

- **Lasaridi K., Kyrkitsos Ph., Protopapas G., Charitopoulou T., Dalamagka A., Georgadi-Ntaliap A., Intzeler M. and Angelakopoulos Ch. (2018). The LIFE REWEEE project – Development and demonstration of waste electrical and electronic equipment prevention and reuse paradigms.**

### Abstract

Waste Electrical and Electronic equipment (WEEE) is considered one of the fastest growing waste streams worldwide. It is estimated that 44.7 million metric tonnes (Mt) of WEEE were generated worldwide in 2016 alone, of which only 20% was recycled through appropriate channels. In order to tackle the growing WEEE generation, policies providing robust guidelines on reuse (prevention) and preparing for reuse are considered a necessity. This paper presents the co-funded by the European Commission LIFE programme “LIFE-REWEEE” (full title: “Development and Demonstration of Waste Electrical & Electronic Equipment Prevention and Reuse Paradigms). The Project facilitates the development and demonstration of efficient sorting and preparing for reuse processes for a variety of WEEE, leading to the increase of acceptance of Used Electrical and Electronic Equipment (UEEE) by the consumer. The “LIFE-REWEEE” project will promote and facilitate the implementation of the relevant legislation, the reliable and socially sensitive preparing for reuse in Greece, and the development and implementation of models and assessment tools of EU-wide applicability, especially for those EU member-States that do not yet have well-established systems in place.

### Poster

The paper and the poster are Annexed as D.7.2 SD NAXOS paper 3 and D.7.2 SD NAXOS poster in the Final report.

## 3.14. CRETE 2018: 6<sup>th</sup> International Conference on Industrial and Hazardous Waste Management, 04-07 September 2018, Chania, Crete, Greece

Representatives of “Appliances Recycling S.A.” (Kalafata K. and Angelakopoulos H.) participated in Conference Boards regarding the implementation of WEEE Labex and CENELEC standards in all stages

of WEEE management, including the preparing for reuse activities. At this point it should be noted that the technical specifications for the Sorting Centres operation are based on WEEE Labex and CENELEC standards. Moreover, they participated in workshops of the COST ReCreew project about the management and exploitation of critical materials and hazardous materials, derived by the WEEE management processes, maximizing the dissemination and networking potential of the LIFE REWEEE project. HUA presented the deliverable of Action B3 of the LIFE REWEEE project. Both representatives of HUA (Prof. K. Lasaridi, Dr. C. Chroni) are also members of the COST ReCreew working groups.

- **Lasaridi K., Boikou K., Kalafata K., Chroni C., Angelakopoulos Ch. and Abeliotis K. (2018). Practices and Initiatives for EEE reuse and WEEE Preparing for Reuse in Greece**

#### Abstract

This paper presents the effort to map accurately Electrical and Electronic Equipment (EEE) reuse and WEEE preparing for reuse practices and initiatives for first time in Greece. The baseline situation on (W)EEE reuse and preparing for reuse in Greece (i.e. practices and initiatives), is currently mainly based on informal, small – scale private entrepreneurial initiatives. The study evolved into two parallel axes: I. Collection, assessment and analysis of data from reliable sources, and II. Investigation of the impact of economic crisis in Greece on WEEE generation. Mapping was conducted through the utilisation of questionnaire-based interviews and a desk top study of official, scientific and grey literature. Up to authors' knowledge, it was conducted for first time in Greece and achieved through analysis and processing primary data, derived from repair centers, EEE representative networks, traders involved in repairing, reusing or preparing for reuse activities. Additionally, the impact of the Greece's deep economic crisis on the sale of EEE and WEEE generation (in quantitative and qualitative terms), and the consumer behaviour was studied. In total, approximately 100 questionnaire-based interviews were compiled. The questions focused on quantification of EEE, the reasons for WEEE generation, the WEEE prevention initiatives and their efficiency. In addition, appropriate indicators for the quantification of WEEE were developed based on actual data, with the ultimate goal of filling gaps in availability of data. Consumer's behaviour towards EEE was affected by economic crisis, and eventually affected WEEE generation. The knowledge gained from this study will be exploited for the development of policies, which will be applicable not only to Greece but also to other countries facing similar economic conditions.

#### Oral presentation

The full paper was published in the Proceedings of the Crete 2018. The agenda, the paper, the presentation and pictures are Annexed as D.7.2 SD CRETE2018 agenda, D.7.2 SD CRETE2018 paper, D.7.2 SD CRETE2018 presentation and D.7.2 SD CRETE2018 pictures in the Final report.

### 3.15. SLCA 2018: 6<sup>th</sup> International Conference on Social Life Cycle Assessment, 10-12 September 2018, Pescara, Italy

- **Abeliotis K., Chroni C., Tragaki A. and Lasaridi K. (2018). Social LCA of sorting for WEEE reuse in Greece.**

#### Abstract

The reuse of Waste Electrical and Electronic Equipment (WEEE) currently draws, worldwide, much attention from an economic, environmental, and social viewpoint. The REWEEE project aims to reduce

WEEE through the implementation of prevention (reuse) and preparation for reuse actions and the development and demonstration of efficient sorting and preparation for reuse processes for a variety of WEEE, leading to an increased acceptance of used WEEE by the consumer. One of the key goals of the REWEEE project is to monitor and highlight the link among the environmental, economic and social benefits associated with WEEE reuse and preparation for reuse.

The aim of this manuscript is the presentation of the key parameters that need to be taken into account in order to assess via means of S-LCA the social impact of the operation of two sorting centres for WEEE reuse in Greece. A social life cycle assessment (S-LCA) is a method that can be used to assess the social and sociological aspects of products and processes, and their actual and potential positive as well as negative impacts along the life cycle. S-LCA assesses social and socio-economic impacts found along the life cycle (supply chain, including the use phase and disposal) with generic and site specific data. S-LCA encounters both positive and negative impacts of the WEEE reuse. S-LCA provides information on social and socioeconomic aspects for decision making, instigating dialogue on the social and socioeconomic aspects of WEEE reuse, in the prospect to improve performance of organizations and ultimately the well-being of stakeholders.

## Poster

The paper, the acceptance and poster picture are Annexed as D.7.2 SD SLCA2018 paper, D.7.2 SD SLCA2018 acceptance and D.7.2 SD SLCA2018 picture in the Final report.

### 3.16. Skiathos 2018: 5th International Symposium on Green Chemistry, Sustainable Development and Circular Economy, 30 September – 03 October 2018, Skiathos, Greece

- **Abeliotis K., Chroni C., Papachristou E., Boikou K. and Lasariidi K-E. (2018). Preliminary estimation of EEE lifespan statistics for Greek households.**

## Abstract

Most of the available estimates regarding the quantification of the generated Waste Electrical and Electronic Equipment (WEEE), are based on the EEE put on the market and the lifespan distribution of different categories of EEE (i.e. the statistical distribution of the time required for EEE items in each category to become waste). However, this lifespan distribution varies over space and time, as differences in purchasing power and consumption habits result in differences in the replacement time of the various EEE items. In addition, lifespan estimates derive from studies in the Netherlands or Nordic countries, casting doubts about the validity of their results for Greece and other EU Member States. To date there is no reliable lifespan estimate of EEE categories in Greece, neither a robust prediction of their stock and WEEE generation rate. To improve these estimations models, the conduction of surveys on household level is deemed crucial.

This preliminary study aims to define the lifespan statistics for Greek households, thus refining the results of population balance models, through the use of a questionnaire study. This study attempts to estimate the amount WEEE that are and will be generated in Greek households within the next two decades. The estimation is based on the EEE put on the market, a detailed questionnaire-based study, and the lifespan distribution of EEE. The questionnaire was targeted to Greek between the age of 18 and 80, and distributed to over 250 households inviting them to participate with a front page which explained the purpose of the study.

The analysis of the questionnaires showed that the average amount of EEE (lamps are excluded) in Greek households is 85 items. The age distribution of EEE in Greek households is expected to differ from the one reported in the EU Member States of North Europe, due to the economic recession in

Greece and the subsequent decrease on the put on the market (from 2009 on). Therefore, the lifespan of EEE stock is expected to expand as consumers choose to repair them.

#### Oral presentation

The full paper was published in the Proceedings of the Skiathos 2018. The agenda, the paper and the presentation are Annexed as D.7.2 SD SKIATHOS agenda, D.7.2 SD SKIATHOS paper and D.7.2 SD SKIATHOS presentation in the Final report.

### 3.17. HERAKLION 2019: 7<sup>th</sup> International Conference on Sustainable Solid Waste Management, 26-29 June 2019, Heraklion, Crete, Greece

- **Chroni C., A.Lekkas, C. Drakouli, C. Abeliotis, E. Terzis, C. Angelakopoulos, K. Lasaridi (2019). Assessment of EEE service lifetime, storage and disposal in Greek households.**

#### Abstract

In the past two decades, several statistical models have been employed in order to calculate the amount of Electrical and Electronic Equipment (EEE) put on the market and the generated Waste Electrical and Electronic Equipment (WEEE). This lifespan distribution varies over space and time, as differences in purchasing power and consumption habits result in differences in the replacement time of the various EEE items. To date there is no reliable lifespan estimate of EEE categories in Greece, neither a robust prediction of their stock and WEEE generation rate. This preliminary study aims at the identification and quantification of EEE to define the lifespan statistics for Greek households, thus refining the results of population balance models, through the use of a questionnaire study. The estimation of generated WEEE amounts is based on the EEE put on the market, a detailed questionnaire-based study, and the lifespan distribution of EEE. The questionnaire was targeted to Greek between the age of 18 and 80, and distributed to over 250 households. The analysis of the questionnaires showed that the average amount of EEE (lamps are excluded) in Greek households is 48 items. The age distribution of EEE in Greek households seems to differ from the one reported in the EU Member States of North Europe. The lifespan of EEE stock tends to expand as consumers choose to repair them.

#### Oral presentation

The full paper was published in the Proceedings of the Heraklion 2019. The agenda, the paper and the presentation are Annexed as D.7.2 SD Heraklion2019 agenda, D.7.2 SD Heraklion2019 paper 1 and D.7.2 SD Heraklion2019 presentation 1 in the Final report.

- **Lasaridi K., Chroni C., Abeliotis K., Protopapas G., Kirkitsos P., Dalamaga A., Charitopoulou R., Kalafata K., Angelakopoulos C. (2019). Preliminary results from the operation of the first WEEE sorting centres in Greece.**

#### Oral presentation

Presentation is Annexed as D.7.2 SD Heraklion2019 presentation 2 in the Final report.

- **K. Boikou, K. Abeliotis, K. Lasaridi (2019). Household behaviour towards end-of-life mobile phones in Greece.**

#### Abstract

This paper examines the behavior of consumers towards mobile phone devices (EEE and WEEE) in Greek households. With this goal in mind, a web-based questionnaire survey was performed to explore the consumers' habits regarding mobile phone throughout the devices' life cycle. More specifically, aims to estimate the current habits and practices towards the store, repair, second-hand purchase, and disposal of mobile phones, which belong to the category of information and communication technology devices. The survey was conducted with the use of a detailed questionnaire, which was sent via emails. The questionnaire was targeted to citizens between the age of 18 and 80 and was distributed to 100 households with the front page of the questionnaire explaining the purpose of the study. In total, 57 persons participated in the survey. The findings indicate consumers' notable storing habits, skepticism about the repair cost of devices, precariousness regarding purchase and use of second-hand mobile phones and limited recycling rates.

#### Oral presentation

The full paper was published in the Proceedings of the Heraklion 2019. The paper and the presentation are Annexed as D.7.2 SD Heraklion2019 paper 3 and D.7.2 SD Heraklion2019 presentation 3 in the Final report.

- **K. Abeliotis, K. Lasaridi, C. Chroni, C. Angelakopoulos (2019). Life Cycle Assessment of the first WEEE sorting centre in the region of Attica, Greece.**

#### Abstract

The reuse of Waste Electrical and Electronic Equipment (WEEE) currently draws, worldwide, much attention from an economic, environmental, and social viewpoint. The REWEEE project aims to reduce WEEE through the implementation of prevention (reuse) and preparation for reuse actions and the development and demonstration of efficient sorting and preparation for reuse processes for a variety of WEEE, leading to an increased acceptance of used WEEE by the consumer. One of the key goals of the REWEEE project is to monitor and highlight the link among the environmental, economic and social benefits associated with WEEE reuse and preparation for reuse

The aim of this manuscript is the presentation of the key parameters that need to be taken into account in order to assess via means of LCA the environmental impact of the operation of two sorting centres for WEEE reuse in Greece.

#### Oral presentation

The full paper was published in the Proceedings of the Heraklion 2019. The paper and the presentation are Annexed as D.7.2 SD Heraklion2019 paper 4 and D.7.2 SD Heraklion2019 presentation 4 in the Final report.

### 3.18. CEST 2019: 16<sup>th</sup> International Conference on Environmental Science and Technology, 04-07 September 2019, Rhodes, Greece

- **Charitopoulou T. , Vogiatzidaki E.E., Gkitzeni I., Malliaris M. (2019). Development and promotion of the WEEE prevention culture in Greece**

#### Abstract

WEEE streams challenge the goals towards a circular economy, since WEEE contain valuable and scarce resources that could be prepared for a second life or recovered. In the framework of the project LIFE REWEE (LIFE14 ENV/GR/000858), Hellenic Recycling Agency aims to raise awareness among stakeholders and consumers on the preference for reuse rather than consumption and recycling. A set of specifications have been prepared, applicable to the collection, storage, sorting of WEEE as well as to all stages of the preparing for reuse process. The specifications aim to provide an integrated legal framework in Greece and simultaneously a standard procedure for managing WEEE in order to encourage the reuse of WEEE as promoted by the Directive 2012/19/EU and the MD 23615/651/E.103/2014. Moreover, a Guide describing prevention and management practices of WEEE addressed to citizens was prepared, which provides information to the citizens concerning ways of extending the life of their appliances and ways of the appropriate treatment of WEEE (e.g. donation, repair, green points, shorting centers etc.). Last but not least, Repair Events were organized for citizens who had the opportunity to repair their appliances without cost and to be introduced in an attractive way to the WEEE prevention culture.

Oral presentation

The full paper was published in the Proceedings of the CEST2019. The paper, the presentation and the agenda are Annexed as D.7.2 SD CEST2019 paper, D.7.2 SD CEST2019 presentation and D.7.2 SD CEST2019 agenda in the Final report.

### 3.19. ISWA 2019: International Solid Waste Association World Congress, 07-09 October 2019, Bilbao, Spain

- **C. Chroni, K. Lasaridi, E. Terzis, A. Lekkas, C. Drakouli, K. Abeliotis, Ch. Angelakopoulos (2019). Assessment of Electric and Electronic Equipment Stock in Greek Households**

#### Abstract

The amount of Electrical and Electronic Equipment (EEE) put on the market (POM) and the consequent generation of Waste Electrical and Electronic Equipment (WEEE) is usually calculated through statistical models. Most of the available estimates are based on the EEE put on the market and the lifespan distribution of different types of EEE. However, differences in purchasing power, consumption habits, and age distribution between countries resulting in differences in the replacement time of the various EEE items and consequently, in the lifespan distribution.

This study aimed to define the EEE stock in Greek households with a questionnaire-based study. The structured questionnaire was distributed and completed, between October 2017 and March 2018, in Greece. The study estimates the amount of EEE stock in Greek households. More specifically, this study investigates both the service and storage lifetime of EEE in households.

The groups of interviewees were selected upon the household types in Greece, to investigate whether they influence the number and the lifespan of the EEE useful life. Therefore, the survey is based on the distribution of the different types of household, rather than the geographical distribution of the Greek population.

#### Poster

The poster and the agenda are Annexed as D.7.2 SD ISWA2019 poster and D.7.2 SD ISWA2019 agenda in the Final report.

### 3.20. WASTE 2019: 31 October 2019

The Conference WASTE 2019 was organized by the Technical Chamber of Greece. The LIFE RE-WEEE was presented by ECYCLE as prevention and reuse paradigms of waste management.

### 3.21. ΕΕΔΣΑ 2020: 6<sup>th</sup> HSWMA Conference, 27-28 February 2020, Athens, Greece

- **K. Boikou, K. Abeliotis, C. Chroni, K. Lasaridi (2020). Συμπεριφορά Ελλήνων καταναλωτών ως προς τη διαχείριση συσκευών κινητής τηλεφωνίας (ΗΗΕ και ΑΗΗΕ) (Consumers behavior towards the management of mobile phones in Greece. EEE and WEEE)**

#### Abstract

Η παρούσα εργασία εξετάζει τη συμπεριφορά των καταναλωτών στα ελληνικά νοικοκυριά ως προς τη διαχείριση συσκευών κινητής τηλεφωνίας (ΗΗΕ και ΑΗΗΕ). Για την επίτευξη του στόχου αυτού, πραγματοποιήθηκε έρευνα μέσω online ερωτηματολογίου για να αποτυπωθούν οι συνήθειες των καταναλωτών σχετικά με τη διαχείριση του συγκεκριμένου τύπου εξοπλισμού καθ' όλη τη διάρκεια του κύκλου ζωής του.

Σκοπός της έρευνας είναι να εκτιμήσει τις τρέχουσες συνήθειες των καταναλωτών όσον αφορά την αποθήκευση, την επισκευή, την αγορά μεταχειρισμένων καθώς και τη τελική διάθεση των συσκευών κινητής τηλεφωνίας που έχουν στην κατοχή τους.

Η έρευνα διεξήχθη με τη χρήση λεπτομερούς ερωτηματολογίου, το οποίο στάλθηκε μέσω μηνυμάτων ηλεκτρονικού ταχυδρομείου και απευθυνόταν σε πολίτες ηλικίας 18 έως 80 ετών. Συνολικά διανεμήθηκε σε 100 νοικοκυριά με τη πρώτη σελίδα του ερωτηματολογίου να εξηγεί το σκοπό της μελέτης. Συνολικά, 57 άτομα ανταποκρίθηκαν στην έρευνα.

Τα ευρήματα φανερώνουν τις συνήθειες αποθήκευσης των καταναλωτών, το σκεπτικισμό τους σχετικά με το κόστος επισκευής των συσκευών, την αβεβαιότητα τους όσον αφορά την αγορά και τη χρήση μεταχειρισμένων συσκευών κινητής τηλεφωνίας καθώς και τα περιορισμένα ποσοστά ανακύκλωσης.

#### Poster

The poster, the agenda and picture of the poster are Annexed as D.7.2 SD 6th HSWMA poster 1, D.7.2 SD 6th HSWMA agenda and D.7.2 SD 6th HSWMA picture 1 in the Final report.

- **E. Maniati-Anagnostopoulou, K. Abeliotis, A. Tragaki, C. Chroni, K. Kalafata, Ch. Angelakopoulos K. Lasaridi (2020). Κοινωνική Αξιολόγηση Κύκλου Ζωής για την επαναχρησιμοποίηση των ΑΗΗΕ (Social Life Cycle Assessment for WEEE reuse)**

### Abstract

Το μεθοδολογικό εργαλείο S-LCA εστιάζει στην αξιολόγηση των κοινωνικών επιπτώσεων που έχει κάθε στάδιο του κύκλου ζωής, από την παραγωγή έως την απόθεση, ενός προϊόντος ή υπηρεσίας, τόσο στους άμεσα εμπλεκόμενους φορείς, όσο και στην ευρύτερη κοινωνία.

Η S- LCA συμβάλλει στη λήψη αποφάσεων και μπορεί να εφαρμοστεί αυτόνομα ή σε συνδυασμό με την Περιβαλλοντική Αξιολόγηση Κύκλου Ζωής (E- LCA).

Σκοποί της εφαρμογής S- LCA στο πρόγραμμα ReWeee είναι:

-Η αξιολόγηση των κοινωνικών επιπτώσεων της λειτουργίας των δύο ΚΔΤ που λειτουργούν στην Αττική και στη Θεσσαλονίκη

-Η αξιολόγηση των κοινωνικών επιπτώσεων της επαναχρησιμοποίησης ΑΗΗΕ

-Η αξιολόγηση επίτευξης των στόχων του προγράμματος

### Poster

The poster and picture of the poster are Annexed as D.7.2 SD 6th HSWMA poster 2 and D.7.2 SD 6th HSWMA picture 2 in the Final report.

## 3.22. SLCA 2020: 7th International conference on Social Life Cycle Assessment: Impacts, Interests, Interactions, 15-17 June 2020 (Virtual)

- **K. Abeliotis, C. Chroni, A. Tragaki, K. Lasaridi (2020). Social impact indicators in Electrical Electronic Equipment reuse**

### Abstract

Waste Electrical and Electronic Equipment (WEEE) or e-waste is one of the fastest growing waste streams worldwide. More than 40 million tonnes of e-waste are created globally each year. The management and disposal of these kind of waste is complex and sometimes related to illegal e-waste trade towards developing countries (European Commission 2015). In several countries dumping of WEEE in landfills without proper treatment, unsafe/semi-illegal handling from scavengers or illegal exports of WEEE from industrialised countries to developing ones constitutes an everyday practice.

In order to enhance the public perception towards the reuse of electrical electronic equipment (EEE) and the prevention of WEEE generation, the LIFE+ ReWeee project has been undertaken by a group of partners (ReWEEE, 2017). The project aims to prevent the generation of WEEE. In order to achieve this objective, two WEEE sorting centers were established and are currently operating for the first time in Greece. The core activity of those centers is the collection, storage and sorting of WEEE depending on their condition, followed by their preparation for reuse; if reuse is not feasible, treatment as WEEE follows.

### Oral presentation

The full paper was published in the Proceedings of the 7<sup>th</sup> Social LCA conference. The extended abstract, the presentation (ppt and video presentation) and the agenda are Annexed as D.7.2 SD SLCA2020 abstract, D.7.2 SD SLCA2020 presentation, D.7.2 SD SLCA2020 video presentation link and D.7.2 SD SLCA2020 agenda 1- D.7.2 SD SLCA2020 agenda 2 in the Final report



### 3.23. ICED 2020: 1st International Conference on Environmental Design, 24-25 OCTOBER 2020 (Virtual)

- **C. Chroni, K. Lasaridi, K. Kalafata, Ch. Angelakopoulos (2020). Development and Demonstration of Waste Electrical and Electronic Equipment Prevention and Reuse Paradigms – The LIFE RE-WEEE Project**

#### **Abstract**

Waste Electrical and Electronic equipment (WEEE) is considered one of the fastest growing waste streams worldwide. It is estimated that 44.7 million metric tonnes (Mt) of WEEE were generated worldwide in 2016 alone, of which only 20% was recycled through appropriate channels. In order to tackle the growing WEEE generation, policies providing robust guidelines on reuse (prevention) and preparing for reuse are considered a necessity. This paper presents the scope and the results of the co-funded by the European Commission LIFE programme “LIFE-REWEEE”. The Project facilitates the development and demonstration of efficient sorting and preparing for reuse processes for a variety of WEEE, leading to the increase of acceptance of Used Electrical and Electronic Equipment (UEEE) by the consumer. The “LIFE-REWEEE” project promotes and facilitates the implementation of the relevant legislation, the reliable and socially sensitive preparing for reuse in Greece, and the development and implementation of models and assessment tools of EU-wide applicability.

#### **Oral presentation**

The full paper was published in the Proceedings of the ICED 2020 conference. The abstract, and the conference program and the presentation (ppt) are Annexed as D.7.2 SD ICED abstract, D.7.2 SD ICED Conference Program and D.7.2 SD ICED presentation and in the Final report