Project funded by EUROPEAN UNION

Zero Waste systems management guide with active public participation

2nd section of the research consisting of the deliverables D.T.1.1.2 Lists with local stakeholders and D.T.1.1.3 Printed Zero Waste Management Guide in the framework of the action AT.1.1 "Implementation of waste characterization research in target areas" of the project: "Zero Waste Strategy: Methods and Implementation in Black Sea Basin" with the acronym "ZeroWasteBSB", implemented under the programme "Joint Operational Programme Black Sea Basin 2014-2020", that is co-financed by the European Union through the European Neighborhood Instrument and by the participating countries: Armenia, Bulgaria, Georgia, Greece, Republic of Moldova, Romania, Turkey and Ukraine.

Author: InCommon

Date: 11 February 2021

Περίληψη

Το παρόν αποτελεί το μέρος Β της έρευνας ΑΤ 1.1 «Εφαρμογή έρευνας χαρακτηρισμού αποβλήτων σε περιοχές στόχους», περιλαμβάνει έναν οδηγό για μηδενική διαχείριση αποβλήτων με συμμετοχή του κοινού τυπωμένη σε 20 αντίγραφα (DT 1.1.3) και ξεχωριστά μόνο για την αναθέτουσα αρχή σε ηλεκτρονικό αρχείο μίας λίστας με στοιχεία επικοινωνίας 40 εκπροσώπων από ενδιαφερόμενα μέρη τοπικών αυτοδιοικήσεων στην Περιφέρεια Κεντρικής Μακεδονίας (DT 1.1.2). Τα συνολικά αποτελέσματα της έρευνας στο πλαίσιο της δράσης ΑΤ 1.1 «Εφαρμογή της έρευνας χαρακτηρισμού αποβλήτων σε περιοχές στόχους» θα παρουσιαστούν στη δράση ΑΤ 1.2 «Τοπικές Ημέρες Ενημέρωσης με τα ενδιαφερόμενα μέρη». Στο αρχείο με τη λίστα στοιχείων επικοινωνίας συμμετέχουν 40 εκπρόσωποι από υπηρεσίες διαχείρισης αποβλήτων τοπικών αυτοδιοικήσεων πρόθυμοι να συμμετέχουν στην εκδήλωση «Τοπικές ημέρες ενημέρωσης με τα ενιδαφερόμενα μέρη ΑΤ 1.2» και επίσης να συμμετέχουν στις διαδικτυακές επικοινωνίες πλατφόρμας του έργου (DC 5.1). Η διαδικτυακή πλατφόρμα στην ιστοσελίδα του έργου είναι ένας τρόπος να συμμετέχουν όλα τα ενδιαφερόμενα μέρη από τις χώρες δικαιούχους του έργου σε ένα κοινό έδαφος για να συζητήσουν παρόμοια προβλήματα που καταλήγουν στη θαλάσσια ρύπανση της λεκάνης της Μαύρης Θάλασσας και να εμπνευστούν για την ανάπτυξη συγκεκριμένων λύσεων.

Το αποτέλεσμα της παρούσας έρευνας βασίζεται τόσο σε νομοθεσία, σε διαδικτυακές πηγές όσο και σε συνεντεύξεις περισσότερων από 30 αρμοδίων για τη διαχείριση δημοτικών αποβλήτων από την τοπική αυτοδιοίκηση. Αρχικά συλλέγεται όλη η απαραίτητη νομοθεσία για να δημιουργηθεί μια συνολική εικόνα από το υφιστάμενο πλαίσιο. Οι διαδικτυακές πηγές ελέγχονται με σκοπό να εκτιμηθεί σε ποια έκταση εφαρμόζεται η νομοθεσία. Οι συνεντεύξεις εστιάζονται στο να διερευνηθεί ποιοι είναι οι περιορισμοί της εφαρμογής της νομοθεσίας και ποια είναι η άποψη των τοπικών αρμοδίων σχετικά με την ενεργό συμμετοχή του κοινού σε αυτό το πλαίσιο.

Το συμπέρασμα στο οποίο καταλήγει η έρευνα είναι ότι η συμμετοχή του κοινού όχι μόνο είναι μια δύσκολη διαδικασία, αλλά είναι επίσης το πιο σημαντικό εργαλείο για πραγματικά αποτελέσματα. Μπορεί να βοηθήσει στην επίλυση προβλημάτων ακόμη και όταν η υποδομή και ο εξοπλισμός απουσιάζουν, αλλά δεν μπορεί να είναι εύκολα επιτυχημένη και να διαρκεί στο χρόνο. Η κατάσταση στην Ελλάδα, στην Περιφέρεια Κεντρικής Μακεδονίας και στη Θεσσαλονίκη δείχνει ανεπάρκειες στην εφαρμογή νομοθετικών σχεδίων λόγω έλλειψης κεντρικού ελέγχου, συγκεκριμένου χρονοδιαγράμματος, υποδομών και εξοπλισμού.

Από την άλλη πλευρά, πολλές επιτυχημένες περιπτώσεις δείχνουν ότι, εάν το κοινό δεσμεύεται στη συμμετοχή, τα συστήματα λειτουργούν χωρίς ακριβό εξοπλισμό, έλεγχο κ.λ.π. Ωστόσο, για να παραμείνει το ευρύ κοινό δεσμευμένο και ολοένα να προκύπτουν περισσότεροι να ακολουθούν τα καλά παραδείγματα, υπάρχει ανάγκη απόδειξης ότι η ενεργός συμμετοχή κάνει τη διαφορά. Επομένως, τα δεδομένα πρέπει να είναι διαθέσιμα, να δημοσιεύονται και να παρουσιάζουν επίσης συγκρίσιμα οικονομικά στοιχεία λόγω της διαχείρισης των αποβλήτων με τρόπο που να προκύπτουν μηδενικά απόβλητα.

Glossary

WECD	Waste from Excavations, Construction and Demolition
WEEE	Waste Electrical and Electronic Equipment
MSW	Municipal Solid Waste
RM	Recyclable Materials
BW	Biodegradable waste
SaS	Sorting at Source
NWMP	National Waste Management Plan
RMSC	Recyclable Materials Sorting Center
WTP	Waste Treatment Plant
BWTU	Bio-Waste Treatment Units
RU	Regional Unit
RWMP	Regional Waste Management Plan
RCM	Region of Central Macedonia
CRWS	Centers of Recyclable Waste Selection
PPP	Public Private Partnership
SSC	Sorting and Sorting Center
STSRC	Screening Training At Source Recycling Center
CUGM	Central Union of Greek Municipalities
SWMB	Solid Waste Management Body
HRC	Hellenic Recycling Company
JMD	Joint Ministerial Decision
MD	Ministerial Decision
PD	Presidential Decision

Project funded by EUROPEAN UNION

Contents

1 Introduction

The main objective of the "ZeroWasteBSB" project is to raise awareness on environmental challenges and good waste management practices related to river and seawater waste in the Black Sea Basin to ensure the improvement of human well-being in the region.

This section of the research consists of two parts. An electronic file with contact details of local and regional stakeholders and a waste management guide with active citizen participation.

The present research is of particular importance. It aims to gather the right people to participate in the project communication platform and the local information day. Also to highlight the importance/contribution of the active participation of citizens in this effort and to present ways that seem to have positive results to be taken into account by the participating countries.

In order to ensure the dialogue between stakeholders from the local authorities of the 4 participating countries to solve the common problems of marine pollution in the Black Sea basin from Greece and specifically the region of Central Macedonia it was important to collect contact details of local stakeholders (Deliverable D.T.1.1.2). This list contains 40 contact details from local and regional waste management authorities. This is not published for reasons of compliance with personal data rules. Nevertheless it is an electronic file delivered to the contracting authority for exclusive use within the needs of the project. It includes the contact details of the persons in charge of waste management in the region of Central Macedonia.

The zero-waste systems management guide with active citizen participation will be used for the event “AT 1.2 Local Informational Days with stakeholders” where the complete result of the research “AT1.1 Implementation of Waste Characterization Research in Target Areas” will be presented to local decision-makers from the participating countries. The people in the list will be invited to participate to this event and will also be logged- in to the project's online platform

The approach followed for the zero waste systems management guide includes as a first step to record the general framework, in terms of legislation and policies applied. After that collecting reports from the internet regarding good practices in the Regional Unit (RU) of Thessaloniki, of the Region of Central Macedonia and in other regions of Greece and then checking for the results that seem to have applied the legislation in practice and in relation to the active participation of the citizens.

The research hypothesis is that the active participation of citizens is important in reducing municipal waste and can bring significant benefits to the environment and the economy and avoid aggravating consequences.

The aim of the research is to develop a guide that offers examples of waste management systems, which with the active participation of citizens can result in zero municipal solid waste. This effort brings together the experience of the relevant services who present the

strengths and weaknesses of the current situation as well as their opinion on the role that can be played by the active participation of citizens in a zero waste management system.

The Zero Waste Systems Management Guide with the active participation of citizens, is printed in 20 copies and freely available online in both English and Greek in the project's website.

In brief, the specific Zero Waste Systems Management Guide includes the following sections:

1. Recommendations-good practices of waste management strategy with active participation of citizens in areas of Greece. The material emerged from current legislation, online data and from interviews with stakeholders summing up the results of the research into theory and practice.

2. List of contact details of stakeholders / stakeholders of 40 entities after consent of not publishing but to use of their contact details in the context of the project actions.

1. Legislative framework

European and national legislation moves in the direction of the circular economy, decentralization, proximity, recycling, reuse and stipulates that all Municipalities should prepare Local Waste Management Plans / LWPs.

The new National Waste Management Plan (NWMP) was voted in October 2020: https://www.elinyae.gr/ethniki-nomothesia/ya-praxi-39-tis-31820202020-fek-185a-2992020 (Government Gazette 185 / A` / 29.9.2020)

In addition, there are important legal texts that complement the framework of policy commitments at central and local level:

1. Directive 2008/98 / EC of the European Parliament and of the Council of 19 November 2008 on waste | the objectives of the European Union for the Management of MSW: http://eur- lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:el:PDF

2. Law 4736/2020 (Government Gazette 200 / A` 20.10.2020) Incorporation of Directive (EU) 2019/904 regarding the reduction of the effects of certain plastic products on the environment and other provisions

3. Regional plans http://www.ypeka.gr/Default.aspx?tabid=938&language=el-GR

4. Local Plans of 63 Municipalities of Attica https://bit.ly/2mtdJ7e

5. NWMP http://www.edsna.gr/index.php/edsna-profil/skopos

6. SWMB- Solid Waste Management Bodies:

http://www.eedsa.gr/Contents.aspx?CatId=38&lang=gr

7. GG 180036/952/2017 (Government Gazette 2812 / B '/ 10-8-2017) Definition of measures and rules for the reduction of the consumption of plastic transport bags, in compliance with the directive 2015/720 / EU: https://www.e-nomothesia.gr/kat-periballon/apobleta/koine-upourgike-apophase-180036-952-2017.html

8. Law on Recycling 4496/2017, amendment of law 2939/2001 on the alternative management of packaging and other products, adaptation to Directive 2015/720 / EU, regulation of issues of the Hellenic Recycling Organization and other provisions (Government Gazette A ' N .4496 / 2017-No.170 / 8.11.2017):

https://www.eoan.gr/el/content/566/tropopoiisi-toy-n-2939-2001

9. Phasing out landfill by 2035 the landfill should not exceed 10% of the total amount of MSW, May 22, 2018 (https://bit.ly/3aenjSc)

10. Pricing Regulation of Solid Waste Management Bodies (SWMB) (Government Gazette B '1277 / 15-04-2019). Percentage reduction rates based on Municipalities and Regional authorities' performance. First degree:https://bit.ly/2PfJdbj

11. Sanctions in the Municipalities that do not promote the recycling and sorting at the source (Government Gazette 2218 B '/ 08.06.2019):

http://www.ypeka.gr/Default.aspx?tabid=785&sni%5B524%5D=6373&language=el-GR

12. Regional Planning (Ministry of Environment) of Municipal Waste Management of Attica with approval as appropriate, sites for facilities, integrated waste management. L.3164 / 2003, article 33:https://www.e-nomothesia.gr/demosia-erga/n-3164-2003.html - https://www.lawspot.gr/nomikes-plirofories/nomothesia/nomos-3164-2003

13. Approval of the Strategic Environmental Impact Assessment (SEIA) of the project "Regional Solid Waste Management Plan (RSWMP) of the Attica Region - 2nd Revision, 25.11.2016":
http://www.ypeka.gr/LinkClick.aspx?fileticket=Hz8R5lLQg3E%3d&tabid=938&language=el-GR

14. Measures, conditions and program for the alternative management of Waste from Excavations, Constructions and Demolition (WECD) JM 36259/1757 / E103 / 2010:

https://www.e-nomothesia.gr/kat-periballon/apobleta/koine-upourgike-apophase-36259-1757-e103-2010.html

15. National Strategy for the Circular Economy:

http://www.greekscrapmetal.gr/assets/uploads/files/ethniki_stratigiki_kikliki_oikonomia.pdf

16. Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98 / EC on waste:

https://eur-lex.europa.eu/legal-content/EL/TXT/PDF/?uri=CELEX:32018L0851&from=EN

17. Circular Economy The implementation of the circular economy in Greece - November, 2020 (https://circulargreece.gr/el/)

18. Support the public consultation on a new Circular Economy Action Plan, 2020 (https://ec.europa.eu/environment/circular-economy/pdf/summary_responses_roadmap.pdf)

19. Presidential Decision 116/2004 measures, conditions and program for the alternative management of vehicles at the end of their life cycle: https://www.e-nomothesia.gr/kat-periballon/apobleta/pd-116-2004.html

20. Ministerial Decision 23615/651 / E.103 / 2014 'Determination of rules, terms and conditions for the alternative management of waste electrical and electronic equipment (WEEE), in accordance with the provisions of Directive 2012/19 / EC' (Government Gazette 1184 / B `/ 2014):https://www.elinyae.gr/ethniki-nomothesia/ya-ip-23615651e1032014-fek-1184b-952014

21. Local Decentralized Waste Management Plan of the Municipality of Thessaloniki, 582 / 25-04-2016, ΑΔΑ 7ΔΦ4ΩΡ5-ΓΓ9: https://thessaloniki.gr/wp-content/uploads/2016/12/topiko-sxedio-diaxeirisis-apovliton.pdf

22. Joint Ministerial Decision No. 51373/4684, (Government Gazette 2706 B / 2015) Ratification of the National Waste Management Plan (NWMP) and the National Strategic Waste Prevention Plan: https://www.e-nomothesia.gr/kat-periballon/apobleta/kya-oik-51373-4684-2015.html

Especially the Waste Framework Directive 2008/98 / EC is important to set out the general legal framework for waste treatment in force in the EU to date. Its primary purpose is to protect the environment and human health, emphasizing the importance of proper waste management, recovery and recycling techniques, in the effort to save resources and find raw materials, in the context of improving their use.

The main directions of the Directive that has been in force since 2008 and is valid with various amendments until today are the following:

- A waste prioritization system is established: prevention, reuse, recycling, recovery for other purposes such as energy recovery and disposal.
- The "polluter pays" principle is confirmed, where the original waste producer has to pay for the waste management costs.
- The concept of "extended producer responsibility" is introduced. This concept includes the obligation for manufacturers to accept and dispose of returned products remaining after use.
- A distinction is made between waste and by-products.
- Waste should be managed without endangering water, air, soil, plants or animals, without disturbing noise or odors, or adversely affecting the landscape or sites of particular interest.
- Waste producers or owners should treat them themselves or entrust their treatment to an officially recognized operator. Permission and periodic inspections are required.
- Competent national authorities should develop waste management plans and waste prevention programs.
- Special provisions apply for hazardous waste, waste oils and bio waste.

- It envisages recycling and recovery targets that should be achieved by 2020 for household waste (50%) and WECD (70%).

Recycled MSWs and biodegradable MSWs that are diverted from the final disposal and recovered (composting) account for 44% of the total MSWs generated for 2014 in the EU-27.

According to national legislation, by July 2016, 65% of the produced BW (the reference year 1997) had to be diverted from the landfills, a goal that was not achieved. While by

2020, about 75% of the produced BW had to be diverted from the landfills, i.e. about 2,934 thousand tons. Greece lags far behind this target, as the cumulative recycling-recovery rate to be achieved is around 60% while today it is less than 30%. Especially with regard to metals, glasses, recycling rates are very low while the capacity of Centers of Recyclable Waste Selection (CRWS) in the whole country is equivalent to about half of the total amount of Recyclable Wastes that must be recovered.

The municipal authorities simply undertook the collection, the transportation of the waste and the disposal of the mixed waste in the landfills and the contents of the blue bins in the CRWS. However, a significant part (over 40%) of those driven to CRWS end up in landfills, as in many cases citizens do not completely separate recyclable from recyclable. The quantities managed by the Municipalities in this way exceed 90% of the total MSWs produced.

The NWMS made the Municipalities fully responsible for waste management, from the stage of prevention to that of final disposal. The Municipalities of the country were and are obliged to plan and implement Local Waste Management Plans (LWMP), always in accordance with the requirements of the NWMS and the RWMS.

1.2. Critical presentation of waste management plans

The new National Waste Management Plan (NWMP) is moving into two central pillars:

- One pillar is to enhance recycling and reuse streams through the Waste Treatment Plants (WTPs) and Bio-Waste Treatment Plants (BWTPs) planned by region and aim at 35% recycling by 2030 while SRF will be generated RDF at the same time will be driven for combustion in the cement industry.
- The second pillar, which is being promoted at the same time, concerns the construction of 5 to 7 central combustion plants in various parts of the country, including Kozani, where mixed material will be burned for energy recovery.

The construction of landfill is combined with the first pillar, where they will accept the residue as well as the construction of composting units, which will produce organic fertilizer while the marketable flow of recyclables will be led to the market for sale.

The second pillar of mixed waste incineration will theoretically use processed and separated product, but the clauses required by large combustion plant companies that have expressed interest in investing through the Public Private Partnership (PPP) system and range from 1200 to 1300 tons per day, cancel any recycling effort, as this will reduce the amount of waste incinerated and significantly increase costs.

According to estimates so far, the construction cost of these units ranges from 300-700 million Euros, while the cost of receiving waste for incineration will be around 170 euros per ton, without calculating the additional cost from the clauses.

The energy capacity of these units will range from 40 MW- 50 MW, depending on the quality of the materials that will be burned and mainly with the percentages of moisture that will be contained in the waste.

For the region of Central Macedonia, the design under construction includes the construction of two units WTU and BWT, one in the east and one in the west of Thessaloniki, with more probable locations Agios Antonios in the east and Sindos or Mavrorrachi in the west, which will produce substantial product (RDF and SRF) for the TITAN cement industry as well as organic fertilizer to be channeled to agriculture.

In the immediate planning of SWMB Central Macedonia there is the supply of 3,000-5,000 coffee bins for the collection of organic waste, which will be given to the Municipalities. However, the reception area BWTU of the product is in the study stage and until the construction of the BWTU will take about 3 years. This means that there is a period of time during which organic coffee will be collected in coffee bins without the possibility of disposal and processing.

For Central Macedonia, the central option seems to be the construction of a combustion plant in Kozani, which will receive waste from Thrace, Macedonia, Epirus and possibly Thessaly, without excluding the transfer of material from neighboring Balkan countries, mainly from the Republic of Northern Macedonia and Albania, in the framework of the "Egnatia of waste" project.

Recycling has been transferred as a responsibility to the Municipalities that are called to implement the plan for the installation of green collection points in the cities. However, the maturation procedures have not been completed. They will also be in charge of the operation of the network of brawn bins and other recycling streams, such as bulky, construction and clothing, but without any municipal infrastructure and reception network yet.

The management of all other categories of waste, such as toxic, hazardous and infectious, medical and agricultural waste, remains unforeseen, while the so-called "green" waste, such as tree branches and cutting waste - sawdust, etc. - full responsibility is given to contractors. Contractors therefore trade the materials produced from the pruning.

All this is expected to be finalized soon, without ruling out a new extension, while it will take time for the regional specialization and updating of the existing Regional Waste Management Plans (RWMP), which will be done by the elected Regions.

Another problem is the government's announcement for the transfer of waste management responsibilities from the Municipalities to the Regions, with the establishment of a Solid Waste Management Body (SWMB) per Region, which will be administered by a deputy regional governor and not by the elected representatives of the Municipalities as has been the case so far the strong reaction of the mayors and CUGM.

1.3. Municipal Waste

1.3.1. The image from the Electronic Waste Register (EWR)

In the Electronic Waste Register (ypeka.gr), which is maintained under the responsibility of the Ministry of Environment and Energy there are data for all collection facilities, waste storage and collection and transport activities registered with the EWR. In this Register, the Municipalities of the country are obliged to submit all the data concerning the management of the municipal solid waste and the quantities that are diverted to the recycling, etc.

Citizens do not have access to the Electronic Waste Register and special codes are required, which are provided only by those who manage waste.

As part of this recording, access was secured and the data that the Municipalities have passed to the EWR are listed for 2018. This is the last year that there are total data, although the Municipalities are obliged to submit them every year. In fact, the completion of the Waste Report every year is mandatory and expires on March 31st. For 2020, it is stated that due to the COVID-19 pandemic and due to the fact that the Waste Report (WR) was not completed on time in the electronic platform of the Electronic Waste Register (EWR) for the year 2019, as the deadline for completion of EA set for July 31, 2020. However, no new data has been posted yet.

Central Macedonia presents intense urbanization and a large concentration of population (almost 50%) in the Urban Complex of Thessaloniki. It is, therefore, important to present the results of the Report to the Municipalities of RU Thessaloniki.

What is immediately perceptible is that not all Municipalities record the quantities of waste generated, only two quantities recordings are found in the collection and transport column from all municipalities, while there are no quantities related to collection and transport and finally there are no records after in 2018.

Reference Results

Waste Report Year: **2018**

MUNICIPALITY OF AMPELOKIPON MENEMENI

Detailed Report Results

codes	Production (tn)	Collection & Transport (tn)

MUNICIPALITY OF VOLVIS

Detailed Report Results

codes	Production (tn)	Collection & Transport (tn)
20 03 01 - mixed municipal waste	10,527,530	N / A

Delta Municipality

Detailed Report Results

codes	Production (tn)	Collection & Transport (tn)
15 01 06 - mixed packaging	1,372,470	N / A
15 01 07 - glass packaging	74,330	N / A
17 09 04 - mixtures of construction and demolition waste, other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	N / A	N / A

20 01 36 - disposable electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35	3,560	N / A
20 02 01 - biodegradable waste	10,410	N / A
20 03 01 - mixed municipal waste	16,940,100	N / A
20 03 02 - waste from markets	320,020	N / A
20 03 07 - bulky waste	798,310	N / A

MUNICIPALITY OF THERMIS

Detailed Report Results

codes	Production (tn)	Collection & Transport (tn)
15 01 06 - mixed packaging	3,192,430	N / A
15 01 07 - glass packaging	32,590	N / A
16 01 04 * - end - of - life vehicles	20,570	20,570
17 09 04 - mixtures of construction and demolition waste, other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	155,020	N / A
20 01 10 - Clothes	89,518	N / A

20 01 35 * - Disposable electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing dangerous components (3)	2,810	2,810
20 01 36 - disposable electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35	0.330	N / A
20 03 01 - mixed municipal waste	20,599,940	N / A
20 03 02 - waste from markets	79,770	N / A
20 03 07 - bulky waste	3,640,900	N / A

Municipality of Kalamaria

Detailed Report Results

codes	Production (tn)	Collection & Transport (tn)
13 02 05 * - non-chlorinated mineral, gear and lubricating oils based on minerals	2,504	N / A
15 01 06 - mixed packaging	4,360,260	N / A
15 01 07 - glass packaging	46,140	N / A
16 01 04 * - end - of - life vehicles	45,130	N / A

17 01 07 - mixture of concrete, brick, tile and ceramic, other than those mentioned in 17 01 06	18,500	N / A
17 09 04 - mixtures of construction and demolition waste, other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	1,794,910	N / A
20 01 01 - paper and cardboard	40,900	N / A
20 01 10 - Clothes	205,928	N / A
20 01 25 - edible oils and fats	0.540	N / A
20 01 35 * - Disposable electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing dangerous components (3)	11,960	N / A
20 01 36 - disposable electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35	6,810	N / A
20 02 01 - biodegradable waste	2,139,120	N / A
20 03 01 - mixed municipal waste	26,498,700	N / A
20 03 02 - waste from markets	330,270	N / A
20 03 07 - bulky waste	1,916,180	N / A

MUNICIPALITY OF KORDELIO-EVOSMOS

Detailed Report Results

codes	Production (tn)	Collection & Transport (tn)
13 02 05 * - non-chlorinated mineral, gear and lubricating oils based on minerals	0.491	N / A
15 01 06 - mixed packaging	N / A	N / A
15 01 07 - glass packaging	42,620	N / A
16 01 03 - end - of - life tires	2,290	N / A
16 01 04 * - end - of - life vehicles	10,040	N / A
16 06 01 * - lead batteries	1,050	N / A
Soils and stones, other than those mentioned in	837,630	N / A
20 01 25 - edible oils and fats	0.760	N / A
20 02 01 - biodegradable waste	523,080	N / A
20 03 01 - mixed municipal waste	1,276,340	N / A
20 03 02 - waste from markets	230,050	N / A
20 03 07 - bulky waste	2,015,830	N / A

MUNICIPALITY OF LAGADA

Detailed Report Results

codes	**Production (tn)**	**Collection & Transport (tn)**

MUNICIPALITY OF NEAPOLIS-SYKEON

Detailed Report Results

codes	**Production (tn)**	**Collection & Transport (tn)**
15 01 06 - mixed packaging	9,450,000	N / A
17 01 07 - mixture of concrete, brick, tile and ceramic, other than those mentioned in 17 01 06	1,746,390	N / A
Soils and stones, other than those mentioned in	376,290	N / A
20 01 10 - Clothes	123,082	N / A
20 03 01 - mixed municipal waste	24,658,000	N / A

MUNICIPALITY OF OREOKASTRO

Detailed Report Results

codes	Production (tn)	Collection & Transport (tn)
15 01 06 - mixed packaging	1,283,310	N / A
15 01 07 - glass packaging	28,080	N / A
16 01 04 * - end - of - life vehicles	4,740	N / A
20 03 01 - mixed municipal waste	14,552,220	N / A
20 03 02 - waste from markets	219,550	N / A
20 03 07 - bulky waste	52,480	N / A

MUNICIPALITY OF PAVLOS MELA

Detailed Report Results

codes	Production (tn)	Collection & Transport (tn)
15 01 01 - paper and cardboard packaging	11,350	N / A
15 01 06 - mixed packaging	2,318,910	N / A
15 01 07 - glass packaging	71,730	N / A
16 01 04 * - end - of - life vehicles	41,380	N / A
17 01 07 - mixture of concrete, brick, tile and ceramic, other than those mentioned in 17 01 06	N / A	N / A
20 01 10 - Clothes	72,764	N / A
20 01 33 * - batteries and accumulators referred to as 16 06 01, 16 06 02 or 16 06 03 and mixed batteries and accumulators containing such batteries	0.022	N / A
20 01 36 - disposable electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35	1,032	N / A
20 03 01 - mixed municipal waste	36,449,750	N / A
20 03 02 - waste from markets	766,340	N / A

20 03 07 - bulky waste	N / A	N / A

MUNICIPALITY OF PYLAIA-HORTIATI

Detailed Report Results

codes	Production (tn)	Collection & Transport (tn)
13 02 05 * - non-chlorinated mineral, gear and lubricating oils based on minerals	0.737	N / A
15 01 06 - mixed packaging	3,453,770	N / A
15 01 07 - glass packaging	44,220	N / A
16 01 04 * - end - of - life vehicles	12,060	N / A
16 06 01 * - lead batteries	0.685	N / A
17 01 07 - mixture of concrete, brick, tile and ceramic, other than those mentioned in 17 01 06	1,431,810	N / A
Excavation rubble other than those mentioned in	140,860	N / A
20 01 01 - paper and cardboard	45,820	N / A
20 01 10 - Clothes	38,663	N / A
20 01 33 * - batteries and accumulators referred to as 16 06 01, 16 06 02 or 16 06 03 and mixed batteries and accumulators containing	0.205	N / A

such batteries		
20 01 35 * - Disposable electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing dangerous components (3)	1,730	N / A
20 01 36 - disposable electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35	1,984	N / A
20 03 01 - mixed municipal waste	24,906,250	N / A
20 03 02 - waste from markets	170,210	N / A
20 03 07 - bulky waste	4,433,450	N / A

MUNICIPALITY OF THESSALONIKI

Detailed Report Results

codes	Production (tn)	Collection & Transport (tn)
13 02 05 * - non-chlorinated mineral, gear and lubricating oils based on minerals	4,668	N / A
15 01 06 - mixed packaging	19,555,320	N / A
15 01 07 - glass packaging	366,040	N / A
16 01 03 - end - of - life tires	19,140	N / A
16 01 04 * - end - of - life vehicles	2,424,155	N / A
16 06 01 * - lead batteries	11,795	N / A
20 01 10 - Clothes	417,304	N / A
20 01 35 * - Disposable electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing dangerous components (3)	71,380	N / A
20 01 36 - disposable electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35	19,910	N / A
20 02 01 - biodegradable waste	47,280	N / A
20 03 01 - mixed municipal waste	111,197,600	N / A

20 03 02 - waste from markets	167,380	N / A
20 03 07 - bulky waste	8,292,070	N / A

MUNICIPALITY OF THERMAIKOS

Detailed Report Results

codes	Production (tn)	Collection & Transport (tn)
15 01 06 - mixed packaging	1,618,710	N / A
15 01 07 - glass packaging	76,380	N / A
16 01 04 * - end - of - life vehicles	3,420	N / A
20 01 01 - paper and cardboard	19,250	N / A
20 01 10 - Clothes	90,694	N / A
20 01 33 * - batteries and accumulators referred to as 16 06 01, 16 06 02 or 16 06 03 and mixed batteries and accumulators containing such batteries	0.013	N / A
20 01 35 * - Disposable electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing dangerous components (3)	3,390	N / A
20 01 36 - disposable electrical and electronic	0.800	N / A

equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35		
20 03 01 - mixed municipal waste	16,474,731	N / A
20 03 02 - waste from markets	266,980	N / A

MUNICIPALITY OF CHALKIDONA

Detailed Report Results

codes	**Production (tn)**	**Collection & Transport (tn)**
15 01 06 - mixed packaging	831,640	N / A
15 01 07 - glass packaging	64,480	N / A
20 01 10 - Clothes	18,517	N / A
20 03 01 - mixed municipal waste	10,896,990	N / A

1.3.2. Especially the Municipality of Thessaloniki

Due to the special importance of the Municipality of Thessaloniki, due to its size and its dominant role throughout Central Macedonia, newer data were sought from its archives and are listed below for the necessary comparisons.

Waste flows in the Municipality of Thessaloniki (MT)

A / A	TYPE OF WASTE	ADMINISTRATOR	2018 (tn)[1]	2019 (tn)[2]	EWR 2019 (tn)[3]
1	MUNICIPAL WASTE	MT-SWMB	130,582.63	138,497.11	137,473.02
2	PACKAGING MATERIALS (blue bucket): Diversion, Sorting	MT-HRC	19,555.32	20,174.33	20,093.86
3	PACKAGING MATERIALS (blue bucket): Residue *	MT-SWMB	7,881.87	8,069.73	6,971.18
4	WEEE (Electrical, Electronic)	APPLIANCE RECYCLING	107.33	106.70	113.79
5	CLOTHING	EAST-WEST GREECE	417.30	556.00	556.00
6	GLASS (packaging)	EEAA (ELDIA SA)	362.26	419.29	419.30
7	VOLUME *	MT	9,075.33	8,353.20	10,358.73
8	VOLUME *	LIAHTIDA-SWMB			978.47
9	AEKK (recovered)	LIAHTIDA			918.20
10	ABANDONED	ΜΕΤ.ΔΟΜ. Ι.Κ.Ε	96.50	163.00	200.67

1

2 They are included in the data of 2018 in EWR

3 Source Municipality of Thessaloniki

Source EWR

	VEHICLES (OTZZ)				
11	TIRES	ECOELASTICS (KYKLOS SA)	19,14		10.80
12	Lead (vehicle) batteries	SUNLIGHT SA	11.79		1.52
13	Used Vehicle Lubricants	ENDIALE SA (CYTOP SA)	4.67		1.47
14	plastic caps	ΔΙΟΝ A.B.E.T.E.			5.77
15	Asbestos AEKK	INTERGEO LTD			5.40

From the above table it appears that for 2019 in some categories there are differences in the quantities declared in the EWR in relation to the archives of the municipality while in others there is no data.

1.3.3. The overall picture of the efficiency of waste management systems in the Region of Central Macedonia

The No. 220/2016 decision (ΑΔΑ: 6ΕΕΠ7ΛΛ-ΠΥ3) of the Regional Council of Central Macedonia approved the Revision of the Regional Solid Waste Management Plan (RWMS) of Central Macedonia. This decision was ratified with No. οικ. 58971/5144 (1) JMD of the Ministers of Interior, Environment and Energy (Government Gazette 4010 B '/ 14.12.2016).

The Waste Management Development and Utilization Actions and Projects were:

1. Sorting at Source, with separate collection in 4 streams of materials (paper, glass, metals and plastic) or alternatively in 3 streams (paper, glass, metals - plastic). A separate collection system for bio waste and printed paper had also been established.

2. Green points, with construction of at least one in each Municipality of the Region of Central Macedonia.

3. Promotion of Home Composting, with the supply of household compost bins per Municipality and per RU of the Region of Central Macedonia (RCM), at least 3% of the generated bio waste.

For the successful implementation of the DSP programs, the home composting but also the operation of the green points, it was decided to carry out awareness and information campaigns of the citizens.

An overview is useful for comparisons and conclusions of the produced MSW as well as their management in RCM, for Regional Unit.

Qualitative recommendation of MSW for RUs in RCM for 2014 in tones

Waste Type	Thessaloniki	Emathia	Kilkis	Pella	Pieria	Serres	Chalkidiki	Total
Organics	219.913	23.720	16.412	23.849	26.919	30.299	32.112	373.224
Paper/cardboard	110.205	11.887	8.224	11.951	13.490	15.184	16.092	187.033
Plastic	69.002	7.443	5.150	7.483	8.446	9.507	10.076	117.106
Metal	19.360	2.088	1.445	2.100	2.370	2.667	2.827	32.857
Glass	21.346	2.302	1.593	2.315	2.613	2.941	3.117	36.227
Other	56.592	6.104	4.223	6.137	6.927	7.797	8.264	96.044
Total	496.418	53.545	37.047	53.835	60.766	68.395	72.487	842.493

According to the above table 44% of MSW consists of organic waste, 22% of paper / cardboard, 14% of plastic, 4% of metal, 4% of glass and 12% of other waste.

89% of the MSW produced end up in landfills and 445 kg of MSW are produced per inhabitant, annually. For RCM it is estimated that 27 kg per euro of income are generated (per capita GDP). Of the total MSW produced, 17.5% is driven for recycling (and recovery through composting) and only about 6.5% is driven for sorting, to create different sorting streams.

Of the total MSW produced, 44% consists of organic waste, of which only 4.12% is processed and of these only 7% of biodegradable is prevented from being dumped in landfills. The goal for 2020 was for 40% of the biowaste to avoid ending up in landfills, but to be selected separately.

The amount of WEEE collected separately amounts to 4 kg per inhabitant while the percentage of recycled batteries in relation to the total amount of batteries in the market is estimated at about 36% for the whole country and is also adopted for RCM.

RCM disposes more than 75% of its waste to landfills and recycles less than 10%.

The main objectives of the EU for 2020 were:

- The total percentage of MSWs led to landfills to be less than 30%
- The minimum percentage of total MSW that will be recycled-recovered amounts to 50%.

At the first level of hierarchy, which is prevention, there is no progress as not only did the MSW produced by the RWMS not decrease by 10% of their weight, but on the contrary they increased.

In the case of the level of recycling, RCM achieves a total recycling rate of 17.5%, i.e. 33% less than the desired target (50%) of 2020. Recycling also includes the percentage of BWs that through composting are used as fertilizer after from composting.

While the EU increasingly relies on recycling, in the RCM recycling rates remain stagnant, revealing shortcomings in organization, infrastructure and cooperation between citizens and local authorities. In the RCM compared to the EU average there is a difference of 27%, as in the EU 44% of the MSW is recycled (and composted) while in the RCM only 17.5%. It is noteworthy that in Germany, for example, 65% of MSWs were recycled or composted.

The EU is approaching its target for 2020 (50%) while a new target for 2030 has been set, which envisages the recycling of 65% of total MSW. The 2020 target, according to the previous NWMS, was also a target of RCM.

The most common waste indicators created worldwide for waste tracking and proper management are recycling rate, recycling sorting rate, waste treatment rate and landfill rate. The same indicators are calculated for RCM based on RWMS data. Based on these, the following picture is formed in the field of MSW management in RCM:

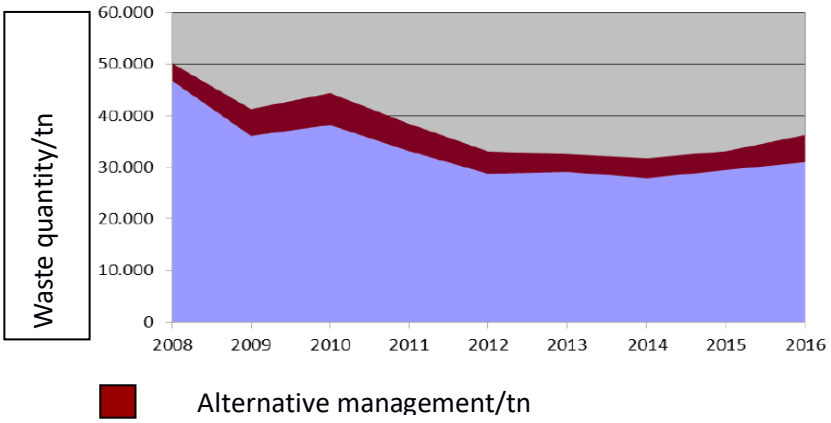
- 89% of the total MSW produced end up in landfills.

- Approximately 27 kg of MSW are produced annually per € of total GDP.
- Of the total MSW produced, 44% consists of bio waste
- A percentage of 17.5% of the total MSW is driven for recycling and composting.
- 6.54% of collected MSWs are sorted separately and then recycled.
- The amount of WEEE collected and recycled is 4 kg / inhabitant
- The portable batteries that are selected separately reach 36% of the batteries available in the market.
- Of the collected biowaste, only 4.1% is processed separately.
- 7% of all biodegradable waste is diverted by landfills.

The failure of the goals is obvious.

In the best case, in some Municipalities there is stagnation, such as in the Municipality of Kalamaria, where the annual quantities of waste that were led to landfill decreased and the waste of alternative management remained stable.

Solid waste management in Kalamaria Municipality



2. Good Examples of citizen participation in Greece

Good examples are those that in principle show the application of legislation in practice. These consist of the Green Points with their subcategories as they were distinguished in large, small, recycling corners and Recycling, Training and Sorting Centers at the source.

The Green Points are outdoor - fenced areas, which have appropriate equipment and infrastructure. They are demarcated and properly landscaped areas with the necessary building infrastructure and equipment, organized by the Municipalities. There the citizens deposit the materials separately by type for either recycling or reuse. However, few have been implemented in the country and only one in Central Macedonia, in Serres.

-An important provision of the previous NWMS, was the creation of Green Points - Recycling Centers, Source Sorting Training (RCSST), which aim to reduce waste, reuse materials, increase recycling rates and promote Dialog.

The difference of RCSST from a simple Green Point is that the organization and operation of such a Center must be done by Bodies of Social Solidarity Economy (SSE) with the cooperation of the Municipality, which creates them. The SSE Bodies with their actions seek to achieve collective and social benefit. That is, on the one hand the joint service of the needs of their members (collective benefit), on the other the service of social needs of local or wider character by the utilization of social innovation, through activities of sustainable development or provision of social services of general interest or social integration (social benefit). Although they were foreseen, no RCSST operated in the country.

There are of course some other good practices that are implemented in the 325 Municipalities and the 13 Regions of the country. However, their number and scope are limited.

Here are some of them:

Recycling Corners

Recycling Corners try to meet the lack of space in cities to create Green Points. The project "Development of a Network of Recycling Corners" in the Municipality of Egaleo aims to maximize the sorting at the source and the separation, primarily, of materials, with the aim of reuse and recycling by the citizen.

Recycling Corners are an international, successful practice based mainly on citizen participation, where users, especially citizens / citizens, have the opportunity to deposit organized useful materials, such as paper / cardboard, glass & metal packaging, edible fats & oils, electrical & electronic equipment etc.

Food from Food

The Food for Feed program is implemented in Crete by the Unified Waste Management Association of Crete. The LIFE-F4F project aims to evaluate, through the construction and

operation of a pilot unit, the simple and innovative solar drying technology, which allows the safe conversion of food waste from hosting areas, after sorting at source, into feed. The project is implemented in Crete (Greece) and more specifically, in the tourist areas of Heraklion and Hersonissos, in the Regional Unit of Heraklion.

https://life-f4f.gr/

Reward program for recycling

The Municipality of Vrilissia started in 2017 the integrated and innovative program of environmental awareness and rewarding citizens, which is based on an online platform "smart city" that unites citizens - local businesses and schools at the initiative of the Municipality.

The common goal of all concerns is the increase of recycling, through the rewarding of the citizens for their information and their participation in environmental protection actions. The reward is received with points that are redeemed in benefits and discounts of products / services of local companies, in order to benefit the citizens, thus strengthening the local economy and society.

More at www.followgreen.gr/vrilissia

Household organic waste management

Following a successful pilot implementation, the Municipality of Kozani and the Waste Management of Western Macedonia / DIADYMA extended the bio-waste sorting program to hundreds of households and health stores. The project concerns the expansion of the recycling program of the 4 packaging materials (paper, plastic, aluminum and glass) and the installation of a coffee bin for sorting at the source of household biowaste. In 2019 the program was expanded, with the aim of the Municipality of Kozani to develop the network of biodegradable at a rate of 60%, i.e. to gradually achieve the diversion of organic waste from the green to the brown bin.

https://kedke.gr/otanews/dimos-kozanis-epekteinetai-to-programma-dialogi-stin-pigi-vioapovliton-tou-dimou-se-synergasia-me-ti-diadyma/

WASTE4THINK

The Municipality of Halandri in collaboration with the National Technical University of Athens, implements a program for the collection of household waste. This initiative is implemented in the framework of the European program Waste4Think, HORIZON 2020, in which four European cities participate (Halandri, Cascais, Portugal, Zamudio, Spain, Seveso, Italy).

http://waste4think.eu/halandri

http://www.halandri.gr/Default.aspx?lang=el-GR&page=386

"Pay as you throw – I pay as much as I throw"

The European LIFE - Environment program started in January 2009, entitled: "The Development of a Paying System for throwing waste in Greece, Estonia and Cyprus", which was co-financed by 48.5% by the EU. It was completed in December 2011, with the main contractor the Municipality of Elefsina.

Program description: http://www.payt.gr/

The principle "I pay as much as I throw" is included in the law on recycling (November 2017) and from 2020 onwards, it is provided that citizens have the opportunity to pay municipal fees depending on the waste they will throw, i.e. "Pay what they throw".

3. Methodology

The methodology followed is based on sources of information from the legislation, the internet to check examples of legislation being applied and interviews on barriers and inefficiencies regarding law appliance to complete the research requirements.

3.1. Tools

Semi-structured interviews were designed and implemented consisting of main but not restrictive of the following questions.

1. Description of the current waste situation in your area of responsibility
2. Recording and / or publication of MSW quantities
3. Is the legislation fully implemented? Are deficiencies identified?
4. Citizen information and awareness programs for the active participation of citizens (Are they? Do they last? Do they have results?)
5. Which cases of active citizen participation seemed to have results and / or duration? What were the characteristics of these cases?

3.2. Application area

The scope of the research includes the Region of Central Macedonia and specifically local services of the Regional Units with tasks related to waste collection and management.

3.3. Sample

The sample covers more than one person in charge of services of each regional unit and in addition one representative from SWMB Central Macedonia. A total of 40 officials

participated in the research. The sample number is considered satisfactory because it covers all Regional Units of the application area.

3.4. Short interview process summary - problem management

The interview process initially started live, but later progressed by telephone and online. The period of strict measures in travel and the implementation of distance work in November, which was a period of adjustment, significantly influenced the development of the interviews that had been launched.

Semi-structured interviews are conducted over a period of about one to two hours with a respondent and the researcher. Any additional information that emerges from the discussion is recorded in a separate field "remarks" in order to be used if they meet more than once in the conclusions.

The aim was to gather at least 30 respondents and eventually more did participate in the interviews. Also during the interview process and in the context of the proper execution of the specific part of the research, more than 40 people were informed about the communication platform of the project and the local day of informing interested parties. 40 of them were willing to give their contact details to create the directory for this use.

4. Results

4.2. Practices encountered in practice

The basic practice in Greece applied is the assignment by the Central Administration of the responsibility of waste management to the Municipal services. The Municipalities are being called to apply the legislation. The lack of resources and infrastructure for implementation, the lack of a timetable and control of the implementation of the legislation by the central administration were recorded among the key problems of the effectiveness of the basic practice.

Nevertheless, there are a number of good practices in the area of application of the research and they are listed below.

LIFE RE-WEEE

The LIFE RE-WEEE project laid the foundations for prevention and reuse, starting with waste electrical and electronic equipment. It was completed after 5 years of work for the development of "preparation for reuse" infrastructure and the creation of a culture of production prevention of Waste Electrical and Electronic Equipment (WEEE). This is a project co-financed by the EU funding tool, Life Environment. Partners of the project are the Recycling of Appliances, Beneficiary Coordinator, the Hellenic Recycling Organization, the Ecological Recycling Company, the Green Fund, Harokopio University, as well as the European network RREUSE.

Within the framework of the Project and in accordance with the EU Action Plan for the Circular Economy and the basic principles that govern it, for the first time in Greece, two Sorting and Sorting Centers (SST) were developed. The first SST operated in Attica in February 2019 by the company "ECORESET", which is also active in other WEEE management operations and the second in Central Macedonia in July 2019 by the company "HERMES IKE" in collaboration with the Municipality of Oreokastro, which granted the building infrastructure. The equipment and construction of SST have been procured and financed by the Green Fund.

The WEEE that is led to the SST comes mainly from the shops, where it is delivered by the citizens. The main tasks that take place in SST are the collection, sorting (visual inspection) and classification of WEEE, according to their condition, in order to follow preparation for reuse or processing. The operation of the SST takes place according to technical specifications developed by the LIFE RE-WEEE project for all stages of work.

The two SSTs operate under the same management plan, in terms of WEEE management. During their first year of operation, the management of the SSTs was 60% co-financed by the EU, while the remaining costs for the "preparation for reuse" service were covered by the Recycling of Devices.

During their first year of operation, a total of 3,100 tons of WEEE have been visually inspected for both SSTs, while over 50% (1,600 tons) have been driven to further preparatory work for reuse. 347 tons (11%) of those that have undergone visual inspection, have successfully passed all the preparations for reuse and are Reusable Electrical and Electronic Equipment (EEE), while 104 tons have already been sold in the Greek and international market. Non-EEE has been taken to the processing plants with which Device Recycling works.

It is worth noting that the highest reuse potential is presented by special equipment, such as POS, as well as laptops and tablets. Of the 1,615 pieces of laptops and tablets that successfully passed the visual inspection, 19% have already been sold (323 pieces), while of the 1,612 pieces of special equipment, such as POS, which successfully passed the visual inspection, 93% have already been sold (1,500 pcs).

After the end of the project, the infrastructure will continue to operate by the contractors "ECORESET" and "HERMES IKE" for at least 5 years in total, according to a cooperation agreement with the Recycling of Devices and with the possibility of expanding the cooperation. Device Recycling will participate in the management costs for the provided "reuse preparation" service at a price set by the bidding process. The Guide to WEEE production prevention and WEEE good management practices will be distributed to respective systems in Europe as well as in the EU.

In the context of the creation of a WEEE production prevention culture, the online platform RE-WEEE for the exchange or donation of Electrical and Electronic Devices was designed, which is on the project website www.rewee.gr. The platform can be visited by citizens and social enterprises, as it will continue to operate. The aim of the project is to become better known and promoted through publicity actions.

During the project, 7 "Repair Café" events were organized, in which citizens could repair some damage to their small appliances for free, but also learn how to repair easy and common damage to their devices themselves. According to a draft law under consultation, work similar to that of "Repair Café" will be able to take place in standard reuse centers that will be created by the local authorities. Also, as part of the project, Guides for citizens were developed with tips for extending the life of their devices, as well as ways to repair them in case of simple failures. By design, the Guides will be distributed to Municipalities and electrical stores.

The LIFE RE-WEEE project will be the basis for the implementation of the Circular Economy Strategy set by the EU since 2016 with priority in the UN. The project will also contribute to the actions of LIFE-IP CEI-Greece "Implementation of the Circular Economy in Greece", always in line with the requirements of the newly approved NWMS 2020-2030, which includes provisions for reuse and actions related to the circular economy. .

https://www.reweee.gr/el/what-is-going-on/teliki-synenteyksi-typoy-toy-ergoy-life-re-weee

Waste and biowaste treatment plants from SWMB

The Regional Association of Solid Waste Management Bodies (SWMB) of Central Macedonia (RCM), which resulted from the merger of 14 different and smaller organizations (Legal Entities SWMB), operates as Public Entity from 01.01.2014. Shareholders in the SWMB Regional Association are all 38 municipalities of RCM and the whole geographical area of Central Macedonia is covered, which consists of the 7 prefectures (Thessaloniki, Halkidiki, Serres, Pella, Emathia, Pieria, Kilkis). The competence and responsibility of SWMB starts from the moment that the municipality, with the equipment and the human resources that it has, completes the collection of the waste. From that point on, the management of the collected waste is the responsibility of SWMB.

SWMB considers the Waste Processing Unit of the Eastern Sector of RCM, the Waste Processing Unit of the Western Sector RCM, the Waste Treatment Unit of the Prefecture of Serres and the Central Waste Plants of Serres and the Central Areas of Serres as the main projects for achieving the objectives of National Planning. There have been protests and appeals to the State Council by Municipalities and citizens against the location of some of these units and it has been criticized that they are preparing the waste to be sent to a plant incineration and for incineration in the cement industry.

- **Waste Processing Unit of the Prefecture of Serres:**

The project was co-financed by NSRF funds, was completed on 09.10.2019 and has been put into normal operation. The Public Private sector Partnership (PPP) contract concerns the design, financing, construction, maintenance and operation of the infrastructure of the Waste Treatment Unit of the Prefecture of Serres.
The Unit serves all the municipalities of Serres, as well as the Municipality of Kilkis from the Kilkis. Its design is in line with the objectives set by the National Waste Management

Plan (NWMP) and specialized in the approved Regional Waste Management Plan of Central Macedonia (RWMS Central Macedonia).

- **"Waste Treatment Unit (WTU) East Sector RCM":**

The Decision of Approval of Environmental Conditions was issued in January 2020, and then the Technical of the preliminary study was submitted. On 23.4.2020 submitted a proposal for funding the project in the Operational Program "TRANSPORTATION INFRASTRUCTURE, ENVIRONMENT & SUSTAINABLE DEVELOPMENT" Priority 14: "CONSERVATION AND ENVIRONMENTAL PROTECTION - PROMOTION OF PROFITABLE USE OF RESOURCES (COHESION)" which is co-financed by the Cohesion Fund entitled "Implementation of mature recovery projects or solid waste disposal", total operating budget € 70,445,677.65 (5 subprojects).
The position of WTU belongs administratively to the Municipality of Thermi of Thessaloniki and in particular is located in Basilica in the place "Agios Antonios". It is located between the settlements of Kato Scholari and Agios Antonios.
WTU will receive and treat two streams of solid waste, mixed waste and pre-selected organic.
The WTU Eastern Sector RCM will receive 150,200 tn / a of which:
i) 128,200 tn / a of mixed waste. 36% of the produced mixed waste of RU will be processed. Thessaloniki, the mixed waste of RU Halkidiki, the remains of CRWS RU Halkidiki and Eastern Thessaloniki (15% each), the residues of the bio-waste treatment units of RU Halkidiki and Eastern Thessaloniki (10% each),
ii) 22,000 tn / a of pre-selected waste (1st BWT Eastern Sector of Thessaloniki). This BWT will serve the Municipality of Thermi and 65% of the Municipality of Thessaloniki.

- **"Waste Treatment Unit (WTU) of Western Sector RCM":**

This is the largest infrastructure project provided by RWMS, as well as the largest project in the country. The study of the project was financed through NSRF (€ 1,315,548.58) and the study contract is currently being implemented. The proposed project under study includes the construction of:
(i) **Mixed Processing Unit** MSW with a capacity of 262,700 t / year (served Municipalities: 10 Municipalities of the Prefecture of Thessaloniki which constitute 64% of the produced mixed waste of the Prefecture of Thessaloniki, (i) Ampelokipi - Menemeni, (ii) Volvi, (iii) Delta, (iv) Thessaloniki (part of the Municipality by 60%), (v) Kordelio - Evosmos, (vi) Lagada, (vii) Neapolis - Sykeon, (viii) Pavlou Mela, (ix) Chalkidonos, (x) Oreokastro , the Municipalities of the prefectures Pieria, Imathia, Pella and the Municipality of Paionia from the prefecture of Kilkis).
(ii) **Pre-selected Bio-Waste Treatment Plant** with a capacity of 38,100 t / year that can be included in this WTU according to the RWMS KM.
The financing, construction, maintenance and operation of the project will be implemented through a PPP partnership (inclusion in the list of PPPs by decision of Intergovernmental Committee for PPPs in September 2019), with the participation of NSRF.

- **Bio-Waste Management Units:**

On 05.04.2019 and 08.04.2019 the contracts of the two sub-projects of the study were signed. The financing for the construction of the projects will be implemented through NSRF. This is the maturation of BWT Kilkis, Pieria, Pella, Halkidiki and 2 BWT Thessaloniki. The maturation of BWT Emathia was carried out by own resources of the Regional Association SWMB of Central Macedonia.

In addition to the above infrastructures, it is worth noting that new ones are expected to be created as it has been issued by the Special Management Service of Central Macedonia calls for proposals for the Operational Program "Transport Infrastructure, Environment and Sustainable Development" Priority Axis 14 "Preservation and Protection of the Environment - Promotion of Efficient Use of Resources (CF)", which is co-financed by:

- Invitation entitled "Completion and completion of integrated waste management infrastructure". For this call, the exclusive potential beneficiary is SWMB Central Macedonia and the total co-financed public expenditure available with this call amounts to € 26,000,000. This call will include projects related to the extensions of existing projects, which are currently in operation and will cover the transitional period, as described in the RWMS. Full maturity for funding has already been secured and the submission of proposals is being prepared.
- Invitation entitled "Biowaste Management". Potential beneficiaries for this call are the municipalities on whose behalf a comprehensive proposal has been submitted for funding from the SWMB of Central Macedonia, for the Supply of bins and other WTUs of collection for the implementation of separate collection programs for biowaste (supply of coffee bins, garbage, garbage etc.). The total co-financed public expenditure available amounts to € 14,500,000.

Local Government and Education

On October 23, 2020, the President of SWMB of the Republic of Macedonia and the Rector of the Aristotle University of Thessaloniki proceeded to a memorandum of cooperation for the permanent and systematic connection of every new public project in the field of solid waste management.

According to the memorandum, the two bodies will work together to promote scientific research in the field of waste management through the creation of a model center for the daily synthesis of university research in the field of waste management and utilization.

The result of the cooperation will be the construction of a special facility with an amphitheater and laboratories that will be available to the university and the students for their daily education in the area of operation of the new Waste Treatment Unit (WTU) of the Western Sector.

Environment - Waste - Recycling Program

The Children's Library of Orestos in collaboration with SWMB and Thermi Environmental Park presented the educational program "Environment - Waste - Recycling". The aim of the program is to teach school children in the area how to properly manage waste, what are recyclable materials and how to recycle them. There was also a presentation of making a pulp that is transformed into recycled paper, an action in which the children were actively involved.

https://bit.ly/3jGY1PA

The same program took place in the children's library of Kallithea. The program aims to raise children's awareness of environmental issues through the process of waste recycling, so that they realize that they can also participate in the overall effort. It is addressed to students of elementary school, elementary school, elementary school.

https://bit.ly/37aSU54

"No natural Christmas tree at the Mavrorrachis landfill"

From January 2019, the program of collection and utilization of natural firs is implemented throughout the metropolitan unit of Thessaloniki in collaboration with the Ministry of Foreign Affairs and the three forest departments of the region, Thessaloniki, Langadas and Stavros.

The Municipalities seek to undertake the obligation to collect all the used trees separately and then to lead them to places predetermined by the forest authorities where they have been placed with the care of SWMB special infrastructure for their cutting and utilization.

According to the data of the forestry offices in the wider area of Thessaloniki, there are about 50,000 natural trees, mainly from the facilities of Taxiarchis Halkidiki, which are being collected as green waste and used either as pellets or as soil conditioners.

The Directorate of Recycling and Municipal Waste Management of the Municipality of Thessaloniki called on citizens not to place the trees in conventional waste bins but in special open bowls in four places (City Hall, Cultural Center of Toumpa, behind the statue of Venizelos next to the parking lot Posidonio).

https://thessaloniki.gr/programma-anakykloshs-ton-fysikon-xristougenniatikon-dentron/

Recycling Festival by the Municipality of Thessaloniki

The Municipality of Thessaloniki has organized five Recycling Festivals until 2019, at the premises of HELEXPO, inside and outside the Kiosk 8. The main objectives of the event are the further establishment of recycling, the promotion of its importance and the awareness of students, of the citizens and visitors of the city, with the ultimate goal of upgrading its

image, as well as the modernization of the collection and collection of recyclable materials.

In detail, the Recycling Festival of the Municipality of Thessaloniki is designed with content and objectives such as:

- The promotion of the program and the actions of the Municipality of Thessaloniki, so that the participants become close collaborators and helpers.
- The promotion of collaborations and synergies of the Municipality of Thessaloniki with public and private bodies, in order to improve the procedures and increase the recycling.
- The participation of all recycling systems and streams, promoting their operation and the benefits that arise.
- The participation of units of the educational community that will present their activities around recycling, either through the organization of events, or through exhibition participation and linking recycling with environmental education.
- The organization of interactive recycling presentation workshops, in which young people and adults will participate.
- The emergence of innovative recycling practices, which are applied in Greece and abroad.
- The organization of days of exchange of views and transfer of good practices between the recycling bodies and with the participation of citizens as well as cultural events.

https://thessaloniki.gr/5o-festival-anakiklosis-apo-ton-dimo-thessalonikis/

Apart from the recycling festival, there are also some events on the subject of recycling in the Municipality of Thessaloniki, but without any periodicity or correlation with other activities.

A relevant information event took place in March 2019, in collaboration with the Hellenic Recycling Utilization Company (EEAA), with the support of the Central Union of Greek Municipalities (CUGM) and the SKAI TV station, in the "Manolis Anagnostakis" hall and in its courtyard City Hall. The action with the slogan "Recycle in the blue bins of your Municipality" was addressed to primary school students, citizens and business professionals, with the aim of educating and raising awareness about the recycling of packaging, from paper, plastic, aluminum and tinplate, to "Blue buckets" and the "Glass Bells". Participants took part in educational games while gifts were given and two bicycles were drawn.

https://thessaloniki.gr/enimerotiki-ekdilosi-ekstrateia-gia-tin-anakiklosi-ston-dimo-thessalonikis/

Small waste on land -Clean Europe Network

With the support of the Development Company "ANATOLIKI SA", the Municipality of Kalamaria became the first Municipality in Greece which voluntarily undertook to apply the first common European methodology for ensuring and monitoring micro-waste on land.

The methodology developed by the Clean Europe Network, is a useful tool for any Municipality that has no previous experience in counting the volume and type of micro-waste that occurs on land and result in ending up and polluting the sea. Utilizing the results of the methodology helps the local authorities to organize actions-programs in the direction of waste prevention on land, thus achieving cleaner cities and improving the quality of life of their inhabitants.

In the context of the voluntary participation of citizens of the Municipality of Kalamaria in the program, field tests were carried out both in the main commercial streets of the city, as well as in peripheral and less visited places.

https://www.linkedin.com/pulse/mliament-kalamaria-first-pilot-litter-monitoring-brocklehurst/?trk=prof-post

Application for "Smart devices" - anThess anakyklosi

In the framework of the Program Contract of the Municipalities of Kalamaria, Thermi, Pylaia - Chortiatis, Thermaikos and "ANATOLIKI SA" for the complete development and support of recycling in Eastern Thessaloniki, the application for "smart devices" (smartphones, tablets), with Android operating system, has been operating since 2015, where the basic information of the website is presented www.anakyklosianthess.gr.

Through the application, users are given the opportunity to be informed about the items that can be recycled and to look for the points (within the administrative boundaries of the four participating Municipalities) where they can deposit the recyclable materials.

After the website www.anakyklosianthess.gr, the Municipalities of Eastern Thessaloniki launched the application "anakyklosi anThess" for "smart devices", mobile phones and tablets, with Android operating system. The application presents the basic information of the respective website for recycling, in the four Municipalities of Eastern Thessaloniki. In it, the user can find basic information about recycling, what we throw and what we do not throw in the blue bins, relevant news for waste management, the streams of recyclable materials that have been developed in each of the Municipalities, glass, electrical appliances, batteries, cooking oils, etc., as well as contact details per Municipality. The search for the collection points of the individual streams is particularly useful,

https://cutt.ly/jlqpJYu

Utilization of coffee residues

The "Kafsimo" program deals with the recycling of Coffee Waste in the Municipalities of Thessaloniki and Kilkis. The project is implemented by InCommOn as part of the

development and implementation of actions to enhance the recycling and sorting of municipal solid waste, including biowaste, and is funded by the Green Fund.

"Kafsimo" deals with the utilization of coffee residues in terms of social inclusion and a fair economy for the production of green biofuel. In addition, it supports the change of public behavior and mentality and the utilization of food scraps for the transition to a circular economy.

The dumping of coffee grounds in landfills in Greece is estimated to be about 40 thousand tons per year. The innovation of the program lies in the combination of the social factor with science, actively involving the producers of the residue with a parallel emphasis on the technical part and the reduction of CO2 emissions. Through the sale of biofuel, the project aims in the long run to be partially self-financed and the revenue to support the social housing of vulnerable groups.

https://www.voria.gr/article/o-kafes-sti-thessaloniki-ke-to-kilkis-ginete-kafsimo

Pop-Machina and co-production

The operation of the first collaborative makerspace in Thessaloniki is planned by the Municipality of Thessaloniki in collaboration with OK! Thess through the European program "Pop Machina". The project aims to strengthen the circular economy, create new employment opportunities and promote social innovation.

It is a project of the HORIZON 2020 Program that seeks to demonstrate and strengthen the potential of the maker movement and co-production for the circular economy in the EU, in order to promote environmental sustainability and create socio-economic benefits in European cities. The project brings people in contact with circular production communities in 7 European cities and supports them with tools, training programs and specialized business services.

The design of makerspace has started in Thessaloniki, which will operate at the facilities of OK! Thess. Using a series of technologies ("factory of the future", blockchain, etc.) and utilizing scientific disciplines such as urban design and architecture, will create the cognitive background that will provide the necessary support to address the escalation problems faced by collaborative production. The laboratory will be equipped with modern and traditional technologies, such as 3D printers, CNC cutting machines, electronics and robotics laboratory and more, while it will offer all the necessary supplies to cultivate and develop skills and knowledge through educational activities and mentoring.

https://okthess.gr/el/blog/makerspace-popmachina-okthess/

"Tropa Verde" reciprocal recycling program

The "Tropa Verde" (green army) program addresses the issue of increasing the recycling rate and reuse of materials at the municipal level and is, based on European, national and regional directives and regulations, a priority of the Municipality of Pavlos Melas, which

cooperates with the Municipality of Santiago de Compostela in Spain and the Municipality of Zuglo in Budapest.

It is a multi-level system of rewarding citizens with reciprocal benefits in order to develop incentives for more intensive recycling and reuse of materials. It is supported by a multimedia platform that aims to promote recycling and environmental responsibility among citizens, directly rewarding good environmental action. The platform's pivotal role is to interactively connect sites where citizens can deposit recyclable materials and partner companies by providing gifts or discounts to citizens (or municipal benefits such as swimming pool and municipal gym subscriptions, theater and concert tickets).

https://pavlosmelas.tropaverde.org/

Recycling of clothing and footwear

It is made by the company EASTWEST GREECE, which has been active since 2015 in the prefecture of Thessaloniki. The clothes and shoes have a second chance to be used, as some are available to the needy from the Municipalities, while the rest take the road of recycling. Even the clothes that no longer have life are recycled and after processing cleaning cloths, insulation material, lint, work uniforms, filling for car seats, etc. are made. In the Municipalities of Thessaloniki there are hundreds of special clothes recycling bins in various places while it has been expanded and in other cities.

http://eastwest-greece.com/h-etaireia-mas/

Collection of frying oils

The Consortium of SSE organizations of Thessaloniki "Everything Everything" has started cooperation with the Municipality of Neapolis-Sykeon as well as the Municipality of Delta, collecting cooking oils from households. It is already discussing expansion to other Municipalities by concluding Program Contracts for the implementation of a pilot program for the safe collection, transport and recycling of frying oil waste from domestic and professional use.

The Consortium uses methods that involve members of the target social groups actively in jointly organized activities such as Environmental and Experiential Education, their guiding principles, the UNESCO Roadmap for the Global Education Action Plan for Sustainable Development, the training implemented by the Offices and the Center for Environmental Education of Western Thessaloniki and relevant educational and informative material.

https://www.pressenza.com/el/2019/08/ta-panta-re-anakiklosi-epanaxrisimopoiisi-apovlita-anakiklosi/

4.3. Sustainable practices over time

The majority of good examples do not come from a systematic application of legislation. In other words, the Green points described by the legislation in each Municipality are not identified, nor the recycling corners, etc. The main problems in the implementation of the legislation are the infrastructure, the equipment and the processes of maturation of projects that are demanding in time and money. Usually the finding of resources is done by programs that co-finance certain actions, however, upon their completion, there is no possibility of funding and there is no continuation of the actions.

But there are many other good examples of active citizen participation. These have a key feature which is the cooperation of Local Authorities with Civil Society Organizations. The Local Government has very rarely managed to implement successful programs with the active participation of citizens. This highlights a need but also an opportunity for cooperation with a common purpose as well as the possibility of implementing active participation effectively even if it is not done exactly as described by law and at the same time can be implemented without great demands on infrastructure and equipment. There is therefore an excellent possibility of sustainable practice that has the sole aim of raising public awareness.

However, a civil society that will be able to be informed and sensitized and then remain firmly aware and willing to participate actively requires proof that the effort and time it devotes makes sense. The results must be published and comparable.

It makes sense to keep waste records and make the result of the effort public. It is advisable to publish the direct and indirect benefits of their effort as they are reflected, if they are e.g. reduction in municipal fees because the volume of waste is reduced this should be followed by information actions to stay and strengthen with additional participation the population of active citizens.

4.4. General conclusion - Discussion

As a general conclusion, which emerges from the interviews, is that a key problem identified is in the assignment of responsibilities without subsequent control over the progress of implementation. In particular, the responsibility for waste management has been transferred to the Local Government without, however, a centrally implemented implementation control mechanism. A typical example is given in the first chapter of the research with the data of the waste that are not fully recorded and data are not kept in the waste register by all the Municipalities or the data are not updated. There does not seem to be a clear plan for the delegation of responsibilities locally from the central administration. In short, the responsibility for the municipalities is given by the central administration for the management of the MWS within the framework of a legislation, but at the same time there is no set timetable, clear and objectively measurable goals and then control of implementation. The interviews show that this planning, if it existed, could enable the Municipalities to fulfill their obligations and seek collaborations and / or resources to respond.

Citizen participation is an essential process. Without their participation it is impossible to sort at the source and separate, primarily the materials, with the aim of reuse and recycling. There must be a common awareness that only in this way can the parallel reduction of waste transportation and management costs, the improvement of the marketability of recyclable materials, as well as the reduction of landfill waste, in order to protect the environment, be achieved, achieve the country's international commitments and avoid fines.

Successful practices were found in the area of application, based on the participation of citizens, where they are given the opportunity to deposit organized useful materials, such as paper / cardboard, glass & metal packaging, edible fats & oils, electrical & electronic equipment, etc.

Nevertheless, these are just a few bright examples, with no rule of thumb. There is no image of active citizen participation as a general impression and stable over time.

However, there are also growing indications that young people are more aware and moves to adopt zero waste practices on a personal level, which should be supported by the central state, municipalities and the media.

Apart from some general type leaflets and incentives on the websites of the Municipalities for the participation of the citizens, substantial opportunities to participate are not offered. It is characteristic that in the whole P.E. Thessaloniki, with 15 Municipalities, there is not a single Green Point. In Central Macedonia, with 40 Municipalities in total, only recently a Green Point was created in the Municipality of Serres.

The websites of the Municipalities do not offer the information that will serve the citizen or will encourage him to participate in actions or personal behaviors that will be harmonized with the spirit of recycling, reuse, etc. Many times, even when they have the respective areas in the menu, the information provided is insufficient or non-existent. There are also cases where only proposals and plans that have not been implemented are mentioned. While there are cases where the electronic links of the websites that refer to recycling do not work, as a result of which the interested parties are not informed immediately. E.g. References to recycling, composting, etc. lead to answers such as "Error establishing a database connection" or similar. See a recent example in our research:

The reasons for the non-participation of the citizens are approached in a special Report in 2020 by the Ombudsman, on the subject of waste management, where he notes that:

"The systems used are blue bin and glass in large producers, while most municipalities do not have complete plans for the separate collection of paper, glass, metals and plastics, in order to ensure good quality and high rates of recyclable waste collection. In addition, they do not have an adequate network for the collection of recyclable materials.

Citizens often complain about the improper placement of blue bins, the inadequacy, they want a dense network of bins at a relatively short distance from each household, as well as the frequency of their collection. They also point out that the bins are overloaded, the lids are left open, while packing boxes and other bulky items are placed outside them, creating annoying conditions. This usually happens when the bins are near stores, which have the cartons in the bins without packing them. Respectively, there are protests about the dumping, inside the blue bins, of other waste streams (e.g. scrap, tires, etc.).

It is noted, however, that citizens, although aware of the issue of recycling, are not sufficiently informed. They do not know exactly what to dispose of in the blue bins and / or other bins if a separate collection system is applied to more in the area. This has an impact on the quality of the pre-selected materials, consequently the residue after the sorting of the blue bin in the Recycling Centers for Recycling Materials of CRWS is very high and often exceeds 40%, as found by the investigation of relevant reports.

It has been ascertained from autopsy reports of the competent services that recyclable products are disposed of at landfills (e.g. disposal of a concentrated quantity of aluminum cans, electronic and electronical waste).

In addition, very few green spots have been licensed to date. Indicatively, the licensing of only three green points in Municipalities of the Peloponnese Region is mentioned. Also, in other cases, only cat' they operate as green spots, as the specifications that have been set are not met and some municipalities use them as a temporary storage area for mixed waste.

Issues are also raised due to the lack of CRWS at least at the level of regional unit. This creates a problem, as the collection and transport vehicles of the Municipalities outside the boundaries of the house of the peripheral unit are not foreseen, and therefore the system is burdened with the cost of the necessary temporary storage, as well as with the cost of transhipment / transport.

However, for the installation of a CRWS, as well as any processing / recovery unit, it becomes necessary to use financial tools and include cost-benefit and sustainability studies. In other words, it is crucial to find a market for recovery products from the processing of MSW (metals, glass, paper, plastic).

Major is the fact of lack of financial incentives that promote prevention and participation in the separate collection ".

For the country as a whole and for the RCM in particular, there is a significant lag in all objectives.

According to the NWMS of 2015 (PYS 49/2015, Government Gazette 174 / A) the creation of at least one (1) Green Point per Municipality, until 2020. However, more than five years after legislation of the Green Points (GPs), only in January 2020 it was decided to implement five GPs in an equal number of Municipalities of Central Macedonia with European resources and only in December 2020 was the first approval for financing one of the that's all -in Serres- with 2.1 million euros from the Operational Program of the Region of Central Macedonia "Transport Infrastructure, Environment and Sustainable Development".

It should be noted that the PS in combination with the Recycling, Training and Sorting Centers (RCSST), the Recycling Corners (RG) and the Mobile Green Points (MGPs) in their full development could create 16,000 jobs, as mentioned in JM18485 / 2017 - Government Gazette 1412 / B / 26-4-2017.

The target of 50% reuse and recycling by 2020 set by the EU is also far from the 2018 (last published) percentages for RCM. As this delay had become apparent in the past, the European Commission had already sent it early warning report in August 2018.

While they have already begun to fines are imposed by the special Interdisciplinary Association of the prefecture of Attica to the Municipalities that without recycling lead their waste to landfills, the road of waste management seems to lead to Public-Private Partnerships (PPPs) and not in very large space for the development of collaborations with SSE projects, as defined in article 3, paragraph 4 (RCSST are organized and operated by the bodies of Social and Solidarity Economy in the geographical scope of Local Authority of First Degree, if there is an agreement of the Local Authority or Local Authorities of First Degree) of Government Gazette 1412 B / 26-04-2017 entitled: Determination of the categories and specifications of Green Points (PS), Recycling Centers, Training and Sorting at the Source (RCSST), the Recycling Corners (GA) and the Mobile Green Points (MGPs), according to article 38 of law 4042/2012, as in force.

In addition, it appears that the data collected by the various recycling agencies are not reliable: there is no control over the content of the garbage trucks that transport the contents of the blue bins to CRWS, NTUA professor Gerasimos Lymperatos explicitly states that "The data are completely fictitious and do not correspond to reality" while EOAN has never received material invoices sold by the CRWS of EEAA SA, in order to determine the quantities that came out and were sold by the CRWS and to cross-check the reliability of the quantitative recycling data sent by EEAA SA. Nonetheless, the conclusion of EOAN at the end of its report for 2018 (compiled at the end of 2020), is that "in terms of the performance of recycling the goals set by the European Directives in most cases have been achieved".

In the field of recycling, there is a large drop in the prices of materials internationally, especially after the "closure" of the Chinese market from 1.1.2018 but also the international fall in the price of oil, factors that reduce the profitability of recycled plastic and perhaps explain the increased frequency of fires worldwide (more than 10 in Greece) in recycling plants during the period 2019-2020.

https://tvxs.gr/news/ellada/giati-kaikan-8-ergostasia-anakyklosis-toys-teleytaioys-mines

https://www.rovespieros.gr/pyrkagies-ergostasia-anakyklosis-mia-pagkosmia-pandimia-pou-prokalei-erotimata/

This development will probably push more towards the planned waste incineration. Incineration, promoted by the NWMS as a waste energy recovery practice or as a circular economy, is not a scientifically proven method. This is pointed out by 4 major environmental organizations (Ecological Recycling Company, Mediterranean SOS, Greenpeace and WWF Hellas). The effects of combustion are air pollution with extremely dangerous substances such as dioxins and furans, threatening human health. In addition, it is more expensive - as a capital-intensive business - than labor-intensive recycling. Is expected to be a significant obstacle to the future achievement of the ever higher goals of the Circular Economy. It is also expected to deprive jobs and in the end, these two waste management methods are directly competitive with each other. In short, to make combustion profitable of waste recycling is degraded.

Some changes to today Waste management, which would make it much more efficient, is:

- the introduction of different currents and the separate collection of materials, instead of the current practice of the "blue bin" managed by the Hellenic Recycling Company (HRC), transporting a mixture of mixed recyclable waste to CRWS
- the change of strategy and the transition from I pay for the rubbish per square meter of apartment, in "I pay as much as I throw".

As a general conclusion, we can say that ecological, alternative and social waste management has been significantly delayed. The development of alternative landfill and incineration management strategies is extremely pressuring and critical. Yet there are not enough examples of good practice in relation to the management of MSW. In addition, mobilizing citizens in this direction is more than an important factor, because it is clear that only a "living" civil society can promote recycling and reuse by sorting at the source while an inactive population can only lead to “solutions” like incineration and landfills.

5. Bibliography

- Regional Association of Solid Waste Management Bodies (SWMB), "Revision of the Regional Solid Waste Management Plan (RWMS) of the Region of Central Macedonia & Strategic Environmental Impact Study, Thessaloniki", https://bit.ly/2OSonTk
- Eurostat, Press Release, "Each person in the EU generated 475 kg of municipal waste in 2014", 2016.

http://ec.europa.eu/eurostat/documents/2995521/7214320/8-22032016-AP-EN.pdf.

- Directive 2008/98 / EC of the European Parliament and of the Council of 19 November 2008 on waste | EU objectives for MSA Management:

http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:el:PDF

- Law 4736/2020 (Government Gazette 200 / A` 20.10.2020) Incorporation of Directive (EU) 2019/904 regarding the reduction of the effects of certain plastic products on the environment and other provisions: https://www.e-nomothesia.gr/kat-RUriballon/nomos-4736-2020-phek-200a-20-10-2020.html
- Regional plans http://www.yRUka.gr/Default.aspx?tabid=938&language=el-GR
- Local Plans of 63 Municipalities of Attica https://bit.ly/2mtdJ7e
- http://www.edsna.gr/index.php/edsna-profil/skopos
- SWMB - Solid Waste Management Bodies:

http://www.eedsa.gr/Contents.aspx?CatId=38&lang=gr

- JMD for plastic bags 180036/952/2017 (Government Gazette 2812 / B '/ 10-8-2017) Definition of measures and rules for the reduction of the consumption of plastic transport bags, in accordance with the directive 2015/720 / EU: https://www.e-nomothesia.gr/kat-RUriballon/apobleta/koine-upourgike-apophase-180036-952-2017.html
- Law on Recycling 4496/2017, amendment of law 2939/2001 on the alternative management of packaging and other products, adaptation to Directive 2015/720 / EU, regulation of issues of the Hellenic Recycling Organization and other provisions (Government Gazette A 'law 4496 / 2017 -No.170 / 8.11.2017):

https://www.eoan.gr/el/content/566/tropopoiisi-toy-n-2939-2001

- Phasing out landfill by 2035 the deposition in the landfills should not exceed 10% of the total amount of MSW. May 22, 2018:https://bit.ly/3aenjSc
- Pricing Regulation of Solid Waste Management Bodies (SWMB) 955- (Government Gazette B '1277 / 15-04-2019). Percentage reduction rates based on Municipalities performance:https://bit.ly/2PfJdbj

- Sanctions in the Municipalities that do not promote recycling and sorting at the source, Official Gazette (2218 B / 08.06.2019):

http://www.ypeka.gr/Default.aspx?tabid=785&sni%5B524%5D=6373&language=el-GR

- Regional Planning (Ministry of Environment) of Municipal Waste Management of Attica with approval as appropriate, sites for facilities, integrated waste management. L.3164 / 2003, article 33:https://www.e-nomothesia.gr/demosia-erga/n-3164-2003.html - https://www.lawspot.gr/nomikes-plirofories/nomothesia/nomos-3164-2003

- Approval of the Strategic Environmental Impact Study (SPS) of the project "Regional Solid Waste Management Plan (RWMS) of the Attica Region - 2nd Review", 25.11.2016:

http://www.ypeka.gr/LinkClick.aspx?fileticket=Hz8R5lLQg3E%3d&tabid=938&language=el-GR

- WTUsures, conditions and program for the alternative management of waste from excavations, constructions and demolition (WECD) JMD 36259/1757 / E103 / 2010:https://www.e-nomothesia.gr/kat-RUriballon/apobleta/koine-upourgike-apophase-36259-1757-e103-2010.html

- National Strategy for the Circular Economy:

http://www.greekscrapmetal.gr/assets/uploads/files/ethniki_stratigiki_kikliki_oikonomia.pdf

- Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98 / EC on waste:

https://eur-lex.europa.eu/legal-content/EL/TXT/PDF/?uri=CELEX:32018L0851&from=EN

- Circular Economy The implementation of the circular economy in Greece - November, 2020:https://circulargreece.gr/el/

- Support the public consultation on a new Circular Economy Action Plan, 2020: https://ec.europa.eu/environment/circular-economy/pdf/summary_responses_roadmap.pdf

- Electronic waste register https://wrm.ypeka.gr/

- P.D. 116/2004 measures, conditions and program for the alternative management of vehicles at the end of their life cycle :https://www.e-nomothesia.gr/kat-RUriballon/apobleta/pd-116-2004.html

- JMD 23615/651 / E.103 / 2014 'Determination of rules, terms and conditions for the alternative management of waste electrical and electronic equipment (WEEE), in accordance with the provisions of Directive 2012/19 / EC' (Government Gazette 1184 /

B `/ 2014): https://www.elinyae.gr/ethniki-nomothesia/ya-ip-23615651e1032014-fek-1184b-952014

- Local Decentralized Waste Management Plan of the Municipality of Thessaloniki, 582 / 25-04-2016, ΑΔΑ 7ΔΦ4ΩΡ5-ΓΓ9: https://thessaloniki.gr/wp-content/uploads/2016/12/topiko-sxedio-diaxeirisis-apovliton.pdf
- JMC No. 51373/4684, (Government Gazette 2706 B / 2015) Ratification of the National Waste Management Plan (NWMP) and the National Strategic Waste Prevention Plan: https://www.e-nomothesia.gr/kat-periballon/apobleta/kya-oik-51373-4684-2015.html
- https://bit.ly/3jGY1PA
- https://bit.ly/37aSU54
- https://thessaloniki.gr/5o-festival-anakiklosis-apo-ton-dimo-thessalonikis/
- https://thessaloniki.gr/enimerotiki-ekdilosi-ekstrateia-gia-tin-anakiklosi-ston-dimo-thessalonikis/
- www.followgreen.gr/vrilissia
- https://kedke.gr/otanews/dimos-kozanis-eRUkteinetai-to-programma-dialogi-stin-pigi-vioapovliton-tou-dimou-se-synergasia-me-ti-diadyma/
- http://waste4think.eu/halandri
- http://www.halandri.gr/Default.aspx?lang=el-GR&page=386
- http://www.payt.gr/
- https://www.reweee.gr/el/what-is-going-on/teliki-synenteyksi-typoy-toy-ergoy-life-re-weee
- https://thessaloniki.gr/programma-anakykloshs-ton-fysikon-xristougenniatikon-dentron/
- https://www.linkedin.com/pulse/mliament-kalamaria-first-pilot-litter-monitoring-brocklehurst/?trk=prof-post
- https://cutt.ly/jlqpJYu
- https://life-f4f.gr/
- https://www.voria.gr/article/o-kafes-sti-thessaloniki-ke-to-kilkis-ginete-kafsimo
- https://thessaloniki.gr/5o-festival-anakiklosis-apo-ton-dimo-thessalonikis/
- https://thessaloniki.gr/enimerotiki-ekdilosi-ekstrateia-gia-tin-anakiklosi-ston-dimo-thessalonikis/
- http://eastwest-greece.com/h-etaireia-mas/
- https://www.pressenza.com/el/2019/08/ta-panta-re-anakiklosi-epanaxrisimopoiisi-apovlita-anakiklosi/

The editor of the material: ANTIGONE– Center on Information and Documentation on Racism, Ecology, Peace and Non-Violence

Address: Ptolemaion 29a, PC56430, Thessaloniki

Tel: +30 2310285688

Date of publishing: 11.02.2021

Joint Operational Program Black Sea Basin 2014-2020 is co-financed by the European Union through the European Neighborhood Instrument and by the participating countries: Armenia, Bulgaria, Georgia, Greece, Republic of Moldova, Romania, Turkey and Ukraine.