

GREEK WASTE PREVENTION PROGRAMME: A CHALLENGE ON THE WAY TO ZERO WASTE ECONOMY

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ABSTRACT

This paper presents the results from the elaboration of Greek Waste Prevention Programme. The Programme provides guideline to promote waste prevention actions, sets clear objectives with a time horizon of at least six following years. It was elaborated after assessing literature and waste prevention programmes from other EU countries. In addition, recent socioeconomic conditions, current waste prevention initiatives, progress in legislation and technology, as well as the trends and performance of waste management practices in Greece were examined. For setting priorities and targets, the principles for waste prevention and resource efficiency were considered. After evaluating all existing data, the first step was setting priorities and targets, the second step was the definition of measures for the achievement of the abovementioned priorities and targets and the third step was the definition of actions for implementation of the measures. Relevant stakeholders were proposed, along with their roles and level of involvement in the Programme. The selected actions will prioritize prevention in major waste streams, on the main waste producers (e.g. industries, businesses, households) and sectors of the economy and society (e.g. tourism, trade, industry).

Keywords: waste prevention, reuse, paper, packaging material/waste, food waste, electric and electronic equipments, household waste.

1. INTRODUCTION

Waste prevention covers a broad range of policy options providing many benefits. Waste prevention usually can be succeeded by minimising the quantity of material used in the products manufacture and increasing the efficiency of products. Targeting at-source waste reduction can affect the waste quantity and toxicity before it will be recycled, composted, energy recovered and/or landfilled. Waste prevention also may influence the adverse impacts of the waste on the environment and human health. The moderation of unnecessary consumption, the design and subsequently, the consumption of products that lead to less waste are considered strict avoidance of waste. Waste prevention also includes actions as re-use, repair or refurbishment of products.

According to the Waste Framework Directive 2008/98/EC, all Member States should prepare national waste prevention programmes. The objective of these programmes is to present the national approach on waste prevention, setting targets and policies and aiming to decouple economic growth from the environmental impacts of waste generation.

This paper outlines the results from the elaboration of Greek Waste Prevention Programme. ENVIROPLAN S.A. was assigned to elaborate the "National Waste Prevention Programme" by the SOP Environment and Sustainable Development of the Ministry of Environment, Energy and Climate Change of Greece. The scope of the project is divided to following phases:

- Phase 1: Analysis of Current State
- Phase 2: Setting of Priorities and Targets
- Phase 3: Elaboration of Strategy and Monitoring and Control Tools

- Subphase 3a: Identification of measures per target and priority
- Subphase 3b: Defining implementation actions of prevention measures and Monitoring and Quality Control tools
- Phase 4: Drafting of Legal Document

Regarding project deliverables, the project consists of six (6) outputs which briefly are:

- Deliverable 1 – Methodology for the Preparation of the Project: It consists of technical report presenting:
 - Assessment of approved national waste prevention plans of other EU countries.
 - Methodology for the implementation project per phase.
- Deliverable 2 – Analysis of the Current Situation (PHASE 1): It consists of technical report presenting:
 - Recording and evaluating existing preventive measures at national level,
 - Recording of demographic, socioeconomic data at national level and forecast of development of key sectors of the Greek economy,
 - Assessment of available waste management infrastructure and services,
 - Recording of waste quantities collected per stream,
 - Existence and consumption of eco-labelled products in the Greek market,

- Assessment of recorded information campaigns and public awareness on waste prevention,
- Assessment of existing national, regional and local policies in relation to waste prevention,
- Assessment of preventive measures at EU level
- The role and level of involvement of all stakeholders.
- Difficulties were and how they are addressed and possible shortcomings of this publication.
- Deliverable 3 – Setting of Priorities and Objectives (PHASE 2): This technical report presents:
 - Setting priorities at national level, at productive sectors,
 - Identifying targets based on the location and administrative level,
 - Setting quantitative and qualitative targets,
 - Time schedule of targets
 - Feasibility of targets,
 - Setting mandatory and voluntary targets
 - Separating specific and general targets
 - Recording the viewpoints of the stakeholders
 - Drafting the framework of priorities and targets at national level.

- Deliverable 4 – Elaboration of National Strategy Plan (PHASE 3): This deliverable is submitted in two parts (part A and part B), as consultation process comes in between.
 - Part A: This technical report includes: identification of proposed measures for each target and priority (e.g.: Target A – proposed measures, Target B – proposed measures, etc.).
 - Part B: This technical report which includes: actions for implementing measures after recording the viewpoints of stakeholders during consultation process, determining potential actions for each measure and target (communication actions, promotion actions, regulatory actions), and drawing of final action plan.
- Deliverable 5 – Implementation of the Strategy and Monitoring tools (PHASE 3): This technical report includes: monitoring methods for the implementation of targets proposed by the strategy (setting monitoring indicators and drafting monitoring plan). In addition, it will present the methodology for the selection of monitoring indicators.
- Deliverable 6 – Drafting Regulatory Document (Phase 4).

2. MATERIALS AND METHODS

This project has been implemented in accordance with the requirements specified in the project contract, and all legislative requirements and scientific and technological progress in the field of waste management. Specifically, the project complies with the directions of the Greek and EU legislative framework for waste management, namely, by following the provisions of the Framework Directive on waste 2008/98/EC and the Law 4042/2012 - Framework for Waste Generation and Management – harmonization of Directive 2008/98/EC on waste prevention.

The National Strategic Plan for waste prevention should provide necessary guidance to change the current state of waste management and promoting actions of waste prevention at national Level. Thus, it can achieve:

- improvement of waste management
- reduction of waste generation
- avoidance of excessive use of natural resources.

Therefore, the following aspects are illustrated in the programme:

- The vision of the European Union and Greece for waste management,
- The basic principles of the legal framework for waste management, with particular emphasis on the Hierarchy of Waste Management
- The policy directions with the completion of the project for the realization of the vision
- Defined targets and their time schedule. Their ultimate aim is to prevent the waste generation and optimal use of resources
- Recommendations and guidelines for better and more adequate information and awareness so as the vision and guidance for the waste prevention can be realised.
- The recommendations for possible legal amendments
- The monitoring and control tools for the implementation and achievement of objectives set by the National Waste Prevention Programme.

For the elaboration of the Programme, The guidance from the EU Directive «Guidance Document: Preparing a Waste Prevention Programme, EC, October 2012» and the literature cited in this document has been taken in to account as well as other sources (Arcadis et al 2010, ADEME 2012, EC DG Environment 2012).

2.1. Collection and Assessment of Data

This section presents the method for collecting and evaluating data used for the preparation of the National Waste Prevention Programme. It is considered important to understand the scope of the project and to undertake a literature search to identify potentially relevant studies, leading to a short list of documents for a further detailed evaluation. All necessary data were recorded per data sources as well as per project deliverable. Literature searches were carried out on the internet, including portals (e.g. Wastenet, Waste and Resources Research Repository (WARRR), WRAP UK, PRE – WASTE, etc.)

The various sources have been classified based on search fields they covered in the context of waste prevention. In addition, they have been examined whether they provide qualitative, quantitative and/or reliable data. Priority has been placed on quantitative and subsequently to qualitative data. Particular attention was given to ensure that the selected documents adequately cover areas related to the project. The data obtained by waste prevention programmes of other countries or other studies and surveys have been assessed, based on the following parameters:

- Date of study
- Credibility of data sources (e.g. Official statistics against estimations, etc.)
- Comparisons of the same data between different studies

- Experience and knowledge of contractor on waste prevention issues
- The views of the Contracting Authority.

Particular emphasis was placed on finding the most effective measures and actions which have already been implemented or proposed in national waste prevention programmes of other countries. They have been selected based on their maturity rate of their implementation and their performance in countries that were applied, but also their applicability and the success of these measures and actions in Greece.

2.2. Assessment of Current Situation

A proper analysis and assessment of the current situation is considered essential for the determination of appropriate priorities and measures. The collected data were evaluated taking also into account the particularities and specific needs of Greece. In particular, the data examined refer to:

- current and future projections for waste generation at national level, in order to choose the sectors of economic activities, which will be defined as priority for providing guidelines and taking measures in the National Waste Prevention Programme
- available waste prevention practices already implemented or planned to be implemented.

Therefore, the analysis of the current situation should be quite accurate. It should include the collection, as far as possible, of all necessary data from reputable sources that lead to safe decisions reflecting reality. Hence, for illustrating of the Current Situation in Greece, the following data have been assessed:

- Collection and analysis of socioeconomic data in Greece:
- Collection and analysis of data on the available waste management infrastructure and services.

- Data collection for the waste management per waste stream.
- Analysis of the current situation about existing or foreseen waste prevention measures and actions at national level.
- Collection and Presentation of data regarding the eco-labelled products in the Greek market: existence, consumption and use of products and services with Ecolabel in Greece.
- Inventory and Evaluation of existing information on public awareness measures for waste prevention.
- Analysis of existing policies at national, regional and local level. An important aspect of planning is that waste prevention programme must coexist with other policies that are in force.
- Analysis and evaluation of waste prevention actions in other countries.
- Recording stakeholders.

2.3. Setting Priorities Areas and Targets

The priorities areas and targets of the waste prevention programme have been set in order to formulate a strategy that will contribute to a sustainable society. The priorities were selected in consultation with the contracting authority in connection with the obligations arising from the EU and national legislation.

The identification of priority areas was conducted taking into account:

- major waste producers (households, businesses, industries, etc.)

- major waste streams (packaging , Construction and Demolition Waste (C & D) , hazardous waste, Waste Electrical and Electronic Equipment (WEEE), etc.)
- The phases of the product lifecycle (from product design to production, consumption and final disposal phases)
- In the key sectors of Greek society and economy (tourism, trade, industry, construction, primary production sector, etc.) in which waste prevention can be applied.

Generally, for setting priority areas the following issues have been investigated:

- the most promising material flows
- the possibility of quantitative prevention for each waste stream
- the possibility of qualitative prevention for each waste stream
- the most promising waste prevention measures for each waste stream
- the waste prevention measures that are compatible with each other or can be combined for a particular material

It was considered appropriate to set general and specific targets. General targets can be expressed in terms of the overall reduction of waste collected by the authorities to be recycled or landfilled. The specific targets can be specified on their priority areas or by specific waste producer (households, businesses, industry, etc.) or specific waste stream. In addition, the proposed targets can cover the whole country, or focus on regional and local level. Also it has been examined whether to propose for each priority area both quantitative and qualitative targets.

When setting any target, it has been examined:

- whether the data needed to verify the results are already available,
- at which level the data could be collected (national, regional and local)
- any difficulties may arise.
- whether the timetable is realistic, if the intervals are sufficient to achieve the desired results.

2.4. Elaboration of Strategy and Monitoring and Control Tools

In order to form the necessary measures to prevent waste generation, all the results of the previous phases of the project have taken into consideration, such as recording and analysis of the current situation and defining priorities and targets. In particular, for determining the measures and actions to prevent waste generation the following points have been considered:

- The results from the assessment of the actions implemented in Greece and in other countries - best practices
- Exchange ideas and views with all stakeholders

The choice of measures was influenced by the possibility of achieving the proposed targets and priorities. According to Article 23 of Law 4042/2012 (Article 29 of Directive 2008/98/EC), the waste prevention programme shall:

- describe the existing prevention measures

- evaluate in order to select some of the examples of measures listed in Annex IV of Directive 2008/98/EC as inserted by Law 4042/2012 on the Greek legislation
- propose additional appropriate measures other than those presented in the Annex IV of Directive.

It was considered necessary to carry out consultation on the selection of final measures through meetings and/or workshops with stakeholders and public participation. Establishing cooperative relationships with stakeholders contributes significantly to the success of the programme mainly by contributing to the definition of appropriate prevention measures.

After the selection of the measures, several communicational, promotional and regulatory actions have been proposed. These actions are expected to help, with the best possible way, implementing measures, and subsequently, the targets set by waste prevention programme. Furthermore, special attention was paid to propose not only short-term but long-term and medium-term actions with not minor effects in relation to the purposes of the Programme.

Furthermore, in order to consider the proposed strategy as integrated and successful, it is essential to define a solid framework of the project, ensuring broad achievement of all objectives. The planning process should include milestones for assessing regularly the adequacy of the priorities set and possibly redefine. Hence, it is appropriate to establish a monitoring plan for the waste prevention programme implementation. This plan proposes specific control methods and suitable indicators for monitoring the implementation of the programme.

These indicators are used for monitoring the development of the National waste prevention programme. Indicators are an essential tool through which emerges the performance of measures and progress of targets. Indicators should be:

- Relevant (when considering the objective which is to measure waste prevention results)
- Accepted (in particular by targeted stakeholders such as academia and policy-makers)
- Credible (transparency and the confidence that the users and stakeholders place in the indicator)
- Easy (in terms of quantification and follow-up over time with regard to data availability issues and in terms of communication towards the targeted group)
- Robust (data quality, scope and representativeness).

The monitoring plan also includes a time schedule of the waste prevention programme which illustrates the expected duration of the various phases of the programme and expected date of completion. It provides a clear time interval between the intervention design, decision, implementation and evaluation of results, while allowing some adjustments during implementation.

Risk analysis is considered a key tool for estimating the possible uncertainties and risks during project implementation and subsequently designed and developed ways of dealing with them, in relation to the time and financial planning of the programme.

2.5. Draft Legal Text of the National Waste Prevention Programme

In phase 4, Draft legal text is elaborated that presents the outcomes derived from the elaboration of the National Waste Prevention Programme. The results and recommendations arising from the earlier implementation phases of the project will be illustrated and especially the proposed measures for achieving the programme targets. The content of this text initially will be proposed by the Contractor and will be finalized by the consistent view of the contracting authority.

3. RESULTS AND DISCUSSION

3.1. Current Situation in Greece

3.1.1. Demographic Trends

As regards the demographic data, it is rather difficult to proceed to a population projection with safe and realistic results. This is mainly due to the fact that a different methodology was applied to the recent census from that was usually used in previous censuses. In particular, according to Greek Statistical Authority, the Census of 2011 has focused on the recording of the resident population of the country as opposed to the previous census, which recorded the De Facto Population, i.e. registered persons who were present in the country at the reference date of the census. In addition, the methodology of the Census 2011 differs significantly from that of previous censuses. Therefore, the results of the 2011 Census and previous censuses are not entirely comparable.

Assuming that censuses 2001 and 2011 can be compared, slight decrease is recorded compared with the previous census in 2001, although the figures are not strictly comparable. As it is shown in Table 1, according to the results of the Census of 2011, the resident population of Greece is 10.815.197 inhabitants, while in 2001 were 10.934.097. Also population decrease is observed in data of Eurostat.

Table 1: Census of Greece (2001 – 2011)

	1991	2001	2011
Resident Population	10.223.392	10.934.097	10.815.197
Legal Population	10.134.534	10.206.539	9.903.268

All regions in Greece present a decrease or relative stability, apart from Crete and the South Aegean, where remarkable growth recorded.

Based on some predictions for 2010 – 2050, both the Greek Statistical Authority and Eurostat have estimated that the population in 2010 would be around 11,300 thousand people, ie higher than the census of 2011, whereas population reduction is foreseen from 2030 onwards by Greek Statistical Authority, and respectively from 2050 onwards by Eurostat.

3.1.2. Financial Trends

The most important sectors of Greek economy are tourism, services, trade, food industry and agriculture. Since 2009, Greece is experiencing recession. The public debt as percentage of GDP has increased significantly and the state relies mainly on loan contributions to cover social expenditures, salaries and the fiscal deficit. Beyond that, Greece is facing challenges to competitiveness and employment perspective of human resources. Over time, the recession is converted rapidly into employment crisis, with official ratings of unemployment constantly rising.

Enterprises need to adopt more efficient production methods. They also need to become more active in promoting Greek branded goods and services in foreign markets. Agricultural production, especially food processing can be oriented towards foreign markets, particularly where high quality products, such as olive oil, selected fruits and vegetables and various dairy products are able to achieve economies of scale and international competitiveness.

Some measures should be applied in order the exported Greek products to become more competitive and attract the environmentally conscious consumer, such as the promotion of reliable environmental management systems and reliable product labels. These indicative measures are proposed as examples

of waste prevention measures in Annex IV of Directive 2008/99/EC and subsequently Law 4042/2012. Therefore, waste prevention could be indirectly influenced by promoting these measures. This is important, since the domestic market has been reduced, an extroverted financial strategy should be followed. The annual report of the Foundation for Economic & Industrial Research (IOBE 2013a, IOBE 2013b) stresses the need to emphasize on extroversion and export and believes that this direction will contribute decisively in enhancement of quality of Greek products, and the organized promotion of Greek brand name foods.

According to NSRF for 2014-2020, the agricultural sector continues to hold a significant share in domestic economic activity, especially when compared with other EU countries, also presents significant opportunities for further development, which can be illustrated and used with positive effects and it can be correlated with sectors such as the food industry.

In the next funding programming period, tourism can play a key role in helping to stimulate Greek Economy. Greece's position in the international marketing of tourism services can be significantly upgraded. Furthermore, the promotion of creditable eco-labelled tourist accommodation, to attract environmentally conscious tourists could contribute indirectly to waste reduction.

3.1.3. Waste Generation Trends

As mentioned above, comparing to the resident population censuses of 2001 and 2011, there is a decrease in the total population of the country. All regions showed a decrease or relative stability, with the exception of Crete and the South Aegean, where recorded remarkable growth.

Waste generation decoupling from GDP and consumption is still a challenge for developed countries. The decoupling of waste generation from the private consumption expenditure is used as an indicator of the effectiveness of waste prevention strategies.

Recession of the Greek economy reached 5.6% in the first quarter of 2013, with GDP falling (at current prices) at 41.888 billion or even lower than the first quarter 2005 (44,206 billion). According to the Greek Statistical Authority, a main reason for the decline in GDP of 5.6% is a further high decline in consumption and investment. In particular, household consumption expenditure decreased by 8.7% and the total consumption expenditure (including the General Government) fell 8.3%.

Therefore, the project team considered that is not safe to make any forecast of the future waste generation across the country. Theoretically, it is estimated that a small reduction / stabilization in waste generation will be noticed in short term, while after the financial recovery a small increase is expected, as the National waste prevention programme will be already applied and information and awareness on waste prevention will provided to the public, productive sectors, organizations and agencies.

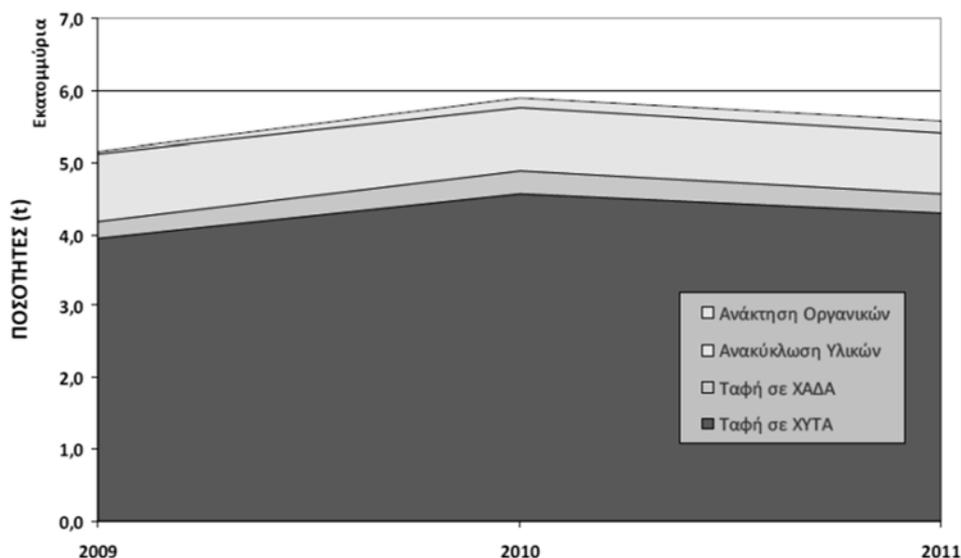
MSW

Important factors that influence the MSW production are: per capita GDP, household size, employment by sector (agriculture, industry, services, etc.), the overall character of the area (urban, agricultural, mountain, island, etc.), demographic changes, the change in per person consumption, the level of awareness of citizens / consumers in the direction of prevention and the changes of the economy (recession or growth).

The National Waste Management Plan which is currently under review indicates that difficulty has been noticed in recording all sources of generation of MSW (MEECC 2014). Hence, for the estimation of generated MSW quantities, population and the records of waste flows (collection-transfer of mixed waste – diversion of recyclables and biowaste – waste recovery - disposal) have been taken into consideration. Specifically, the quantities of generated MSW for 2010 and 2011 were estimated based on data of MSW quantities recorded in the existing management infrastructure (MRF, IWMF and landfill sites), taking into account the quantities diverted through various Collection and Management Schemes or other recycling / recovery networks. For the interpretation of the variations in quantities and composition of MSW between different regions of Greece indicators of economy, population density, etc. were also taken into consideration.

Figure 1 illustrates increase in MSW generation and especially during 2009 – 2010. The large increase in the quantities between 2009 – 2010 is due to the large number of operating landfill facilities, which allows the recording of incoming quantities in the facilities. A decrease of MSW generation during 2010 – 2011, as well as continuous reduction in the quantities recycled are noticed, mainly due to the country's economic recession.

Figure 1: Progress in MSW generation and Management during 2009 - 2011



According to the data of the under review National Waste Management Plan, the percentage of the organic fraction in MSW is 44.3 %, including biodegradable garden and park waste, food and kitchen waste from households, restaurants, caterers and retailer and similar waste from food processing plants (MEECC 2014). It should be noted that the composition of MSW in individual materials, due to their variability and uncertainty in the exact definition, varies substantially in range.

Packaging Waste

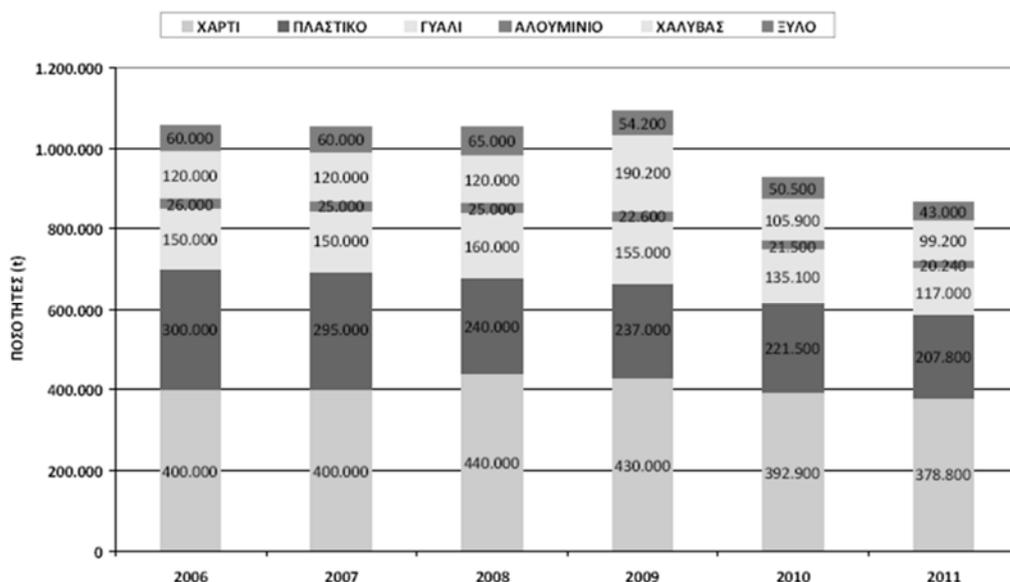
Packaging waste derived from daily use of products by citizens / consumers or by commercial, industrial or other activities. In application of the extended producer responsibility, legislation determines that those responsible managers, namely products packers and importers of complete packaging are

required to organize individual Waste Collection and Management Schemes or to participate in collective Waste Collection and Management Schemes for the management of packaging waste in order to achieve the objectives of recycling and recovery. Additionally, Local Authorities are required cooperate with the approved Waste Collection Management Schemes for municipal packaging waste.

As regards the calculation of the quantities produced, the data are based on the statements of the participants in the schemes and additional assessments associated with the accurate measurement of waste in the past and the annual change indicated by the schemes for each type of material.

Among the most important problems of operating schemes is related to the activities of certain social groups (economic immigrants, scavengers, etc.), which they illegally collect packaging waste from the bins, removing substantial amounts of packaging waste, mainly metals and paper which have high resale value, affecting the overall collected quantities and increasing the percentage of the residues.

Figure 2: Progress in packaging waste generation

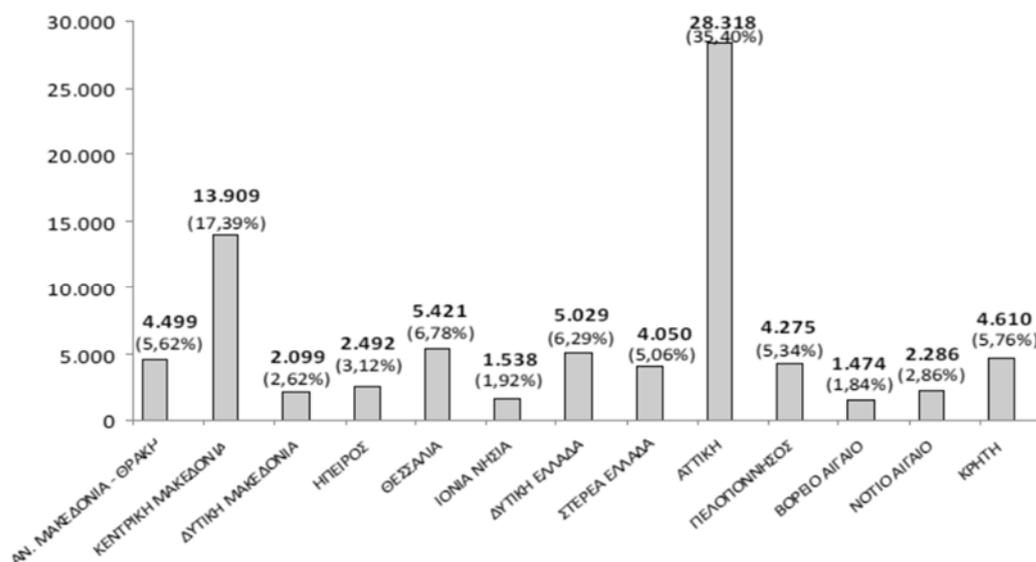


WEEE

In 2010 the separate collection of WEEE from households reached 44.552 t, reaching the national target. However, a decline is noted compared to previous years, mainly due to the economic recession and the increase of the price of metal scrap (which promotes illegal management of ferrous WEEE).

As regards the WEEE management, all parties (manufacturers and importers) are responsible to organize collection and management schemes or to participate to them, while EEE distributors are also obliged to participate. However, the amount of EEE placed on the market and quantities of WEEE are based on estimations. Only, the amount of EEE placed on the market in 2010 is recorded, based on the statements of producers participating in the schemes.

Figure 3: WEEE Generation by Region (2010)



Industrial Waste

The total production of industrial waste and of other activities in the country amounts to 17.700.000 t in 2011, of which 273,000t (1.5%) is identified as hazardous. This category excludes waste categorized in Chapter 20 of EWC. Waste derived from other activities includes waste from utility installations, public service, hazardous waste from health units, animal by-products, and waste streams such as, batteries, accumulators and industry, waste oils, used tyres and end of life vehicles.

The lack of recording (partially or in total) in specific flows leads to use of estimates to determine the waste generation of that type. The recording of generated hazardous and non hazardous industrial waste has several weaknesses-deficiencies which necessitates the estimation of total annual production of this waste.

There are two key factors in managing waste of industrial origin, which impede the application of good practices:

I. The inability to detect and record large proportion of waste generated. The declaration of industrial waste is left to the compliance of the existing legislative framework in which the businesses are obliged to fill in annual waste reports. However, they do not always fulfil their obligations.

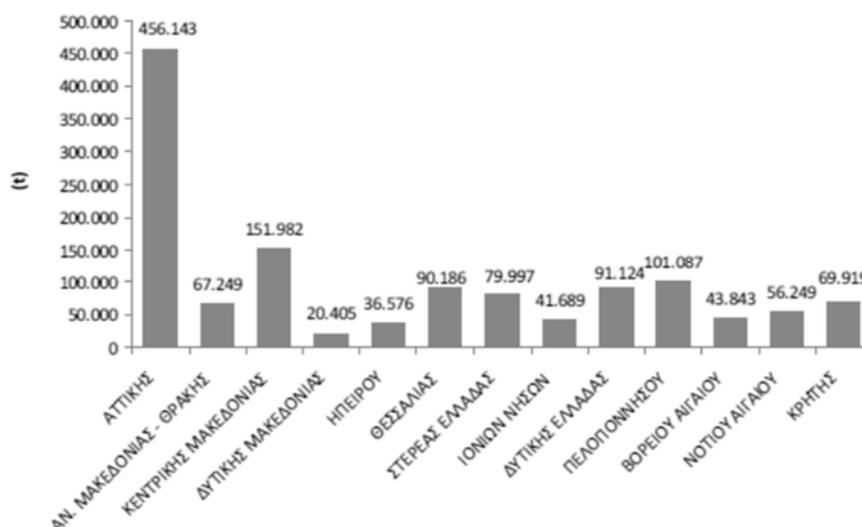
II. Inadequate management and disposal infrastructure for industrial waste has lead to the compulsory disposal via waste shipment in related facilities abroad, and thus significantly increased waste management costs for waste producer. As a result, great waste amounts are temporary stored at the premises of waste producers and/or illegal managed.

The hazardous industrial waste which is not recorded is estimated approximately 87.000 t in 2011, (30% of hazardous industrial waste). Additionally, about 20% of the produced hazardous waste is temporarily stored, which often leads to permanent storage at the premises of waste producers.

C&D waste

No detailed data are available for the total generated C&D waste. In areas where is intense residential development, particularly in Athens and Thessaloniki, the quantities of C&D waste is very high compared with other regions. It should be noted that in 2011 no official data for C&D waste collection and management, since these activities were not recorded. Some materials (cables, glass, doors frames and window frames) have been reused, while others were landfilled or disposed in uncontrolled landfill sites. As regards C&D waste from big projects, excavation materials are usually reused on site.

Figure 4: Estimated quantities of generated C&D by region (2011)



Agricultural Waste / Animal By-products

In 2011, the total estimated agricultural waste produced in the country amounted to 10.781.500 tn, of which approximately 79% are farm-waste, while crop residues and withdrawn fruits are about 21% of the total. Very small percentage (<0.1%) are the greenhouses and plastic packaging waste fertilizers.

In general, as regards the recordings of the quantities of animal by-products, inconsistencies are noticed between the generated and the managed amounts. This fact suggests possible defects and failure in monitoring methods, while the methods of recording and monitoring of Animal by-products needs improvement. Moreover, there is no systematic record of produced agricultural waste and its management practices by waste category and origin, in order to have accurate data.

3.1.4. Waste Prevention Actions in Greece

Most of the recorded waste prevention actions in Greece focus on:

- Implementation of EU funded projects (e.g. LIFE+), mainly pilot programmes on zero waste, PAYT, PPP schemes for reuse of organic and packaging waste.
- Corporate practices: plastic bag reuse, unused medicine reuse, packaging waste prevention, ecolabelled / ecodesigned products promotion, public awareness campaigns on waste prevention and reuse, C&D waste and textile reuse.
- NGO waste preventions actions: unused medicine reuse, products reuse, food saving, goods exchange.
- Ecolabelled goods

Hence, the majority of preventive actions are related to reducing MSW generation and especially paper, packaging and biowaste. Other actions are related to C&D, bulky waste (i.e. furniture), WEEE and Hazardous i.e. medicine. Also some recorded actions are for industrial waste from Cement Industries. Most of them are addressing Households, public sector, commercial activities, such as restaurants and retail trade, tourism, industry (e.g. bottling and cement) and construction.

It should be noted that most of the actions have been recently launched and have limited local application. They do not consist part of any policy. Many of them seem to be quiet popular to the public interest, while others are not particularly successful despite the effort made and the support provided. Some of them are considered as innovative, while others are related to donations and charities. However, except for those consisting part of European projects or implemented by companies, their results are not recorded. Hence, the most successful actions are related to Public Awareness.

3.2. Waste Prevention Programmes in Other EU Countries

Currently, several WPP of other EU Countries are already in compliance with the provisions of the the Waste Framework Directive and already published, e.g.:

- Austria
- Belgium (Brussels)
- England
- Finland
- Germany

- Ireland
- Luxembourg
- Poland
- Portugal
- Scotland
- Wales

Many of the waste prevention measures proposed in other National WPPs already implemented because of the provisions in older European Directives or originate from national initiatives. Nevertheless, most of proposed measures in the other National programmes derived from the provisions of 2008/98/EC, trying to achieve stricter objectives set by WFD. Regarding the effectiveness of the proposed measures by the national plans, usually waste generation projection is estimated, whereas the implemented measures are assessed. The new proposed waste prevention measures are generally evaluated at a later stage, in monitoring reports.

The waste types usually addressed in waste prevention programmes in other countries of the European Union are:

- Food / biodegradable (organic) waste
- C & D waste
- Hazardous waste

- Household / municipal waste
- Paper
- Packaging
- WEEE / batteries
- Industrial waste
- Bulky waste
- Others

The main waste streams which the Waste Prevention Programmes focus are: MSW, hazardous waste and industrial waste. Also, food, packaging and C & D waste are often examined, while other waste streams as biodegradable waste, hospital waste, agricultural waste, games or special waste (e.g. waste oils) follow.

The sectors usually covered in the waste prevention programmes are the following:

- Agriculture
- Extraction, processing of raw materials
- Construction / Infrastructure
- Manufacturing
- Trade, retail, transport

- Households
- Services (Private Sector) / Hospitals
- Public services.

Table 2 shows the targets set in waste prevention programme of other EU Countries, based on the waste stream and whether is qualitative or quantitative.

Table 2: Quantitative and qualitative targets per waste stream in other European Waste Prevention Programmes

Waste Streams	Austria	Belgium - Brussels	Finland	Luxembourg	Poland	Portugal	Germany	Sweden	Wales	England
Food Waste / Organics										
C & D Waste										
Hazardous										
Household / MSW										
Paper										
Packaging										
WEEE/Batteries										
Industrial										
Bulky										
Other										

Qualitative Target
 Quantitative Target

3.3. Setting Priorities Areas and Targets

In general, the objectives of waste prevention programme are as follows:

- Better information and public awareness in relation to waste prevention
- Promoting sustainable consumption of products
- Promoting reuse of products

Most countries with already approved waste prevention programmes set targets goals for each waste stream. In addition, several studies investigate streams of materials / waste, in order to assess the potential prevention and the consequences for prioritizing prevention (Arcadis et al 2010, EC DG Environment 2011).

Concerning the introduction of qualitative and quantitative targets, ambitious quantitative targets were set in waste prevention programmes of countries with extensive experience in prevention, such as Belgium. Most Prevention Programs that have been elaborated recently, with significant experience in waste prevention has not set specific quantified targets. Typical example is The German Federal Waste Prevention Programme, in which is stated that not having qualitative targets provides a large degree of flexibility in choosing preventive measures.

It should be noted that preventing waste in sectors/ waste producers identified in the investigation of the current situation, (i.e. tourism, industry, commerce, households) is considered more appropriate to be promoted by proposing appropriate measures / actions, rather than establishing specific targets per waste producer.

Furthermore, Municipal Solid Waste is not proposed as a whole, but only the following three distinct waste streams:

- Food Waste
- Paper
- Packaging Material / Waste.

As it is above mentioned, a significant number of existing waste prevention measures in Greece and abroad have been recorded, aiming mainly at these materials. The selected waste streams occupy a significant percentage in the composition of MSW. The food waste as part of biowaste, estimated to have a significant percentage in MSW composition. According to the literature, these priority streams have high potential for waste minimisation after the implementation of appropriate waste prevention measures. (ACR+ 2009),

Moreover, no targets were set for agricultural, industrial, C & D, hazardous waste. As regards agricultural waste, the only European country that so far has included agricultural waste in WPP [Ireland- Smarter (Resource efficient) farming] is not related to waste prevention measures, but mostly to procedures to minimize / processing waste through composting / anaerobic digestion and recycling of waste bulk packaging. Regarding industrial waste, the trends of industrial production can be affected by various factors, such as economic conditions and increase of imports. The lack of recording (partially or in total) in specific waste flows leads to use of estimates to determine the waste quantity. Improper provision of data from companies that are obliged to submit annual waste report leads to erroneous results.

Concerning C & D wastes, their generation is directly related to the economic conditions and economic growth. No detailed data are available for the total C & D waste generation just estimations. The effect of various waste prevention measures in this sector is characterized by uncertainty and is difficult to be quantified. Because C & D waste (i.e. demolition waste) is derived from infrastructure built several years ago, generated C & D waste as waste prevention indicator has reduced relevance to waste prevention actions. The promotion of sustainable building as a waste prevention measure cannot be connected to monitoring indicators (Nordic Council of Ministers 2013).

Finally, in relation to hazardous waste, the generated quantities are small in country level. Regarding Small Quantities of Hazardous Substances in Municipal Waste, and in general, it is indicated to succeed better separation from the main stream of MSW, which subsequently will lead to an increase in the recorded amounts, which were not previously identified. Thus, it is difficult to achieve quantitative target for reduction of hazardous waste.

Table 3 indicates the final selected targets set in the National Waste Prevention Programme.

Table 3: Targets set in National Waste Prevention Programme

Waste Stream	Selected Target	Target Group	Geographical and Administrative Implementation	Implementation Time
Food Waste	Promoting food waste reduction	Mainly households, but can be extended to foodservice, retail, food industry, health units, hotels and schools.	National, particularly in major urban areas	Short-term, within a time horizon of 6 years from the entry into force of the WPP

Waste Stream	Selected Target	Target Group	Geographical and Administrative Implementation	Implementation Time
Paper	Promoting reduction in paper consumption	Mainly households, schools, businesses, public services and tourist facilities		
Packaging Material / Waste	Promoting packaging waste reduction	Mainly households, schools, businesses and tourist facilities		
WEEE	Promoting Reuse of EEE	Mainly households, but can be extended to schools and public services		

3.4. Proposed Measures of the Waste Prevention Programme

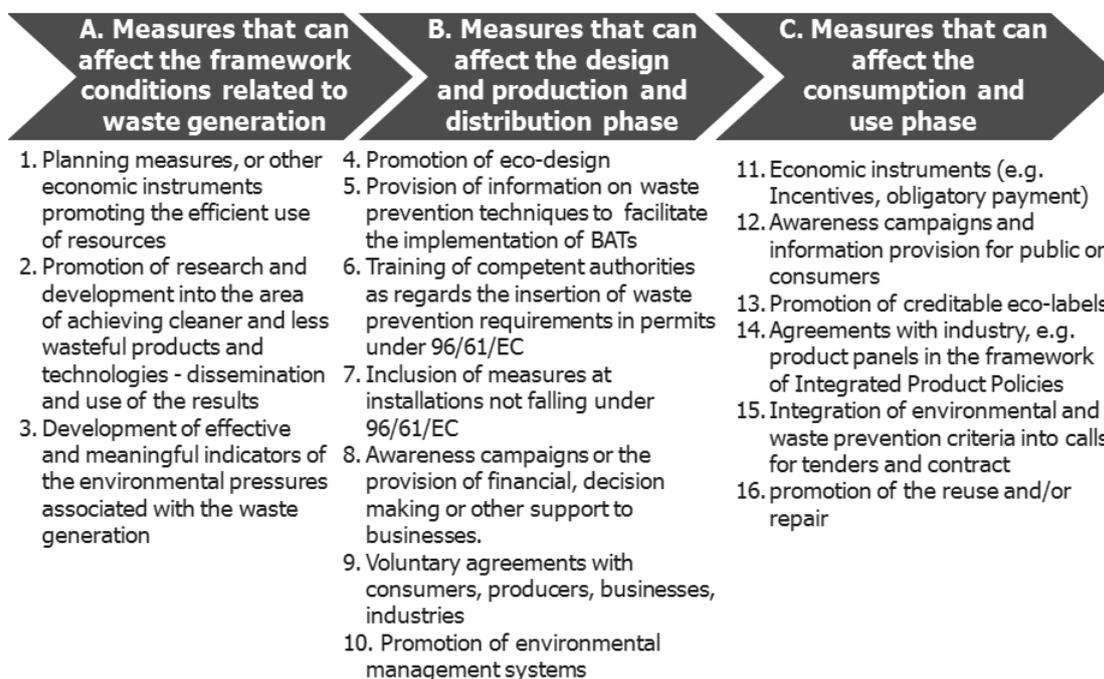
The proposed measures in the waste prevention programme are selected in order to achieve the abovementioned priorities and targets, taking into account the indicative measures presented in Annex IV of Waste Framework Directive, as it is presented in Table 4. The proposed measures to ensure that the programme put in place is well suited to the particular circumstances of Greece and that it will be widely accepted and engaging. Hence, the consultant has taken into account following issues for the selection of appropriate waste prevention measures, i.e.:

- the current situation in Greece,

- current prevention actions implemented in Greece,
- waste prevention initiatives and measures implemented in other countries.

Measures are proposed for each priority area in order to achieve the selected targets. Regarding waste prevention for clothes / textiles and hazardous (e.g. medicines, detergents) and bulky waste, it is addressed by taking measures to reduce MSW. Thus, the main proposed measures for waste prevention are Public awareness, Eco-design, Promotion of reuse, Green Public Procurement, Other waste prevention measures targeted on companies and consumers.

Table 4: Examples of measures listed in Annex IV of Directive 2008/98/EC as inserted by Law 4042/2012



The following tables present an overview of the proposed measures per priority area and target group. The numbering of the proposed measures is correlated to the numbering of each measure example indicated in Annex IV.

Table 5: Proposed General measures

Proposed General measures	Target group
Sector A. Measures that can affect the framework conditions related to the generation of waste	
Bundle of measures A1. The use of planning measures, or other economic instruments promoting the efficient use of resources.	
Measure A1.1: Development of Waste Prevention Programs by Local Authorities	Inhabitants, enterprises, local authorities and stakeholders
Measure A1.2: Development of Sectoral Prevention Programs	Enterprises, Industries, Public and Private Organizations
Sector B. Measures that can affect the design and production and distribution phase	
Bundle of measures B7. The inclusion of measures to prevent waste production at installations not falling under Directive 96/61/EC. Where appropriate, such measures could include waste prevention assessments or plans.	
Measure B7.1: Promotion of uniform waste prevention implementation at installations not falling under Directive 2010/75/EU.	Permitting Agencies, installations, enterprises, hospitals, etc.
Bundle of measures B8. The use of awareness campaigns or the provision of financial, decision making or other support to businesses. Such measures are likely to be particularly effective where they are aimed at, and adapted to, small and medium sized enterprises and work through established business networks	
Measure B10.1: Promotion of credible environmental management systems in organisations from public and private sectors and	Enterprises

Proposed General measures	Target group
expansion of current systems by inserting waste prevention concepts.	
Measures not included in Annex IV of WFD	
Recording of prevention actions	-

Table 6: Proposed measures for Food Waste

Proposed measures Priority area: Food Waste	Target group
Sector B. Measures that can affect the design and production and distribution phase	
Bundle of measures B8. The use of awareness campaigns or the provision of financial, decision making or other support to businesses. Such measures are likely to be particularly effective where they are aimed at, and adapted to, small and medium sized enterprises and work through established business networks	
Measure B8.1: Development, continuation and completion of current projects on public awareness.	Enterprises
Bundle of measures B9. The use of voluntary agreements, consumer/producer panels or sectoral negotiations in order that the relevant businesses or industrial sectors set their own waste prevention plans or objectives or correct wasteful products or packaging	
Measure B9.1: Further promotion of voluntary agreements on waste prevention	Enterprises
Sector C. Measures that can affect the consumption and use phase	
Bundle of measures C 12. The use of awareness campaigns and information provision directed at the general public or a specific set of consumers.	
Measure C 12.1: Promotion of waste prevention during buying of products and public awareness campaigns.	Consumers
Measure C 12.2: Promotion and implementation of waste prevention	Schools, teachers, students

Proposed measures Priority area: Food Waste	Target group
measures in schools, universities, etc.	
Bundle of measures C14. Agreements with industry, such as the use of product panels such as those being carried out within the framework of Integrated Product Policies or with retailers on the availability of waste prevention information and products with a lower environmental impact.	
Measure C 14.1: Promotion of agreements between industry and commerce	Enterprises, industry
Measures not included in Annex IV of WFD	
Promotion of donations of surplus foods	Public and private organizations, consumers, etc.

Table 7: Proposed measures for Paper

Proposed measures Priority Area: Paper	Target group
Sector A. Measures that can affect the framework conditions related to the generation of waste	
Sector B. Measures that can affect the design and production and distribution phase	
Bundle of measures B8. The use of awareness campaigns or the provision of financial, decision making or other support to businesses. Such measures are likely to be particularly effective where they are aimed at, and adapted to, small and medium sized enterprises and work through established business networks	
Measure B8.1: Development, continuation and completion of current projects on public awareness.	Enterprises
Sector C. Measures that can affect the consumption and use phase	
Bundle of measures C 12. The use of awareness campaigns and information provision directed at the general public or a specific set of consumers.	

Proposed measures Priority Area: Paper	Target group
Measure C 12.1: Promotion of waste prevention during buying of products and public awareness campaigns.	Consumers
Measure C 12.2: Promotion and implementation of waste prevention measures in schools, universities, etc.	Schools, teachers, students
Bundle of measures C13: The promotion of credible eco-labels	
Measure C13.1: Further promotion of eco-label "EU-Ecolabel"	Public and private organizations
Bundle of measures C16. The promotion of the reuse and/or repair of appropriate discarded products or of their components, notably through the use of educational, economic, logistic or other measures such as support to or establishment of accredited repair and reuse-centres and networks especially in densely populated regions	
Measure C 16.1: Promotion of reuse and / or repair	Public and private organizations, consumers, etc.
Measures not included in Annex IV of WFD	
Online transactions of public and private sector	Public and Private organizations

Table 8: Proposed measures for Packaging Material/ Waste

Proposed measures Priority area: Packaging and Packaging Waste	Target group
Sector A. Measures that can affect the framework conditions related to the generation of waste	
Bundle of measures A2. The promotion of research and development into the area of achieving cleaner and less wasteful products and technologies and the dissemination and use of the results of such research and development.	
Measure A2.1: Promotion of environmental research/new technologies/access to environmental information regarding waste prevention	Technological Research Institutes, SMEs, Industry

Proposed measures Priority area: Packaging and Packaging Waste	Target group
Sector B. Measures that can affect the design and production and distribution phase	
Bundle of measures B4. Promotion of eco-design	
Measure B4.1: Diffusion of information on eco-design and prevention of waste resources. Further improvement of products and provide initiatives for eco-design in waste procurement.	Product designers, manufacturers, retailers.
Bundle of measures B8. The use of awareness campaigns or the provision of financial, decision making or other support to businesses. Such measures are likely to be particularly effective where they are aimed at, and adapted to, small and medium sized enterprises and work through established business networks	
Measure B8.1: Development, continuation and completion of current projects on public awareness.	Enterprises
Bundle of measures B9. The use of voluntary agreements, consumer/producer panels or sectoral negotiations in order that the relevant businesses or industrial sectors set their own waste prevention plans or objectives or correct wasteful products or packaging	
Measure B9.1: Further promotion of voluntary agreements on waste prevention	Enterprises
Sector C. Measures that can affect the consumption and use phase	
Bundle of measures C11. Economic instruments such as incentives for clean purchases or the institution of an obligatory payment by consumers for a given article or element of packaging that would otherwise be provided free of charge	
Measure C11.1: Economic instruments for prevention of single-use plastic bags	Consumers, Super Markets, Chain stores
Bundle of measures C 12. The use of awareness campaigns and information provision directed at the general public or a specific set of consumers.	

Proposed measures Priority area: Packaging and Packaging Waste	Target group
Measure C 12.1: Promotion of waste prevention during buying of products and public awareness campaigns.	Consumers
Measure C 12.2: Promotion and implementation of waste prevention measures in schools, universities, etc.	Schools, teachers, students
Bundle of measures C14. Agreements with industry, such as the use of product panels such as those being carried out within the framework of Integrated Product Policies or with retailers on the availability of waste prevention information and products with a lower environmental impact.	
Measure C 14.1: Promotion of agreements between industry and commerce	Enterprises, industry
Bundle of measures C 15. In the context of public and corporate procurement, the integration of environmental and waste prevention criteria into calls for tenders and contracts, in line with the Handbook on environmental public procurement published by the Commission on 29 October 2004	
Measure C 15.1: Further promotion of integration of environmental and waste prevention criteria into call for tenders and contracts.	Staff of governmental sector, enterprises
Bundle of measures C16. The promotion of the reuse and/or repair of appropriate discarded products or of their components, notably through the use of educational, economic, logistic or other measures such as support to or establishment of accredited repair and reuse-centres and networks especially in densely populated regions	
Measure C 16.1: Promotion of reuse	Consumers (reusable bags)

Table 9: Proposed measures for Waste Electrical and Electronic Equipment (WEEE)

Proposed measures Priority area: Waste Electrical Electronic Equipment (WEEE)	Target group
Sector C. Measures that can affect the consumption and use phase	
Bundle of measures C 15. In the context of public and corporate procurement, the integration of environmental and waste prevention criteria into calls for tenders and contracts, in line with the Handbook	

Proposed measures	Target group
Priority area: Waste Electrical Electronic Equipment (WEEE)	
on environmental public procurement published by the Commission on 29 October 2004	
Measure C 15.1: Further promotion of integration of environmental and waste prevention criteria into call for tenders and contracts.	Staff of governmental sector, enterprises
Bundle of measures C16. The promotion of the reuse and/or repair of appropriate discarded products or of their components, notably through the use of educational, economic, logistic or other measures such as support to or establishment of accredited repair and reuse-centres and networks especially in densely populated regions	
Measure C 16.1: Promotion of reuse and / or repair	Public and private organizations, consumers, etc.
Measure C 16.2: Promotion of repair centres	Public and private companies, NGO's

Table 10: Proposed measures for waste streams not belonging to proposed priority areas

Proposed measures	Target group
Not belonging to the identified priority areas	
Municipal Waste	
Sector B. Measures that can affect the design and production and distribution phase	
Bundle of measures B5. The provision of information on waste prevention techniques with a view to facilitating the implementation of best available techniques by industry.	
Measure B5.1: provision of information to enterprises by public bodies about the potential waste prevention	Enterprises
Bundle of measures B8. The use of awareness campaigns or the provision of financial, decision making or other support to businesses. Such measures are likely to be particularly effective where they are aimed at, and adapted to, small and medium sized enterprises and work through established business networks	
Measure B8.1: Development, continuation and completion of current projects on public awareness.	Enterprises

Proposed measures Not belonging to the identified priority areas	Target group
Bundle of measures B9. The use of voluntary agreements, consumer/producer panels or sectoral negotiations in order that the relevant businesses or industrial sectors set their own waste prevention plans or objectives or correct wasteful products or packaging	
Measure B9.1: Further promotion of voluntary agreements on waste prevention	Enterprises
Sector C. Measures that can affect the consumption and use phase	
Bundle of measures C11. Economic instruments such as incentives for clean purchases or the institution of an obligatory payment by consumers for a given article or element of packaging that would otherwise be provided free of charge	
Measure C 11.2: Introduction of “Pay-as –you –throw systems”.	Inhabitants, Enterprises, Municipalities
Bundle of measures C 12. The use of awareness campaigns and information provision directed at the general public or a specific set of consumers.	
Measure C 12.1: Promotion of waste prevention during buying of products and public awareness campaigns.	Consumers
Measure C 12.2: Promotion and implementation of waste prevention measures in schools, universities, etc.	Schools, teachers, students
Bundle of measures C13: The promotion of credible eco-labels	
Measure C13.1: Further promotion of eco-label “EU-Ecolabel”	Public and private organizations
Bundle of measures C14. Agreements with industry, such as the use of product panels such as those being carried out within the framework of Integrated Product Policies or with retailers on the availability of waste prevention information and products with a lower environmental impact.	
Measure C 14.1: Promotion of agreements between industry and commerce	Enterprises, industry
Bundle of measures C 15. In the context of public and corporate procurement, the integration of environmental and waste prevention criteria into calls for tenders and contracts, in line with the Handbook on environmental public procurement published by the Commission on 29 October 2004	

Proposed measures Not belonging to the identified priority areas	Target group
Measure C 15.1: Further promotion of integration of environmental and waste prevention criteria into call for tenders and contracts.	Staff of governmental sector, enterprises
Bundle of measures C16. The promotion of the reuse and/or repair of appropriate discarded products or of their components, notably through the use of educational, economic, logistic or other measures such as support to or establishment of accredited repair and reuse-centres and networks especially in densely populated regions	
Measure C 16.1: Promotion of reuse and / or repair	Public and private organizations, consumers, etc.
Measure C 16.2: Promotion of repair centres	Public and private companies, NGO's
Industrial Waste	
Sector B. Measures that can affect the design and production and distribution phase	
Bundle of measures B5. The provision of information on waste prevention techniques with a view to facilitating the implementation of best available techniques by industry.	
Measure B5.1: provision of information to enterprises by public bodies about the potential waste prevention	Enterprises
Bundle of measures B6: Organise training of competent authorities as regards the insertion of waste prevention requirements in permits under this Directive and Directive 96/61/EC.	
Measure B6.1: Training of competent authorities in order to take into consideration waste prevention in permits.	Competent authorities.
Measures not included in Annex IV of WFD	
Industrial Symbiosis	Industries
Construction and demolition waste	

Proposed measures Not belonging to the identified priority areas	Target group
Sector A. Measures that can affect the framework conditions related to the generation of waste	
Bundle of measures A2. The promotion of research and development into the area of achieving cleaner and less wasteful products and technologies and the dissemination and use of the results of such research and development.	
Measure A2.1: Promotion of environmental research/new technologies/access to environmental information regarding waste prevention	Technological Research Institutes, SMEs, Industry
Sector B. Measures that can affect the design and production and distribution phase	
Bundle of measures B4. Promotion of eco-design	
Measure B4.1: Diffusion of information on eco-design and prevention of waste resources. Further improvement of products and provide initiatives for eco-design in waste procurement.	Products Designers, Constructors, Distributors
Bundle of measures B5. The provision of information on waste prevention techniques with a view to facilitating the implementation of best available techniques by industry.	
Measure B5.1: provision of information to enterprises by public bodies about the potential waste prevention	Enterprises
Bundle of measures B8. The use of awareness campaigns or the provision of financial, decision making or other support to businesses. Such measures are likely to be particularly effective where they are aimed at, and adapted to, small and medium sized enterprises and work through established business networks	
Measure B8.1: Development, continuation and completion of current projects on public awareness.	Enterprises
Bundle of measures B9. The use of voluntary agreements, consumer/producer panels or sectoral negotiations in order that the relevant businesses or industrial sectors set their own waste prevention plans or objectives or correct wasteful products or packaging	
Measure B9.1: Further promotion of voluntary agreements on waste prevention	Enterprises

Proposed measures Not belonging to the identified priority areas	Target group
Sector C. Measures that can affect the consumption and use phase	
Bundle of measures C 12. The use of awareness campaigns and information provision directed at the general public or a specific set of consumers.	
Measure C 12.2: Promotion and implementation of waste prevention measures in schools, universities, etc.	Schools, teachers, students
Bundle of measures C14. Agreements with industry, such as the use of product panels such as those being carried out within the framework of Integrated Product Policies or with retailers on the availability of waste prevention information and products with a lower environmental impact.	
Measure C 14.1: Promotion of agreements between industry and commerce	Enterprises, industry
Bundle of measures C16. The promotion of the reuse and/or repair of appropriate discarded products or of their components, notably through the use of educational, economic, logistic or other measures such as support to or establishment of accredited repair and reuse-centres and networks especially in densely populated regions	
Measure C 16.1: Promotion of reuse and / or repair	Public and private organizations, consumers, etc..

3.4. Proposed Actions of the Waste Prevention Programme

Following the proposed measures in National WPP, horizontal actions, along with actions for each priority area are selected, in order to achieve the selected targets. After recording the viewpoints of stakeholders during consultation process, potential actions for each measure and target (communication actions, promotion actions, regulatory actions) were selected, in major waste streams, on the main waste producers (e.g. industries, businesses, households) and sectors of the economy and society (e.g. tourism, trade, industry) and drawing of final action plan.

The following tables present an overview of the proposed actions per priority area, target group and realisation period (short/mid/long-term). Informational strategies are expected to contribute greatly to the achievement of the targets, as they are aimed to change behaviour and make informed decisions. The most feasible actions in the short term are the horizontal public awareness actions, the promotion of reuse by supporting NGOs and by the social structures in the Municipalities, the creation of a database of waste prevention actions and the elaboration of sectoral waste prevention plans. Meanwhile, Green Public Procurement and promotion of electronic transactions (e-invoicing and e-billing), both in public and in private sector, will contribute significantly to waste prevention.

Table 11: Proposed Horizontal Actions

Proposed Horizontal Actions	Coordinating Authority	Target groups
Horizontal Communication and Publicity Actions		
Logo and Corporate Identity of the National Waste Prevention Plan and / or the 'Prevention'	Ministry of Environment, Energy and Climate Change (MEECC)	All target groups
Website of the National Waste Prevention Plan	Ministry of Environment, Energy and Climate Change	All target groups
Press Office	Ministry of Environment, Energy and Climate Change	Mass media (primary target audience), Local Authorities, educational institutions, other organizations (chambers, NGOs, etc.)

Proposed Horizontal Actions	Coordinating Authority	Target groups
Polls and researches (carried out in 3 phases). The sampling will be carried out on a national level	Ministry of Environment, Energy and Climate Change	General public
<p>Awareness events, Education, Information (Conferences / Seminars / Participation in other events). The application is on central level in terms of coordination and on regional / local in implementation</p> <p>At the start of the national plan, the maximum possible information is required. However, the actions should be repeated at regular intervals in order to ensure continuity and consistency and presentation / dissemination of new "Best Practices", along with progress of the actions of the national plan</p>	MEECC in cooperation with other ministries, local Chambers & Municipalities	Private, Chambers & Unions, Education (Educational and Research Institutions)
Workshops	MEECC	Competent agencies
Mass Media involvement and utilization	MEECC	All mass media (print, electronic and broadcast media)
Publications & Productions: Informative & Promotional Material	MEECC	All target groups
Establishing synergies with other actors	MECC in cooperation with the General Secretariat for Consumer Affairs and Ministry of Administrative Reform and e-Governance	Consumers (General Secretariat for Consumers Affairs), Citizens (Citizens' Service Center)
Call Centre / Centre for Public Information	MEECC in cooperation with Ministry of Administrative Reform and e-Governance	All target groups

Proposed Horizontal Actions	Coordinating Authority	Target groups
Horizontal Promotional Actions		
Development of local waste prevention plans	MEECC / Regional Waste Management Operators / Municipalities	General public and specific groups, private (business, etc.) and public sector, education and other agencies
Development of sectoral prevention plans	MEECC in collaboration with other Ministries and Chambers	Organizations in Public and Private Sector, Business, Manufacturing
Promotion of waste prevention implementation at installations not falling under Directive 2010/75/EU	MEECC with - competent ministries as appropriate (eg Tourism, Health, Rural Development and Food, etc.)	Public and Private Sector, where appropriate (licensing authorities where appropriate, facilities, businesses, health units, etc.)
Promotion of credible environmental management systems in organisations from public and private sectors and expansion of current systems by inserting waste prevention concepts.	MEECC in collaboration with accredited verification bodies	Private Sector (Business)
Detailed recording of waste prevention actions in appropriate database	MEECC, local authorities	General public and specific groups, private (business, etc.) and the public sector, education and other agencies
Horizontal Regulatory Framework Actions		
Amendments to legislation in relation to the standards of tourist accommodation facilities	Ministry of Tourism, Ministry of Environment, Hellenic Tourism	Tourism Sector

Proposed Horizontal Actions	Coordinating Authority	Target groups
	Organisation in collaboration with other relevant Chambers	

Table 12: Proposed Actions for Priority Area - Food Waste

Priority Area - Food Waste	Coordinating Authority	Recipients - target groups
Communication and Publicity Actions		
Creation and Operation of a Website specifically for the field of Food Waste	MEECC	All target groups
Creation of accounts in social networks (Facebook, Twitter, etc.)	MEECC	All target groups
Communication actions targeted at Consumers	MEECC in collaboration with other agencies (NGOs, municipalities, etc.)	Consumers
Communication actions targeted at Businesses	MEECC MEECC in collaboration with other agencies (Chambers, etc.)	Retail chains, hospitality sector, hospitals and businesses that provide food services
Communication actions targeted at Education	MEECC in collaboration with Ministry of Education	Public and Private Universities and Schools providing food services (restaurants within institutions, student clubs, etc.) and Students in Primary & Secondary Education
Communication actions targeted at Education	MEECC in collaboration with	Armed forces feeding units, Officers's

Priority Area - Food Waste	Coordinating Authority	Recipients - target groups
	Ministry of National Defence	Clubs, etc.
Promotional Actions		
Promotion of voluntary agreements for the prevention of food waste	MEECC in collaboration with respective chambers and associations or large companies in the industry	Private Sector - Businesses in catering and tourism sector and retail trade, respectively
Promoting food donations		

Table 13: Proposed Actions for Priority area – Paper

Priority area - Paper	Coordinating Authority	Recipients - target groups
Communication and Publicity Actions		
Create special section on the official website of the National Waste Prevention Plan	MEECC	All target groups
Press releases	MEECC	Mass media – National and Local (consequently the General Public)
Enhancing EU-ecolabel communication	MEECC	
Information and Awareness Events & Meetings Books Bazaars Workshops and Informational events for businesses and Public Sector	MEECC in collaboration with other actors (NGOs, local authorities, etc.)	Consumers, Enterprises, Public Sector, Educational Community (Students & Teachers)

Priority area - Paper	Coordinating Authority	Recipients - target groups
Paper Waste Prevention Best Practice Guide for the Office	MEECC	Business (office environment), Public Sector, Universities, Chambers, NGOs
Further promotion of the paper waste prevention communication message to the public through public utility bills (electricity, water, etc.)	MEECC in cooperation with public utility companies	General public
Promotional Actions		
Promoting of reused books through coordination and promotion of events		
Promoting of reused books through reuse and repair centers	Municipalities through the creation of reuse and repair centers locally	General public and specific categories
Promoting electronic transactions, both with the public and with the private sector		

Table 14: Proposed Actions for Priority area – Packaging Materials / Waste

Priority Area - Packaging Materials / Waste	Coordinating Authority	Recipients - target groups
Communication and Publicity Actions		
Promotional Material & Productions for viewing of waste prevention Materials / Waste Packaging	MEECC	General public - consumers
Packaging Waste Prevention Best Practices Guide in Industry	MEECC	Business (office environment), Public Sector, Universities,

Priority Area - Packaging Materials / Waste	Coordinating Authority	Recipients - target groups
		Chambers, NGOs
Press Releases	MEECC	Mass media (general public) national and local
Media relations	MEECC	Mass media (general public) national and local
Further promotion/communication of the European Ecolabel (EU Ecolabel)	MEECC in cooperation with other agencies	Consumers, Enterprises, Public Sector, Educational Community
Organization of Informational and educational events and workshops	MEECC in cooperation with other agencies	Business & Industry, Department of Industrial Research & Planning Educational Institutions
Organisation of Awareness & Encouragement events for adopting of "Best Practices"	MEECC in cooperation with other agencies	Business & Industry, Department of Industrial Research & Planning Educational Institutions
Polls for recording and evaluating the change in consumer behavior regarding the use of plastic bags	MEECC	General public - consumers
Promotional Actions		
Promoting environmental research / innovative technologies / access to environmental information focusing on prevention	Ministry (and Ministry of Rural Development and Food for sub-program on innovative food packaging	Private / Public Sector and other organizations - Federation of Industries Production of Packaging Material, Chambers and professional

Priority Area - Packaging Materials / Waste	Coordinating Authority	Recipients - target groups
	technologies).	associations, research institutions for the development of technology, as well as representatives of alternative management systems.
Dissemination of information on eco-design and avoid wasting resources in product design	Ministry (and Ministry of Rural Development and Food for sub-program on innovative food packaging technologies).	Private / Public Sector and Other Organizations
Promotion of voluntary agreements for waste packaging prevention	Ministry (and Ministry of Rural Development and Food for sub-program on innovative food packaging technologies).	Private / Public Sector and other organizations - Federation of Industries Production of Packaging Material, Chambers and professional associations, research institutions for the development of technology, as well as representatives of alternative management systems.
Promoting reuse (reusable bags and packaging)	MEECC in collaboration with respective chambers and associations or large companies in the industry	Target group for application: Private Sector - Businesses in the retail sector. Final Target Group - recipient: general public

Priority Area - Packaging Materials / Waste	Coordinating Authority	Recipients - target groups
Regulatory Framework Actions		
Economic instruments for reducing quantities of single use disposable plastic bags – fee on single use disposable plastic bags	MEECC	General Public (Consumer), Private Sector (supermarkets and large chains)
Promote integration of environmental criteria and criteria to prevent waste packaging in Green Public Procurement	MEECC	Public Sector (implementation), Private Sector(business)

Table 15: Proposed Actions for Priority Area – Waste Electrical and Electronic Equipment (WEEE)

Priority area – Waste Electrical and Electronic Equipment (WEEE)	Coordinating Authority	Recipients - target groups
Communication and Publicity Actions		
Dissemination of Information on Reuse and Repair Centers	MEECC, local authorities	Media, general public, Businesses, Universities, Public Sector
Organisation of Workshops for Potential Partners in Reuse and Repair Centres	MEECC, local authorities, chambers	Professionals
Harnessing the 'synergy' of MEECC with the General Secretariat for Consumer Affairs	MEECC with General Secretariat for Consumer Affairs	Consumers
Promotional Actions		
Promoting the reuse of EEE in Municipalities through social structures and partnerships with NGOs	Municipalities	General public and specific groups, other

Priority area – Waste Electrical and Electronic Equipment (WEEE)	Coordinating Authority	Recipients - target groups
		organizations (NGOs, etc.)
Promoting the reuse of EEE in reuse and repair centers	MEECC, local authorities	Public and private agencies, private and non-profit initiatives
Create guides for the reuse and repair operations and adoption model for the reuse of EEE	MEECC, research institutes	Centers reuse and repair businesses engaged in repair of EEE
Regulatory Framework Actions		
Promote integration of environmental criteria and criteria prevention of WEEE in tenders and contracts	Ministry	Public Sector (personnel carriers), Private (business)

Table 15: Proposed Actions for waste streams not belonging to proposed priority areas

Not belonging to the identified priority areas	Coordinating Authority	Recipients - target groups
Municipal Solid Waste		
Communication and Publicity Actions		
Create dedicated section on the official website of the National Waste Prevention Plan	MEECC	All target groups
Social Networks (Facebook, Twitter) and prevention of MSW	MEECC	All target groups
Further promotion/communication of the European Ecolabel (EU Ecolabel) in the context of aid reduction Municipal Solid Waste	MEECC	Consumers, Enterprises, Public Sector, Educational Community
Dissemination of Information on Reuse and Repair Centers	MEECC	Mass media (national and local)

Not belonging to the identified priority areas	Coordinating Authority	Recipients - target groups
Media Relations	MEECC	Mass media (national and local)
Promotional Actions		
Promoting the reuse of clothing, furniture and other goods through reuse and repair centers	Municipalities	General public and specific groups
Coordination via the municipalities of used products promotion within their jurisdiction – Setting a department within the Municipalities for coordinating and implementing actions regarding EEE reuse and communication with NGOs	Municipalities	Other organizations (NGOs, social groceries), the general public and specific categories
Regulatory Framework Actions		
Investigation of possible Implementation of 'pay as you throw' system in Greece	MEECC in collaboration with Regional Waste Management Operators and Municipalities	Responsible for implementation - Public Sector (Municipalities), Final Recipient - General public (residents)
C&D (Construction and demolition waste)		
Communication and Publicity Actions		
Informing the local community on C&D waste and provide guidance for the proper implementation of preventive measures through the distribution of leaflets	MEECC in cooperation with Hellenic Recycling Organisation, local authorities	Local community
Workshops/events for industries, businesses, and professionals associated with the generation of C&D waste	MEECC in cooperation with Hellenic Recycling Organisation, local authorities and chambers	Industries producing construction materials (cement, steel, etc.), C&D transportation businesses, C&D producers (contractors, builders, etc.)
Educational seminars for employees in businesses related to	MEECC in	Employees

Not belonging to the identified priority areas	Coordinating Authority	Recipients - target groups
the production and management of C&D waste	cooperation with Hellenic Recycling Organisation, local authorities and chambers	
Promotional Actions		
<p>Organisation of meetings between stakeholders involved in the construction industry, consultants and engineers, research and educational institutions , collective C&D waste management systems under the coordination of MEECC and setting up of working groups</p> <p>Setting a strategy and action plan for sustainable construction and C&D waste prevention and creation of website creation / platform to provide tools</p> <p>Promoting environmental research / innovative technologies / access to environmental information , with emphasis on prevention - Planning and funding pilot projects to develop innovative and low- waste production technologies and support pilot programs that promote innovation in sustainable construction and waste prevention cooperation with research institutes</p> <p>Dissemination of information on eco- design (Developing teaching materials and eco-design tools, database of building materials to optimize material selection, eco-design guidelines and presentation of those tools on the online platform)</p> <p>Promotion of voluntary agreements for waste prevention</p> <p>Promotion of integration of environmental criteria and criteria to prevent waste in tendering and contracting (Coordination of working groups on the Action Plan for</p>	MEECC	Stakeholders involved in the construction industry, consultants and engineers, research and educational institutions , collective C&D waste management systems

Not belonging to the identified priority areas	Coordinating Authority	Recipients - target groups
<p>Green Public Procurement with the working groups on sustainable construction, conduction of research programs to expand the evaluation criteria, investigation of the viability of developing a nationwide LCA methodology, elaboration of guidelines and development of a database)</p> <p>Planning and funding of pilot programs (creating a network for the supply of reused materials, certification of reused materials)</p>		
Industrial Waste		
Promotional Actions		
<p>Promotion of industrial symbiosis</p> <p>Organisation of meetings with involved stakeholders and immediate setting up of working groups in order to identify opportunities to promote and finance industrial symbiosis in Greece</p> <p>Exploration of possibilities for coordination of synergies at national level (Setting of a National Program for Industrial Symbiosis or an Agency or other)</p>	<p>MEECC in collaboration with the General Secretariat of Industry and the General Secretariat for Research and Technology (National Coordinator for the program "Horizon 2020")</p>	<p>Local Trade and Industry Chambers, Research Institutes. Final beneficiaries: Industrial Enterprises</p>

As regards the monitoring plan for the waste prevention, which it will propose specific control methods and suitable indicators for monitoring the implementation of the programme, is currently under elaboration and it has not been completed. Hence, it is preferred not to include any finding from the preparation of that plan, which is not finalized or approved by the Contracting Authority.

4. CONCLUSION

The National Waste Prevention Programme provides guidance how to promote waste prevention, by setting clear objectives, measures and actions with a time horizon of at least six following years. It complies with the directions of the Greek and EU legislative framework for waste management by following the provisions of the Framework Directive on waste 2008/98/EC and the Law 4042/2012.

For the preparation of the Programme, other related literature and actual national plans for waste prevention prepared by other European Countries were examined. For the analysis of current situation the following parameters were thoroughly assessed latest socioeconomic conditions, current waste prevention initiatives in Greece and other European countries, provisions and obligations derived from legislation, trends in waste generation and waste management practices in Greece.

Currently, waste prevention actions in Greece focus on reducing MSW generation, i.e. paper, packaging and biowaste. Other actions are related to C&D, bulky waste, WEEE and Hazardous waste. Some actions recorded are for industrial waste. The most of the actions have been recently launched and have limited local application, without recorded results. They do not consist part of any policy.

After evaluating all existing data, priorities and targets were taking into consideration the principles for waste prevention and resource efficiency. The targets per priority area set in the National Waste Prevention Programme are the following:

- Food Waste – Promoting food waste reduction
- Paper – Promoting reduction in paper consumption
- Packaging Material / Waste – Promoting packaging waste reduction

- WEEE – Promoting Reuse of EEE

The proposed measures in the waste prevention programme are selected in order to achieve the abovementioned targets, taking into account the indicative measures presented in Annex IV of Waste Framework Directive. Relevant stakeholders were proposed, along with their roles and level of involvement in the Programme. After recording the viewpoints of stakeholders during consultation process, potential actions for each measure and target (communication actions, promotion actions, regulatory actions) were selected, on major waste streams, on the main waste producers (e.g. industries, businesses, households) and sectors of the economy and society (eg. tourism, trade, industry).

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