

## **DOCUMENTATION AND POLICY BRIEF RECOMMENDATIONS DEVELOPMENT RELEVANT TO FOOD WASTE MANAGEMENT FOR NGOS AND POLICY MAKERS**





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## 1. Introduction

### 1.1. About the project

Main idea of the project “SAVE 4 WASTE” is to focus on piloting actions upon food waste prevention, management and reduction, and to foster students’ ability to think critically and to adopt a proactive attitude by:

- Raising students’ awareness of the problem of food waste – increasing their knowledge about reasons for and impacts of food wastage.
- Pointing them towards specific options for actions that are within their sphere of influence by teaching them new skills related to evaluation of food quality and understanding proper food storage, food preservation options, and so on.

Food waste is a recognized problem that has gained political, economic, and social importance in recent years. Numerous high-level political statements formulated in the last decade express the need to combat food waste. It is generated all along the food supply chain at the stages of production, processing, retailing and consumption. Food waste can be defined in many ways and there is no unique methodology for measuring it. Nevertheless, it is generally recognized that, at global level, around one third of the food produced for human consumption is wasted or lost. Food loss is defined as the decrease in quantity or quality of food. Food waste is part of food loss and refers to discarding or alternative (non-food) use of food that is safe and nutritious for human consumption along the entire food supply chain, from primary production to end household consumer level. FAO defines food waste as food which was originally produced for human consumption but was not consumed by humans, instead it was directed into a non-food use (for humans), feed for animals or waste disposal (FAO, 2014).

Most of the systemic challenges of eliminating food waste stem from certain mind-sets and approaches that in turn come from the loss of our value for food. For many people, it is so accessible that we hardly think about it. Would it not be better to start changing mind-sets with our youngest and their schools? Schools are uniquely positioned to help change the culture around food waste management and they can be the drivers for a more thrifty, efficient, and resourceful use of food. Today’s students are tomorrow’s food decision makers. Consequently, students as the generation of the future are the most important people to reach when addressing change in behaviour that affects our resources like solid, water, nutrients wasted along with food. It is considered as vital to take pilot actions in high schools.

“SAVE 4 WASTE” (S4W) promotes awareness regarding the economic, social, and environmental consequences of food waste, highlighting actions and habits that people can take to reduce their own food waste. The project develops a curriculum and piloting actions which enable teachers to select those activities that best match the needs, abilities and interests of their students while also conforming to time and resource constraints. Educate and



engage the school community, communicate and celebrate food waste management good practices are more important than ever. The pedagogical advantages of initiatives focusing on recycling and composting are multitude. In particular, students can learn by practicing, interacting and expressing their creativity, being aware that the topic of waste is also relevant to their life and the environment outside their schools. What students learn at school has an enormous potential to be immediately applied. S4W project is based on composting method as it is an easy-to-perform, natural process that transforms organic waste into compost, a valuable and nutrient-rich natural fertilizer to be applied on a school's garden, and also on 9 circular economy 'R' strategies or principles, referred to the 9 R's, as it has been proposed by EU. Finally, the project encourages students to implement mini projects led by them in cooperation with their teachers to find ways to prevent and reduce food waste in their classrooms.

## 1.2. About the Intellectual output – PR2

Project Result 2 (PR2) “Documentation and policy brief recommendations development relevant to food waste management for NGOs and Policy Makers” is a good sample for the new approach towards establishing of strategic partnership in transnational cooperation among different socio-economical organizations (local bodies, educational institutions, civil sector representatives and SMEs) with the aim to ensure implementation of innovative and good practices related to food waste management and environment protection in educational process.

With the development of the Action plan contained hereafter a variety of innovative education methods as well as good practices are taken into consideration as a possibility for improvement of education processes in project partners' primary schools but at the same time, the foreseen activities are based on project ideas suitable for implementation by other primary schools at local, regional and national level, public administrations, research organizations and NGOs. The document is available for free online downloading from project website and Erasmus+ Programme website by any interested stakeholders and will be presented on each of the Final National Dissemination events.



## 2. Policy regulations for food waste management in Bulgaria, Greece, and North Macedonia

### 2.1. Bulgaria

Bulgaria's waste management policy is laid out in the following documents: National Waste Management Plan 2014-2020, National Waste Management Plan 2021-2028, National Strategic Plan for Step-by-Step Reduction of Biodegradable Waste, intended for landfill 2010-2020, the Food Act, the Waste Management Act and also a number of local laws and regulations. All these documents affect production, ways to prevent and manage biological waste, set requirements for producers and traders or regulate food donation activities to food banks.

In Bulgaria (as well as in the other EU member states), precise data on the generation of food waste by sector are not yet available, according to the pan-European methodology adopted in 2019. However, based on data from the Executive Environment Agency (EEA) and considering Ordinance No. 2 on classification of waste, estimates were made for the amount of food waste in the country.

The chart below summarizes food waste volumes for 2018 in Bulgaria.

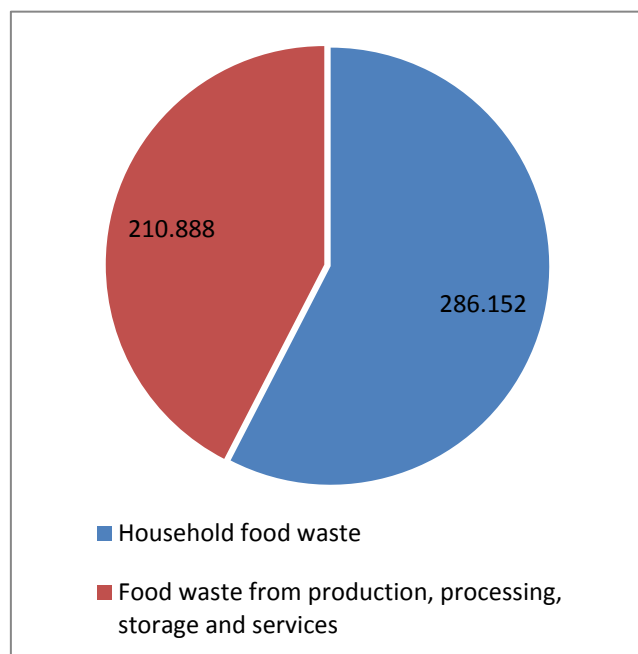


Figure 1: Food waste volumes for 2018 in tons, Source: EEA data

The total amount of food waste in the country in 2018 amounted to nearly 500,000 tons, of which nearly 57% was food waste of a domestic nature.

It should be noted that the amounts of the latter do not include the potential amounts of food waste, which can be assumed to be contained in the "fine fraction <4cm" (which is reported in the National Methodology for Morphological Analysis of Household Waste).

The diagrams below summarize the data on the formation of food waste by sector in Bulgaria and in the EU-28 (average results).

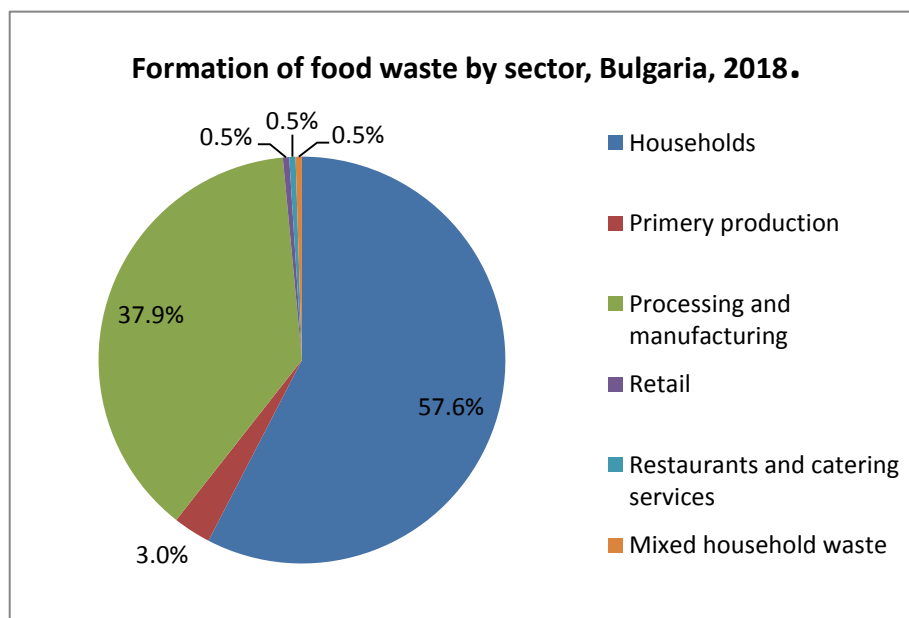


Figure 2: Formation of food waste by sector, Source: EEA data

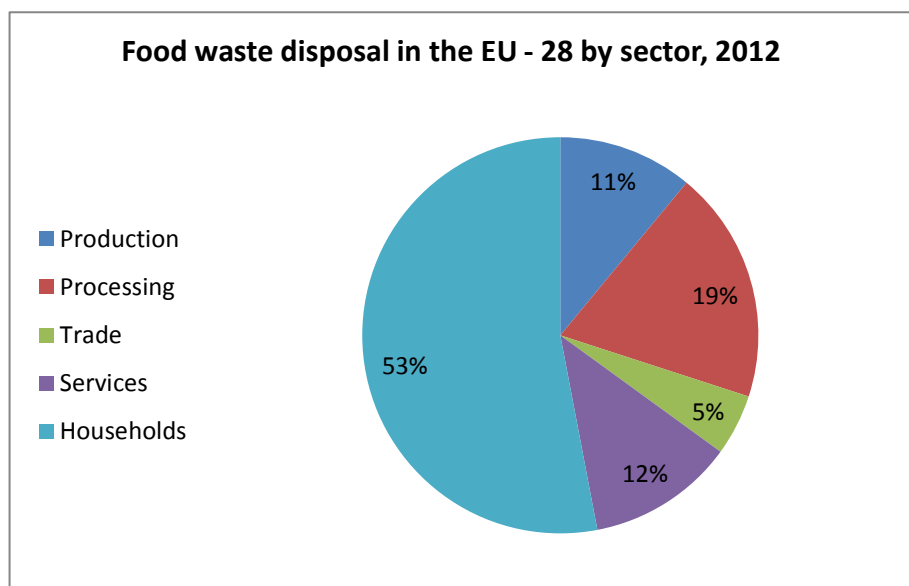


Figure 3: Food waste disposal in the EU, Source: FUSIONS

As can be seen from the comparison, households are the main source of food waste generation both in the country and in the EU, followed by the food processing and production sector.



That is why the reduction of the amount of food waste is necessary for all sources of formation and especially food waste of a domestic nature and from food processing and production.

Comparative data on food waste generation is presented in the EC Joint Research Centre's report "Waste Prevention in the Circular Economy: Analysis of Strategies and Sustainable Goals. Example of food waste" 2016. The table below shows the rate of food waste generation per capita in the EU and in Bulgaria

**Volumes of food waste generated**

<b>Research</b>	<b>Year</b>	<b>Food waste generated per capita</b>
EU member states	2012	127 kg
Bulgaria	2016	94 kg

The value for Bulgaria, determined on the basis of the average annual population for 2016 in the country, is more favorable than the average of the member states of the study, but regardless of this, targeted policies and measures to prevent food waste are needed.

In December 2019, the EU Platform on Food Loss and Waste developed Recommendations for action to prevent food waste. The main objective of food waste prevention should be to act at the source, limiting the generation of surplus food at each stage of the food chain (production, processing, distribution and consumption). If such a surplus occurs, to utilize and ensure the highest utilization of food resources in accordance with the hierarchy of food waste prevention. Food surplus prevention and social redistribution are forms of prevention where food remains in the food chain for human consumption. Bulgaria's national program for preventing and reducing food loss covers prevention at the source and donating food to people in need.

Produced food products that cannot be sold or realized but are safe and can be used to produce other foods or redistributed for human consumption and thus remain in the food chain are not considered food waste (for example, processing unsold but safe-to-eat bakery products into breadcrumbs or donating them for consumption by people in need).

In 2017, less food was donated in quantity, but with a higher value. The Bulgarian Food Bank cites as the main reason for this the provision for the marking of donated food, which implies a serious commitment on the part of the business, related to the investment of additional resources - money, time, human labor and, accordingly – with the occurrence of new costs resulting from the additional marking. In addition, when it comes to food with a very short shelf life, time is a critical factor and it is important that the food reaches those in need quickly, risk-free and safely.



The "Bulgarian Food Bank" Foundation was registered on 06.04.2017 with the Bulgarian Food Safety Agency as a food banking operator. Since March 26, 2019, the non-profit association "VERNIAT NASTOYNIK" has been registered as a food bank operator in Bulgaria. With the help of a network of partner organizations and volunteers across the country, food is distributed to thousands of people in need, but it can become even more effective if some institutional and regulatory obstacles are overcome. Considering the accumulated vast experience and created capacity in the area under consideration, it is recommended that the bank's activities continue, which is possible and recommended to be carried out with the financial support of the activity through the Fund for European Assistance to the Neediest Persons and food donations through the national Food Program 2021-2027. The fund has special provisions that allow financing in the area under consideration. In fulfillment of the requirements of Art. 103, para. 1 of the Food Act, a public register of the issued permits for food bank operators is available on the website of the Bulgarian Food Safety Agency. In fulfillment of global goals and European policies regarding food waste, the Ministry of Agriculture has developed a project of a National Program for the prevention and reduction of food loss, which will include measures for food loss and waste from the "farm" to the "table".

In some Member States, little or no VAT is payable on food donations to food banks, as national authorities consider, in accordance with Article 74 of the VAT Directive as transposed into national law, that the value of the donated food shortly before the expiry of minimum shelf life/expiry date is little or no. Other EU member states, on the contrary, consider that the price of a ready-to-donate product is identical to its purchase price in normal commercial transactions. VAT is thus calculated on the basis of the commercial price with negative consequences for food donation.

The findings of the European Economic and Social Committee's (EESC) comparative study on food donation legislation and practices show that most of the Member States examined do not charge VAT on food donated to food banks, provided that certain conditions are met. From the EESC's study, as well as from additional data provided to the Commission by Member State experts, it is clear that Belgium, Germany, Greece, Denmark, Italy, the Netherlands, Poland, Portugal and Croatia have introduced special provisions in their own tax legislation, to address the issue of VAT in relation to food donation.

In response to a question from the European Parliament, the EC expresses the opinion that the donation of food to food banks and other charitable organizations should not be hindered by tax obstacles. In accordance with the guidelines approved by the EU VAT Committee, the Commission recommends that when determining the VAT on donated food, the value of the goods should be adjusted depending on the circumstances and their condition at the time of donation. Where the donation of food takes place shortly before the end of the minimum durability/use by date or where the goods are not fit for sale but can be consumed safely, these circumstances should be considered by Member States when determining the VAT due, which can even be zero in cases where the food actually has no value.





The food distributed by the partner organizations can be purchased with funds from the Fund for European Aid to the Most Deprived and Food Donations (FEAD), but can also be donated. A FEAD operational program may provide funding for food donations, where food is donated to a partner organization and distributed free of charge to those most in need. The costs of the partner organizations for the collection of the food donated by the donor and for its transportation, storage and distribution to the neediest persons may be covered by funds from FEAD. In this way, FEAD can contribute to reducing food waste

Determining expiration dates ("use by") and minimum durability ("best before") is the responsibility of food manufacturers. With the exception of table eggs, EU legislation does not specify the ways in which the marking of dates is determined (i.e. the choice of the expiry date ('use by') and minimum durability ('best before') or the shelf life of the product). While consumption of foods past the expiration date may raise safety concerns, after the minimum shelf life ("best before") date, foods are still safe to eat, provided storage instructions are followed and the packaging is not damaged. Regarding the minimum durability period ("best before"), manufacturers guarantee the quality of the food (e.g. crispness, color, taste...) and compliance with the label (e.g. nutritional claims regarding the level of vitamin C in a food) until the expiry date of the minimum shelf life.

With respect to the donation of food with a marked expiration date ("use by"), donors should ensure sufficient shelf life when delivering such products to food banks and other charities to ensure their safe distribution and use by the end user before the stated expiry date. The marketing of foods with an expired minimum durability date ("best before") is permitted under EU rules and national legislation, provided that the foods concerned are still safe and their presentation is not misleading.

The *National Waste Management Program in Bulgaria 2021-2028* sets the following goals:

- Strategic objective

Breaking the link between economic growth and improving people's well-being, on the one hand, and on the other - the increase in the formation of food waste and the related harmful impact on people's health and the environment.

- Operational objective

Reducing the amount of food waste generated

- Actions/Measures

It is envisaged that the goals will be achieved through specific measures/activities, which are presented in the Action Plan for this program.



The main actions/measures are formulated as a result of the review of recommendations, guidelines, legislative acts at the European level, based on a review of good practices in the area under consideration, as well as the situation in the country.

At present, there is no methodology implemented in Bulgaria for measuring food waste from sources other than households. Also, at the national level, there is no effective strategic framework for preventing the formation of food waste with relevant measures and actions that cover all stages of the food chain - primary production, food processing, wholesale and retail trade, public catering and households.

Food loss and waste has a social and ethical dimension. According to the FAO, about 793 million people in the world are undernourished. According to Eurostat data, in 2014 in the EU, 55 million people (9.6% of the population) could not afford quality food every second day. For 2017, data from the National Statistical Institute (NSI) show that 31.6% of Bulgarians cannot afford to eat meat, chicken or fish every second day, and that more than half of Bulgarians do not eat a nutritious diet. 23.4% of the country's population was below the poverty line, and 29.2% of children aged 0-17 in Bulgaria are at risk of poverty.

To successfully reduce consumer-related food waste, it is necessary to know the factors influencing consumer perceptions and behavior towards food. Consumers' motivation to avoid food waste, as well as their skills in managing food purchases and food preparation, have a large impact on their food waste behaviour. Of particular importance are a number of factors related to awareness, knowledge and abilities that determine whether, how and to what extent consumers can manage food supply and food preparation, and whether to use or dispose of leftover (surplus) food. It is extremely important that the problem of food loss and waste be introduced for consideration in school education, in the educational programs of secondary and higher education in the field of the food industry, as well as in the training programs of the sites of food production, processing and distribution.

In its *Regional Waste Management Program*, the Province of Pazardzhik and its comprising municipalities are increasingly taking a responsible approach to biodegradable waste, part of which is also food waste. "Biodegradable waste" is all waste that has the ability to decompose anaerobically or aerobically, such as food and vegetable waste, paper, cardboard and others.

Biodegradable waste has a different percentage and composition in the total mixed household waste, depending on the type of settlement. Of the total composition of household waste, almost 40-50% is a biodegradable fraction, which in turn causes rapid decomposition processes, accompanied by the release of methane, the formation of leachate, the release of unpleasant odors, the creation of a nutrient environment for the breeding of insects and other pests. At the moment, a program for home composting has been introduced only in the municipality of Velingrad. The program has been operating since 2002 under the pilot project "Composting in the family yard", financed by Enterprise for the management of environmental protection activities (EMEPA). On the territory of Pazardzhik district from



2020. there is a modern landfill for waste separation and composting, which has three installations.

According to the municipal ordinance on waste, bio-waste as well as waste from green areas are treated by composting or anaerobic digestion in a way that ensures a high degree of environmental protection.

On the territory of the municipality, a waste collection campaign is organized every year, and in exchange for the delivered waste, citizens can receive flowers, saplings or decorative bushes.

## 2.2. Greece

In today's era, while food crises are raging in an increasing number of countries around the world, approximately one-third of the food produced globally for human consumption is lost or wasted.

The primary goal of the United Nations (SDG 12.3) is to halve per capita global food waste by 2030. Member states are required to take measures to prevent and reduce food waste.

In this context, the European Commission approved an action plan in 2015 to support the acceleration of Europe's transition to a circular economy, enhance global competitiveness, promote sustainable economic development, and create new jobs. The action plan includes 54 measures to "close the loop" of product life cycles, from production and consumption to waste management and the market for secondary raw materials. It also identifies five priority areas where the transition will be accelerated throughout their entire supply chains (plastics, food waste, critical raw materials, construction and demolition, biomass, and bio-based materials).

This transition is financially supported by the European Structural and Investment Funds, the Horizon 2020 program, the European Fund for Strategic Investments (EFSI), and the LIFE program. The action plan also promotes close cooperation with member states, regions, municipalities, businesses, research institutions, citizens, and other stakeholders involved in the circular economy (EC, 2020). In 2020, the European Commission adopted a new action plan for the circular economy as one of the key elements of the European Green Deal, Europe's new agenda for sustainable development.

In Greece, in December 2018, the Ministry of Environment and Energy published the National Strategy for the Circular Economy, which aligns with the European strategy. This plan includes actions and interventions in regulatory and legislative provisions, incentives and financing, as well as raising awareness among businesses and society to actively participate in and promote the Circular Economy plan (Liogas, 2018).

The main tools shaping the national waste policy are the Framework Law on Waste (4819/2021), the National Waste Management Plan (ESDA) 2020-2030, and the National Waste Prevention Program.

The following diagram presents the results from the 1st annual report submitted to the EU by the Ministry of Environment. Specifically, in Greece for the year 2020, 2.05 million tons of food waste were generated, sourced as follows:

- 45% from households
- 18% from primary production
- 18% from processing and treatment
- 7% from distribution
- 11% from food service

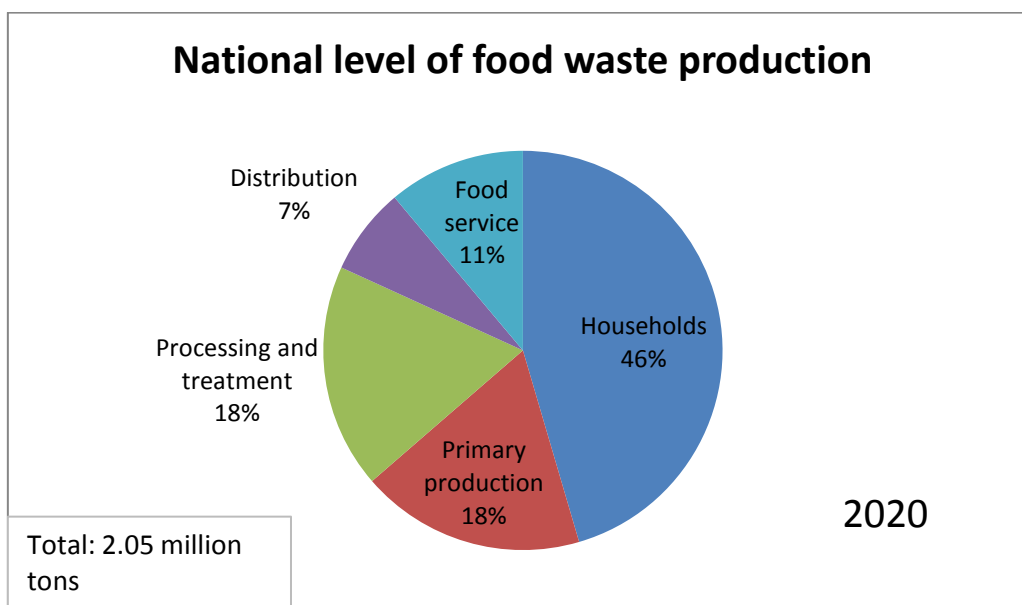


Figure 4: National level of food waste production

The Framework Law on Waste (4819/2021)

In 2021, Law 4819/2021 – Government Gazette 129/A/23-7-2021 "Integrated framework for waste management" was published in the Official Gazette of the Government. It represents a significant institutional reform that incorporates European Directives and harmonizes the provisions for proper waste management, including recycling and circular economy. The draft law introduces preventive measures to reduce food waste and encourages the use of surplus food suitable for human consumption through incentives for donation.

The target for reducing food waste by 2030 is set at 30% compared to 2022. To achieve this goal, several businesses such as food processing and treatment units, supermarkets, hotels,



large restaurants, food service establishments, etc., are required to adhere to the waste hierarchy in the following order of priority:

1. Prevention
2. Preparation for reuse
3. Recycling
4. Other forms of recovery, such as energy recovery
5. Disposal

Additionally, a database is being created to record food waste, enhancing the digitalization of waste data in the country. Obligated businesses will annually register their food waste in a specific section of the Waste Electronic Registry (WER), but the establishment of national guidelines with the appropriate methodology for calculating such waste is pending.

The new framework law establishes the appropriate framework for:

- Preventing the generation of food waste
- Imposing obligations on businesses involved in the food industry
- Creating an electronic monitoring platform for generated food waste and surplus food recorded by obligated businesses
- Encouraging food donation and redistribution for human consumption through the determination of obligations for donors and recipients, expanding tax incentives for food donation, etc.
- Providing educational material for primary and secondary school students in collaboration with the Ministry of Education and Religious Affairs.

The diagram below illustrates the hierarchy of food waste according to Law 4819/2021.

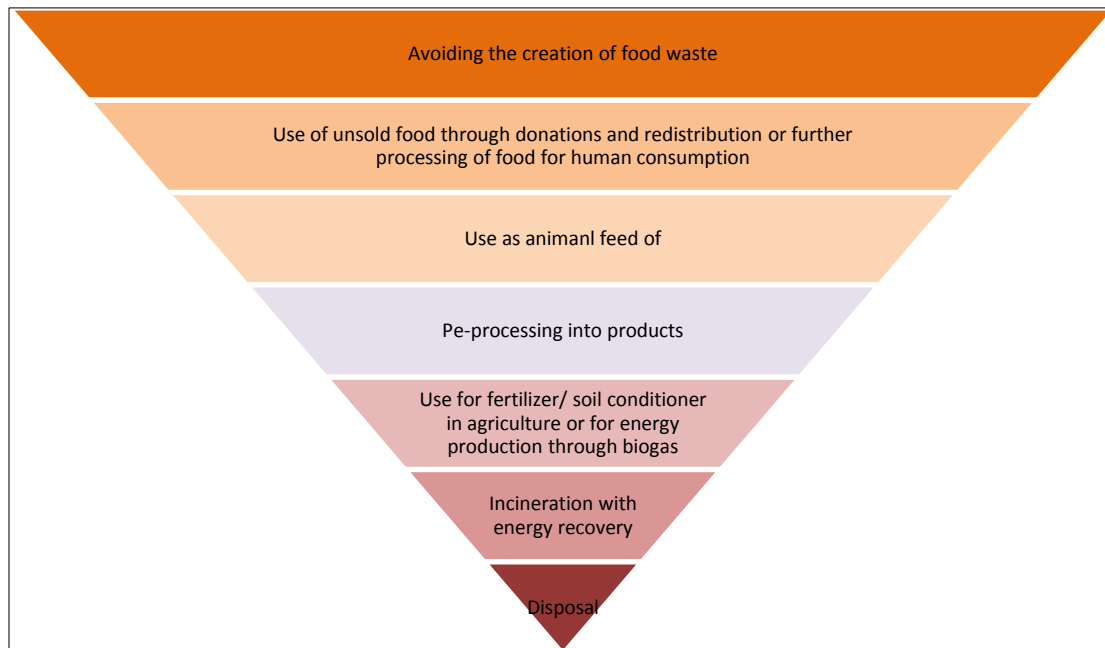


Figure 5: Hierarchy of Food Waste-Law 4819/2021

### National Waste Management Plan (NWMP) 2020-2030

The NWMP establishes the policies, strategies, axes, as well as the qualitative and quantitative waste management targets, while also setting out the action axes and measures to achieve the goals set by both national and EU legislation for waste management. It is developed by the Ministry of Environment and Energy and approved by the Ministerial Council.

The new NWMP (2020-2030) has set goals that align with the targets of EU directives, which are also objectives of measures for the circular economy, especially the increase in preparation for reuse and recycling of Municipal Solid Waste (MSW) by at least 55% by weight by 2025 and 60% by weight by 2030. Additionally, the goal is to minimize landfilling to 10% of generated MSW by 2030. To achieve these goals, the NWMP includes specific measures and identifies the responsible authorities for their implementation, such as:

- Separate collection of new waste streams
- Source separation
- "Pay as You Throw" principle
- Strengthening and upgrading of Recycling Centers for Recyclable Materials (RCRM)

Furthermore, programs for citizen information and awareness are planned, which are prerequisites for the successful implementation of the national plan.

In 2022, the NWMP was amended to adapt to new developments in the circular economy and recent changes in the financing criteria for waste management infrastructure, in order to



secure funding for the infrastructure from the European Structural and Investment Funds (ESIF) for the period 2021-2027.

### National Waste Prevention Program

One of the key priorities and actions of the Ministry of Environment and Energy, promoted through the National Waste Prevention Program, include:

- Food Waste (accounting for approximately 37% of municipal waste)
- A series of legislative and non-legislative measures aimed at preventing and reducing the generation of food waste during primary production, processing, retail trade, and other forms of food distribution.

The Ministry of Environment and Energy has enacted a series of relevant legislative regulations. In June 2021, the new National Waste Prevention Program for the period 2021-2030 was approved by the Ministerial Council, according to which "food waste" is now a priority stream, in full compliance with the requirements of the revised Waste Framework Directive.

Given the significant importance of taking actions for the prevention of food waste generation, the National Program foresaw the development of a specific prevention program, which was implemented as part of the European project LIFE IP CEI Greece "Implementation of the Circular Economy in Greece."

Through the LIFE program, the following are promoted:

- Development of methodology and measurement of food waste generation
- Creation of a platform for redistributing food waste
- Best practices and actions for food waste prevention

Already in 2022, a special platform was developed in the Electronic Waste Registry (EMEA) for recording food waste (quantities of the years 2020 and 2021) from specific categories of activities, such as food processing industries, fish farming, livestock farming, and poultry farming units. The platform is further evolving in order to include all activities provided for by Law 4819 by 2023.

It is worth noting that the initiative "Alliance for Food Waste Reduction" is under the auspices of the Ministry of Environment and Energy, in which public authorities, professional bodies, food and catering businesses from all stages of the supply chain, civil society organizations, and academic and research communities participate. The goal of the Alliance is to coordinate efforts to limit the impacts of food waste on the environment, the economy, and society as a whole.



### 2.3. North Macedonia

Waste management is one of the most serious environmental problems in Macedonia. The general waste management policy, in order to overcome the situation and establish a sustainable waste management system, was established in the Law on the Environment, in the National Environmental Action Plans (NEAP 1996/2007) and features in the Law on Management with waste. The Law on Waste Management in new waste management policy documents: Waste Management Strategy, National Waste Management Plan and Waste Management Programs. Certain policy initiatives contained in the NEAP (2007) are closely related to projects related to the Kyoto Protocol, based on the Clean Development Mechanism. But the existing arrangement of policy and legislation at the national level are insufficient in several areas to meet the requirements of the waste sector.

The basic national legislation on waste management consists only of the Law on Waste Management, which is a basic legal act and prescribes the general rules that apply to the basic issues related to waste and hazardous waste; it also provides a legal basis for the adoption of a number of by-laws, but some of them are missing or have been adopted in the form of regulations or guidelines. The Law on Waste Management has important links with other legal acts that regulate the tasks and competencies in relation to organizational and operational issues in the field of waste management, especially with the Law on the Environment, which contains basic provisions on environmental permits, the procedure for assessment of environmental impacts, greenhouse gas emissions.

Collection, transport and disposal constitute the main regular method of disposal of almost every fraction of waste. Existing waste treatment and disposal facilities and facilities are inadequate, legislation and standards are not effectively applied, and current waste management practices contribute to air, water and soil pollution. The total amount of waste generated, including mining waste, is estimated at about 26 million tons/year. The main fraction of waste comes from mineral mining and ore processing (about 17.3 million tons/year); the management of this waste is regulated by the Law on Mineral Resources. But this group of waste contains significant amounts of dangerous ingredients, and improper disposal causes the most obvious consequences for the environment. Agricultural waste with about 4.9 million tons/year of animal feces and with about 0.6 million tons/year of plant waste represents the second largest fraction of waste, mainly named as by-products, ie. these types of waste represent the fractions that can be recycled in agricultural activities. The management of animal by-products from slaughterhouses and slaughtered animals on farms is far from the requirements of the relevant EU legislation. Municipal solid waste is one of the main waste streams generated (about 570,000 tons/year, with forecasts to grow by about 1.7%/year and reach 700,000 t/year in 2020, or 285 - 350 kg/ inhabitant per year) and consists of household waste, street cleaning and park waste, commercial-institutional waste and waste generated in industry with a character similar to household waste. A small part of household waste has dangerous properties (batteries containing heavy metals and acids, oil paints and solvents...). An important percentage of the general waste stream comes from spent products

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and various used products such as construction waste and rubble (about 500,000 tons/year), used tires, batteries, used vehicles, electrical/electronic waste, in a total amount of about 40,000 tons /annually. Construction waste and construction debris also contain asbestos as a special waste with hazardous properties. The management of these fractions, which may contain dangerous and combustible ingredients, is not carried out in accordance with EU directives and almost the entire collected fraction is deposited or dumped in wild landfills. Power plants, thermo-metallurgical and inorganic chemical processes create an additional group of non-hazardous waste in the amount of about 2 million tons/year; larger generators deposit their waste locally, while smaller generators dispose of it together with municipal waste. The main quantities of hazardous waste (about 77,500 tons/year) are generated by the two largest metallurgical-industrial facilities and are deposited in an industrial landfill. They represent ecological hotspots with their impact on the environment. Some of the combustible hazardous waste oils are burned as fuels. National initiatives to reduce waste at the household and industrial level are lacking in several areas. Waste generators are not aware of the potential opportunities and benefits of waste prevention, information on waste prevention opportunities and techniques is not widely available, the true costs of environmentally sound waste management are unknown and are covered by waste generators, resources, including financial resources, for waste management are not used effectively, and fees for waste treatment and disposal are higher than they should be, considering the quality of services provided.

#### Waste prevention plan (2022-2028)

The target for reducing food waste by 2028 is set at 30% compared to 2022. To achieve this goal, several businesses such as food processing and treatment units, supermarkets, hotels, large restaurants, food service establishments, etc., are required to adhere to the waste hierarchy in the following order of priority:

1. Prevention
2. Preparation for reuse
3. Recycling
4. Other forms of recovery, such as energy recovery
5. Disposal

Additionally, a database is being created to record food waste, enhancing the digitalization of waste data in the country. Obligated businesses will annually register their food waste in a specific section of the Waste Electronic Registry (WER), but the establishment of national guidelines with the appropriate methodology for calculating such waste is pending.

The Waste prevention plan establishes the appropriate framework for:



- Preventing the generation of food waste
- Imposing obligations on businesses involved in the food industry
- Creating an electronic monitoring platform for generated food waste and surplus food recorded by obligated businesses
- Encouraging food donation and redistribution for human consumption through the determination of obligations for donors and recipients, expanding tax incentives for food donation, etc.

### 3. Best Practices on Food Waste Management in Bulgaria, Greece and North Macedonia

- In 2018, an information campaign to promote the reduction of food waste was launched on the territory of the Sofia Municipality, Bulgaria. It was implemented as part of the partnership commitment of the Metropolitan Municipality in the TRiFOCAL London (Transforming City Food Habits for Life) project, with the coordinator organization Resource London, created in partnership between WRAP and LWARB - together with Groundwork London. TRiFOCAL is funded by the LIFE program of the European Union, project number LIFE15 / GIE / UK / 000867. During the first stage, a CHILDREN'S DRAWING COMPETITION of an animated food superhero will be held to convey, in an accessible way, the messages of the project. The second stage kicked off with a special event for the media – a dinner with salvaged food. The event was held at the Waste Treatment Plant, and the guests took part in a tour of the plant to get to know personally the entire process of treating waste. In the third stage, the winner of the contest for children's drawing of a food superhero was selected. The child's drawing was animated and an information campaign was launched in the summer of 2018 on social networks. In February 2019, Mori the supercarrot was "revived" with a special suit created for the purpose. So, Mori embarks on a special "journey" in which, in 4 months, he visits 30 municipal kindergartens and meets with over 1,000 children, with whom he talks about the importance of reducing food waste - mainly from fruits and vegetables. As part of this project, during the second stage, the Sofia Municipality partnered with Radio Enjoy and thus managed to popularize among listeners the topic of household waste, recycling and environmental protection. As part of the campaign, a mobile point for distributing compost to citizens is organized. The compost was produced at the Biological Waste Treatment Facility. It is distributed in packages of 10 kg to all Sofia residents who have paid the garbage fee (against the receipt for the paid fee). The aim of the initiative is to promote the result of the separate collection of bios- and green waste. Thanks to the promotion of the initiative, nearly 4 tons of compost in 10 kg packages were distributed within the two days.
- In the city of Plovdiv in 2017. is starting a pilot project, the purpose of which is the collection and removal of food waste from establishments in the city. Restaurants, cafeterias and kitchens in the central city area will only be able to dispose of this type



of waste in specialized trucks. Food waste will be collected in over 700 brown plastic bins. The project involves 180 sites, which are notified of the exact time at which the collected food scraps must be handed over. Initially, the project starts in the center of Plovdiv, but gradually other areas will be covered.

- The topic of zero waste is gaining more and more popularity through various internet platforms and applications. One of these platforms is foodbox.com. The purpose of the platform is to connect various restaurants that cannot sell their food with consumers who order food. Each establishment can offer its remaining food at less than the selling price so that it incurs smaller losses. Foodbox currently has over 430 business partners in Sofia, Plovdiv, Varna, Burgas, Ruse. More recently, the company also launched in Bucharest with 15 partner sites.
- The first zero-waste restaurant in Bulgaria operates in the city of Sofia - "Blagichka - Zero Waste". In addition to the fact that the restaurant adheres to the five principles of the zero-waste philosophy in their daily operations, they also employ mostly disadvantaged youth to work on site. The staff gives up plastic cups, packaging and straws, they use glass bottles, cloth bags for the market, food is delivered in reusable boxes. It is also the first establishment to dispose of all its organic waste in a composter, which waste soon turns to soil.
- The Bulgarian Food Bank Foundation is the first food bank operator registered in the country and is a reliable partner of food industry companies in their efforts to reduce food waste. The Bulgarian Food Bank (BFB) ensures the transformation of surplus and suitable food into a resource for various social programs for nutritional assistance to people in need. Every week, the food provided by BFB for various programs reaches more than 8,000 people, and annually the food provided by the foundation supports more than 20,000 people. The foundation partners with both large food chains and registered food producers, processors and traders.
- In the period 2018-2021 on the territory of Bulgaria, Slovenia, Turkey and Greece, the "Resilient Affordable Eco-School Training" project was implemented under the Erasmus+ program. The project was aimed at children in 45 schools, who should become ecologically aware citizens. Through STEM teachers, accessible environmental education was introduced through fun activities. Various materials have been developed under the project - manuals, mobile applications, an interactive booklet, which aim to create habits for separate collection of waste, including food waste, and children can clearly see the results of these activities through the created clips for each topic.
- Best practice 'We Can'  
We Can' is a non-profit organization that works to reduce food waste and fight malnutrition throughout Greece. In the context of the "Food Rescue & Offer" program, every day, they save food and foodstuffs from all possible donors and offer them, through charitable organizations, to people who are in food insecurity. In this way, they reduce the environmental burden and food waste and, at the same time support the most vulnerable social groups with food.



Figure 6: "We Can", Source: <https://www.boroume.gr>

“We Can” approaches the phenomenon of food waste as a whole through various programs aimed at:

- To inform and educate citizens through campaigns, media, and events, but also participation in international information networks and promotion of legislative changes to reduce food waste at national and international levels
- Implementation of student awareness programs in schools.
- Saving surplus agricultural production in the field and making it available to people in need at a local level.
- Rescuing products from street markets in the neighborhoods and making them available to those in need.
- As part of the organization's activities, the educational program "We can at School" has been created with the main purpose of informing children about the issue of food waste, but also raising awareness of the concepts of volunteering and giving and creating social awareness. The teacher can use the manual as a basis, as there are two training programs, suggested actions and other helpful material, and develop the topic further according to the educational methods he follows.
- “We Can” saves & offers more than 30,000 portions of food every day, while from 2011 to today, they have saved & offers a total of over 58,000,000 food portions. They cooperate with more than 650 non-profit organizations, associations, and social services of municipalities throughout Greece. Its vision is to develop a social movement to reduce food waste and, at the same time, increase food support for people in need based on voluntary donations.

Lean more: [www.boroume.gr/](http://www.boroume.gr/)

- Best Practice – Social Plate

Social Plate (Supporting Social Enterprises in combating poverty and social exclusion) is an urban nonprofit company that aims to provide a solution to poverty and social exclusion issues, as well as environmental protection. The idea originated from the Central Market of Thessaloniki (KATH) S.A. and was put into practice in

April 2018. The program's goal is to provide food for the most vulnerable social groups, offer employment to long-term unemployed individuals, and reduce food waste. Integral to this initiative is spreading the solution to all social strata and actively involving them in changing direction and mindset regarding food waste issues.

As part of the project, non-marketable products are collected and, under the supervision of the quality control manager, sorted into consumable and non-consumable categories. They are then repackaged by the staff and distributed to various social entities that, in turn, provide them to socially vulnerable groups. The project is implemented within the framework of the subsidized INTERREG V-A Greece - Bulgaria 2014-2020 program, in collaboration between the two countries. Beneficiaries include social organizations in the region, such as Social Grocery Stores, Non-Governmental Organizations, Church Soup Kitchens, Collectives, etc.



Figure 7: "Social Plate", Source: [www.hcap.gr](http://www.hcap.gr)

- Since April 2018, Social Plate has received over 1 million kilograms of food, 700,000 or more of which it has provided to associations, organizations, and entities with which it collaborates to support citizens in need. In total, it has collaborated and continues to collaborate with over 100 entities and associations, providing crucial support to thousands of people in the wider area of Northern Greece. \*Read more at [www.socialplate.eu/el](http://www.socialplate.eu/el)

- Best Practice – WWF Hotel Kitchen  
“Here, food has value”

The program was implemented for the first time in 2017 in the USA, by WWF US, the American Hotel and Lodging Association (AHLA), and with the support of the Rockefeller Foundation. In Greece, during the summer of 2019, as part of the implementation of the corresponding program, WWF Greece invited 3 well-known



Greek hotels to participate in a pilot program for the application of best practices to reduce food waste. Within just 16 weeks, the three hotels achieved a total waste reduction ranging from 10-25% thanks to the establishment of a task force, raising awareness among employees, and receiving enthusiastic support from guests.

Results:

- 45% reduction in food waste in the meal preparation process
- 25% reduction in fruit and vegetable cleaning section
- 13% to 15% reduction in food waste in the buffet section
- Monetary savings estimated at 9% in one of the participating hotels.

It should be noted that by placing conscious consumption messages on tables and buffets, significant reduction in food waste on guests' plates was achieved. The reduction in expenses was also significant, as avoiding waste entails cost savings in ingredient procurement, labor costs, and final waste generation.

In spring 2021, WWF continued its action, focusing on collaboration with local stakeholders, the new operational framework for hotels based on new legislation, and the creation of an educational mechanism for industry workers. Within this framework, WWF collaborated with 11 new hotels in Crete, Rhodes, and Kos. The collaboration with these 11 hotels yielded important conclusions and led to the development of a mechanism for staff training and informing hotel guests. Additionally, the findings contributed to mapping and addressing the issue in the hotel industry, benefiting any hotel that aims to reduce food waste in their facilities, while also achieving numerous environmental and economic benefits.

How was the waste reduced?

Some of the measures implemented in the 14 participating hotels were:

- Proper storage, preservation, and management of ingredients
- Redesigning meal preparation and buffet setup
- Planned meal preparation methods
- Accurate calculation of food quantities based on the number of guests and their dietary habits
- Smart presentation of food
- Menu design to reduce waste and on-site food preparation by the kitchen staff

\*Guide for reducing food waste in hotels: [www.hotelkitchen.wwf.gr/manual/](http://www.hotelkitchen.wwf.gr/manual/)

- Best practices from North Macedonia

**Title: Eco gardens in our Kindergartens, ERAZMUS+ programme**

Start date: 1.11.2018.

End date: 31.10.2020.

Main aims of the project:



1. Promote the exchange of experience and practical knowledge between kindergartens and other institutions with aim to include best expertise from different areas (different socio-economical organizations) that will lead to improved preschool education
2. Increase kindergarten teacher's competences and skills for developing of own education approaches by using of "learning by doing" educational methods and to be able to use advantages of transnational cooperation with their colleagues from other countries by using of eTwinning networking module

Achieved project results:

- Prepared **document** for long-term strategic transnational partnership
- Prepared **Handbook** as manual for waste selection, recycling and practical utilization of composting in pre-school education
- Established transnational pre-school teachers' **network**
- 300 children with increased competences and skills for waste selection, recycling and practical utilization of composting in eco production, teamwork skills
- Project **web site** with best practices from project activities - <http://ecogardens.eu/>

- **Title: STE(A)M KIDS, ERAZMUS+ programme**

Start date: 1.11.2020.

End date: 31.10.2022.

Rapid development of science and technology addresses the main educational systems' challenge. The progress and prosperity of country needs to rely on innovative talents of science and technology. Kids are important talents for future progress and development of society and it's necessary to update early childhood curricula in order to keep up with this international trend and address the growing need for STEAM Classroom programs in early childhood education. EU is faced with a challenge and a successfully implemented STE(A)M-focused classroom as an education approach, very soon can be easily recognized as a key force in the progress toward high quality preschool education for all kids.

Main project aim was to promote the synergy among the experience of different socio-economical organizations and Kindergartens, with aim to include best expertise in everyday learning process. Concept of STEAM classroom is consisted of two main parts:

1. Appropriate working space (kindergartens will ensure a working space /classroom/) where specially designed equipment and tools appropriate for kindergartens kids age will be installed
2. Educational part (a "learning by doing" based methodology appropriate for kindergartens' kids age will be developed by experts and adopted with kindergarten teachers in the frame of the training events).

Main project objectives were:

1. to improve quality and attractiveness of early childhood education process in regions of four municipalities from Croatia, North Macedonia, Turkey and Bulgaria;
2. enhance pre-schools teachers' competences and skills by increasing of their theoretical background and introducing learning by doing method for STEAM related topics;



3. establish strategic partnership among different socio-economic types of organizations (public body; educational institutions; National, Regional and Local NGOs) for increasing of quality level of education process.

Specific objectives of the planned activities in the frame of the project were to:

1. develop own and innovative STEAM classroom - based educational approach with large transfer-ability potential;
2. design and implement a special (appropriate for kids age) equipment and tools for practical work with kids in the STEAM field that will cover four main topics: Basic Science; Renewable Energies; Energy efficiency & Ecology; and Art;
3. improve kids' skills through the alternative forms of teaching especially encouraging experiential learning and team work /in the frame of long-term teaching assignment/;
4. establish transnational kindergartens' teachers network by using of eTwinning networking platform and to create of a long-term strategic partnership for transnational cooperation in the field of education.

## 4. Challenges and opportunities in primary school education

### 4.1. Challenges in primary school education

In this chapter challenges and opportunities in primary school education in the three target regions – Kochani, Larissa, and Pazardzhik are described.

Identified challenges are:

- Ensuring relevant support by all the key partners included in the strategy
- Limited financial resources, human resources and time
- Adaptation to distance learning
- Primary education has too much theoretical and bookish curricular, narrowly conceived and unpractical. It creates social misfits and does not fulfill the needs of life.
- Absence of life skills training
- *Ex katedra* lectures
- Lack of knowledge of professors when teaching environmental topics, and good practices in the area of food waste management
- Education is mainly related to frontal lectures, while experiential knowledge is missing
- The school curricula lacks of lessons dedicated to topics related to contemporary technologies, and education based on “learning-by-doing” approach
- Lack of lessons dedicated to ICT, and practically they do not teach topics like WEB 2.0 tools and Open Educational Resources





- Lack of adequately educated teachers to pass on their knowledge to the students in the aforementioned topics
- Need to increase capacity among primary school teachers on topics like: EU programmes and funding, potential opportunities for a professional collaboration with other similar institutions and schools at EU level, and establishment of a teachers' network for exchanging professional ideas and experience
- As a result of globalization and migration, population in rural regions has started to decline and it leads to shrinking numbers of students and pupils enrolled in schools

## 4.2. Opportunities in primary school education

The traditional structure of primary education as a parallel bridge between pre-primary education on one side, and the secondary education, is changing. Workforce in this millennium is less involved in industrial production and isolated professions, and increasingly involved in knowledge work, services, communication and innovation. Economies and societies are therefore looking for ways to have their education systems more concentrated in building meta-cognitive and creative capitals that both are necessary resources for both individuals and nations to succeed in competitive knowledge-based and innovation-intensive, and environmentally-friendly world.

The need to redesign education systems, including primary education, comes from the notion that changing economic, social and ecological circumstances have created the need for individuals who are flexible, able to adjust to changing situations, to learn effectively and creatively and to create ideas productively. Social and creative capitals are becoming increasingly important and sought-after characteristics of successful nations, just as basic knowledge and generic manual skills were the drivers of industrial countries.

A good example of the changing skills requirement is illustrated by research carried out by Levy and Murnane (2004). In that study they divided the tasks performed by workers into five categories (also in World Bank, 2005):

**Expert thinking:** solving problems for which there are no rule-based solutions;

**Complex communication:** interacting with others to acquire information, to explain it, or to persuade others of its implications for action;

**Routine cognitive tasks:** mental tasks that are well described by logical rules;

**Routine manual tasks:** physical tasks that can be well described using rules;

**Non-routine manual tasks:** physical tasks that cannot be well described as following set of “if-then-do” rules and that are difficult to computerize.



## 5. Action plan

In the Action plan all the main purposes are appointed according to the preliminary shown examples where in an identical way are presented in accordance with achieving a certain aim – a performer of the activity, time for implementation, expected results, other participants, which means human resources, as well as prerequisites for implementation of foreseen activities.

### Activity 1:

Description of the activity	<p><b>“Food waste manager” GAME</b></p> <p>Almost everybody knows about the dangers of climate change, pollution, food waste and overall problems that affect our planet in a negative way, but many of them don’t actively try to combat it. Some people are fond of recycling, not wasting excessive amounts of water, electricity but these are passive ways of reducing someone’s carbon footprint.</p> <p>By developing an app that teaches a person how to recycle his garbage, it might be enough to make a difference to fight environmental problems and food waste. The app will be under the form of an augmented reality mobile game – you will have a big variety of garbage and it will be needed to separate it in the correct place. You can also connect with other players and make a competition how much garbage you will succeed to recycle for 1 minute, 2 minutes, 3 minutes, etc. In the second part of the game, every player can put each recycle bin to the correct garbage truck which has to collect it. At the end of the game the player will see the processing of organic and non-organic waste at a digital landfill which will mean that he/she has successfully passed the game stages.</p>
Human resources and Performer of the activity	<ul style="list-style-type: none"> <li>- People willing to download the app and participate in the activities</li> <li>- Schools using the app as a way of teaching students on waste management and eco-friendlier way of living</li> <li>- NGOs, public authorities and companies that wish to implement or collaborate with this project</li> <li>- IT company to develop the Food waste manager App.</li> </ul>
Expected results	<p>Improvement of:</p> <ul style="list-style-type: none"> <li>- Knowledge on issues related to protection of environment;</li> </ul>



	<ul style="list-style-type: none"> <li>- Knowledge on separate waste collection;</li> <li>- Knowledge on how to be more environmentally friendly;</li> <li>- Basic skills and competences on contemporary topics like food waste, clean environment, climate change issues in combination with modern technologies</li> </ul>
Period of performance	2026-2030
Budget:	EUR 150,000 – 200,000
Financial sources:	Erasmus+ Programme; Other potential EU programs from the current programming period 2021 – 2027

### Activity 2:

Description of the activity	<p><b><i>Digital interactive handbook for waste management for teachers and students</i></b></p> <p>It is unfortunately not a secret that protecting the environment is not on top of people’s priorities and changing that would be extremely difficult. The best way of simplifying such a broad and difficult to comprehend subject is to make children aware of nature. Following the work of S4W project, and continuing activities beyond the project end, partners can further improve the Project Result 1 by integrating some parts of it into a “digital interactive handbook” which will teach students and teachers in an attractive and interactive way on topics like separate collection of waste, composting, recycling, clean environment challenges, etc.</p> <p>By creating a handbook with 3 different modules, we can simultaneously entertain students and teachers and raise awareness about problems affecting the environment and solutions to them. This digital handbook will consist of 3 different parts related to food waste management and recycling</p> <p>The first part will contain advices on separate collection of waste and its recycling. The second one will be focused on food waste how we can use our leftover food to make new meals. The final part of the book will contain tips on how to use our leftover food scraps to turn them into other items:</p> <ul style="list-style-type: none"> <li>- to make a birdhouse out of a milk carton</li> <li>- to make compost from our food waste</li> <li>- to make your own mini greenhouse and plant some herbs and spices. This will contribute to reducing the distance that the product will travel to end-users.</li> </ul> <p>The digital interactive handbook will have short and attractive videos and cartoons which will illustrate good practices on</p>
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	waste collection, recycling and processing that have already been implemented successfully across different European regions, and will provide an interactive guidance on how to improve the local waste management system. It will be disseminated during different activities and events of schools, NGOs, local authorities and other stakeholders.
Human resources and Performer of the activity	<ul style="list-style-type: none"> <li>- Teachers and students willing to use the digital interactive handbook and participate in the activities</li> <li>- Schools using the handbook as a way of teaching students and eco-friendlier way of living</li> <li>- NGOs, public authorities and companies that wish to implement or collaborate with this project</li> <li>- IT company to develop the interactive digital part of the Handbook</li> </ul>
Expected results	<p>Improvement of:</p> <ul style="list-style-type: none"> <li>- Knowledge on issues related to protection of environment;</li> <li>- Knowledge on waste management, composting, and reducing of food waste;</li> <li>- Knowledge on how to be more environmentally friendly;</li> <li>- Basic skills and competences on contemporary topics like clean environment projects, food waste management, and climate change issues</li> </ul>
Period of performance	2025-2028
Budget:	EUR 50,000 – 70,000
Financial sources:	Erasmus+ Programme; Other potential EU programs from the current programming period 2021 – 2027

### Activity 3:

Description of the activity	<p><b><i>AR nutrition APP</i></b></p> <p>Exercising is important part of keeping teens healthy and the lifestyles that are learned in childhood are more likely to stay into adulthood. Most teens spend countless hours each week sitting behind a computer screen and playing video games. So the idea is to use this fact and make exercising and gathering knowledge about healthy food. In order to be able to eat properly, it is necessary to know the nutritional values of certain foods. One of the biggest reasons people drop an exercise program or stop eating healthy is lack of interest. The idea is to create an application that would be run from mobile devices and that would in a fun way stimulate</p>
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	<p>teenagers to acquire knowledge and in the same time physical fitness, which is ultimately a prerequisite for meeting all the demanding tasks in front of them during school and later in life. The concept is based on knowledge of the nutritional values of foods in synergy with physical movement. Simplified if there is less of knowledge of foods nutrition values – there is larger amount of running or walking. And vice versa. At the beginning of the application, it will be necessary to enter data, namely age, height and weight. The data is needed to later have more accurate calculations when calculating calorie expenditure and the data is not stored anywhere except on the mobile device itself. Augmented reality systems based on AR Core technology allow the user to "place" 3D digital objects in real space.</p>
Human resources and Performer of the activity	<ul style="list-style-type: none"> <li>- People/students willing to download the app and participate in the activities</li> <li>- Schools using the app as a way of teaching students and eco-friendlier way of living</li> <li>- NGOs, public authorities and companies that wish to implement or collaborate with this project</li> <li>- IT company to develop the app</li> </ul>
Expected results	<p>Expected results are:</p> <ul style="list-style-type: none"> <li>- health promotion in children</li> <li>- use of AR-based ICT technologies in education</li> <li>- adoption of new educational approaches - Student-centered learning</li> </ul>
Period of performance	2025-2028
Budget:	EUR 100,000 – 150,000
Financial sources:	Erasmus+ Programme Other potential EU programs from the current programming period 2021 – 2027

#### Activity 4:

Description of the activity	<p><b>App “Plant the trees and mitigate climate changes”</b></p> <p>It is a well-known fact that temperatures in last decades are gradually increasing. This is due mainly to complicated climate changes, and unfortunately the trend leads to extremely high temperatures in urban territories during the hot season, i.e. in the summer period. The main objective of this project is to stimulate a behaviour change among students, their teachers, and parents which will lead to growing trees and plants in cities, which can eventually form large green parks. These green areas and parks will help to fight against</p>
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	<p>an increasing problem in the last decades: the constantly increasing summer temperatures and fighting against the so called “summer energy poverty”. Green areas in cities can help mitigate the effect of “heating waves” and “urban heat islands” where city centres experience too high temperatures during summer period and living conditions are becoming aggravated. Green areas will mitigate the overheating effect by reducing (cooling down) temperatures in European cities during the hot summer period.</p> <p>One of the ways that we can deal with this problem is by developing an app that teaches people how to plant different kinds of vegetation and trees and how to take care of them after that, it can be one of the solutions when it comes to fighting the environmental problems. The app will be created to look like augmented reality mobile game that can be downloaded from the app store – the person using it will have to choose the spot and the type of plant or tree that he/she wants to plant and pin it on the map in the app. It will also have the option of sharing a location of the pins, so other people using the app can see it and join if they want to, and by this way it can be turned into a social activity. The more people are using the app the more trees and plants are been planted.</p> <p>It can even be organized as an event or a competition between different schools, universities and even companies – by using the app they can significantly increase the number of trees and plants on the territory of the participating municipalities.</p>
Human resources and Performer of the activity	<ul style="list-style-type: none"> <li>- People willing to download the app and participate in the activities</li> <li>- Schools using the app as a way of teaching students on eco-friendlier way of living</li> <li>- NGOs, public authorities and companies that wish to implement or collaborate with this project</li> <li>- IT company to develop the Plant App.</li> </ul>
Expected results	<p>Improvement of:</p> <ul style="list-style-type: none"> <li>- Knowledge on issues related to protection of environment;</li> <li>- Knowledge on how to be more environmentally friendly;</li> <li>- Basic skills and competences on contemporary topics like clean environment, climate change issues in combination with modern technologies, summer energy poverty, etc.</li> </ul>
Period of performance	2026-2030
Budget:	EUR 250,000
Financial sources:	Erasmus+ Programme

*Funded by the European Union. Views and opinions expressed are however those of the authors only and do not necessarily reflect those of the European Union or the Human Resource Development Centre (HRDC). Neither the European Union nor HRDC can be held responsible for them.*



	Other potential EU programs from the current programming period 2021 – 2027
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### Activity 5:

Description of the activity	<p><b>Dissemination and Awareness raising activities</b></p> <p>To disseminate project outputs and results to other educational institutions beyond the project end. Teachers and students who participated in the SAVE 4 WASTE project can visit other schools which did not participate in the project and present project activities to them.</p> <p>Apart of that, the following Awareness raising campaign can be performed:</p> <ul style="list-style-type: none"> <li>- In the frame of the established public events mobilizing the students (from pre-primary education, primary schools, and secondary schools) in the 3 participating regions,</li> <li>- Production of dissemination materials and development of appropriate local activities;</li> <li>- Bringing topics like waste management, composting, and food waste reduction into school classes through “learning-by-doing” activities;</li> <li>- Bringing clean energy technologies in classrooms (mini models and measurements to prove feasibility and benefits).</li> </ul>
Human resources and Performer of the activity	<ul style="list-style-type: none"> <li>- Schools from the three pilot locations (students, and teachers);</li> <li>- Public administrations as policymakers and main stakeholders;</li> <li>- NGOs as experts on environmental and climate change topics.</li> </ul>
Expected results	Raised awareness and improved habits on topics like food waste, waste management, composting, energy efficiency, renewable energy sources, etc.
Period of performance	2026-2030
Budget:	EUR 20,000
Financial sources:	Local resources: public and private sources; other potential EU programs from the current programming period 2021 – 2027

### Activity 6:

Description of the activity	<p>App for food waste management “We Can”</p> <p>Mission of the application is to help towards the scope and the goals of Boroume “We Can” organization. The organizations</p>
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	main goal is to reduce food waste and to fight malnutrition in Greece. Through the application all data will be correlated, creating a platform of connection between the individuals and legal entities who want to give the food and the volunteers - employees of the organization.
Human resources and Performer of the activity	<ul style="list-style-type: none"> <li>- People willing to download the app and participate in the collective effort</li> <li>- Legal Entities that want to participate in the network (networking)</li> <li>- People that are interested to donate</li> <li>- People that are interested to volunteer in the actions of collecting and distributing the food</li> </ul> <p>A Tech company to develop the App will be needed.</p>
Expected results	The expected results will be the better involvement in the whole food waste management chain of all parties in order to achieve better and more sustainable results for the society.
Period of performance	2026-2030
Budget:	EUR 250,000
Financial sources:	Erasmus+ Programme Other potential EU programs from the current programming period 2021 – 2027

### Activity 7:

Description of the activity	<p>“Food Waste Millionaire” - Board game Millionaire for Food Waste</p> <p>There a few games for young students (5-12 years old) that are trying to raise awareness on the issues of food waste management. One of the most familiar and known games is Millionaire game. Through this board game with questions specialized with questions for youngsters, “Food Waste Millionaire” will have a direct impact to improve the knowledge of young students.</p>
Human resources and Performer of the activity	<p>Creation of a board game will need:</p> <ul style="list-style-type: none"> <li>-experts in the field of food waste management that will create the questions</li> <li>- experts/company for the design</li> <li>- volunteers/employees of the organization that will test the board game</li> <li>- dissemination of the board game to the wider public</li> <li>- translators to different national languages</li> </ul>
Expected results	To create a board game for students between 5 to 12 years old that can increase awareness about food waste management





	and to disseminate the results to the wider public.
Period of performance	2026-2030
Budget:	EUR 250,000
Financial sources:	Erasmus+ Programme Other potential EU programs from the current programming period 2021 – 2027

### Activity 8:

Description of the activity	<p><b>GAME EDU</b></p> <p>Inclusion in the education of the children with learning difficulties and disabilities is one of the priorities in EU and all over the world.</p> <p>This segment needs improvement in all involved parties, namely parents of these children, the teachers in the schools, the peers and school mates of these children.</p> <p>The goal of the activity is to create educational game set that will be used to teach STEM subjects in third and fourth grade pupils (9 and 10 years age).</p> <p>With this educational game set all pupils will learn STEM subject more efficiently, but it is very important that the pupils with learning underachievement and special needs will also benefit a lot from this learning approach. Very important in this approach is that the pupils with learning difficulties will not be separated from the rest of their classmates, but they will learn altogether.</p> <p>Lecturing and training for the teachers on the topic “How to ease the inclusion in the education” will be incorporated in the project activities as well.</p> <p>The teachers will have a task to find appropriate environmental and ecological topics to be included and taught by using the Educational game set.</p>
Human resources and Performer of the activity	<ul style="list-style-type: none"> <li>- Schools from the three countries (students, and teachers);</li> <li>- NGOs as experts on inclusion and environmental topics.</li> <li>- Local self-government as policymakers and main stakeholders;</li> </ul>
Expected results	<p>Expected results from these projects are:</p> <ul style="list-style-type: none"> <li>-Third and fourth graders will reach higher level in learning of STEM subjects.</li> <li>-Third and fourth graders will be more sensitive and with raised awareness regarding the pupils with learning disabilities.</li> <li>-Pupils with learning disabilities will be better accepted by the surrounding in the school and their school achievements will be increased.</li> </ul>



	- New educational game set will be created. -New pedagogical approach will be developed.
Period of performance	2026-2030
Budget:	EUR 250,000
Financial sources:	Erasmus+ Programme Other potential EU programs from the current programming period 2021 – 2027

### Activity 9:

Description of the activity	<b>Using holograms in primary education</b> We are all aware that technology changes and improves on almost daily basis. Many teenagers spend a lot of time using interactive games on computer and other high-tech devices. We can freely say that they are much more ahead with the technology knowledge than the teachers and schools in the three targeted regions. The idea of this project is to create educational material for the students aged 13-14 years by using holograms. The STEM subjects will be in the field of interest. The schools have a real need of trainings and education of the staff in the area of IT and also creation of modern, innovative lecturing approaches.
Human resources and Performer of the activity	- Schools from the three countries (students, and teachers); - NGOs as IT experts.
Expected results	- Increased interest and higher grades in STEM subjects. - Created new, innovative, digital educational material by using holograms. Teachers from the schools get higher knowledge in using IT.
Period of performance	2026-2030
Budget:	EUR 250,000
Financial sources:	Erasmus+ Programme Other potential EU programs from the current programming period 2021 – 2027

## 6. Financing the activities

The activities described in this strategy will be financed with the budgets of the municipalities or with funds ensured by different projects and programs.

## 7. References

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*Funded by the European Union. Views and opinions expressed are however those of the authors only and do not necessarily reflect those of the European Union or the Human Resource Development Centre (HRDC). Neither the European Union nor HRDC can be held responsible for them.*



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