Policy Proposal on
Reducing Food Waste
Towards a circular EU

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STUDENT FORUM MAASTRICHT

Student Forum Maastricht (SFM) is an annual student conference held at the Maastricht University Campus in Brussels. The conference is organised by students from Maastricht University in cooperation with different partner organisations. The participants are under- and postgraduate students from all over Europe with diverse academic backgrounds. Based on problem statements provided by European Commission representatives, they develop policy proposals for pressing topics within the Commission. In this process the students receive input and insights from experts from NGOs, academia and the business sector relating to the topic. The 2018 edition of SFM took place from April 19th to 22nd. For more information on Student Forum Maastricht, please visit: www.student-forum.eu

Executive summary

The problem statement formulated in this policy brief is: How can the amount of food waste produced in the European Union be significantly reduced.
After analysing the complexity of the issue, the working group has agreed on three ideas that approach the problem and try to address it since the preventive stage. We propose a Flexible Member State Approach, the creation of an EU-wide app and awareness campaign.

Flexible Member State Approach

We suggest the European Commission to make the SDG goal 12.3 on food waste mandatory for all Member States and introduce a new, legally binding goal of 70% reduction at the consumption level. To achieve this, we recommend a flexible approach for Member States. We furthermore propose considering pre-harvest food waste by including a tenth goal 'Cutting Food Waste at Harvest Stage' in the CAP policy after 2020 and establishing a common framework methodology for pre-harvest food waste.

APP

We recommend the European Commission to create an EU app that incorporates the objectives of the sub-group established under the EU Platform on Food Losses and Food Waste to support EU activities in relation to date marking and food waste prevention. This multi-purpose app would, among others, entail a new barcode system and easy-to-use information and awareness raising tools.

Awareness Campaign

We propose the European Commission to focus on reducing food waste at the consumer level with EU-wide awareness campaign. It includes three different approaches: raising awareness in social media and public transport, launching an EU-wide social media challenge and school competition.

Table of abbreviations

Best Available Technique Reference Documents: BREFs
Carbon Dioxide: CO2
Common Agricultural Policy: CAP
European Union: EU
Food Supply Chain: FSC
Greenhouse Gases: GHG
Member State: MS
Non-Profit Organization: NGO
Sustainable Development Goals: SDG
United Nations: UN
United Nations' Food and Agriculture Organization: FAO

Introduction

The waste of food occurring along the supply chain is perceived to be a great problem by the working group for the European Union as a whole. One of the main issues, before delving into the discussion is to adopt a common definition for "food waste". The European Commission defines food waste as fractions of food and inedible parts removed from the food supply chain that could had been recovered or disposed (including crops that are not harvested, anaerobic digestion, bioenergy production, co-generation and incineration) (European Commission, 2016). The working group has chosen to adopt this definition so that its proposals to the Commission result more feasible.

According to the project FUSIONS, funded by the European Commission (2016), around 88 million tonnes of food are wasted annually in the EU, which constitute an estimated cost of 143 billion euros. Food waste means that the valuable and often scarce resources such as water, soil, and energy that were put in the production of that food are lost, and it also worsens climate change. According to FAO, the carbon footprint of global food waste is about 8% of all greenhouse gas emissions caused by humans. For every kilo of food produced, 4.5 kilos of CO2 are released into the atmosphere. Food waste also has ethical implications. According to the FAO, about 793 million people in the world are malnourished, while according to Eurostat, 55 million people (9.6% of the EU's population) were unable to afford a quality meal every second day in 2014 (European Parliament, 2017). This means that wasting food is an ethical absurdity in a world where so many people cannot afford food at all.

Considering the increasing global demographic growth, it is important to find concrete and fast solutions that can tackle the problem of food waste. The European Union addresses these problems by adopting a circular economy approach. For this reason, the *EU action plan for Circular Economy* was adopted in 2015. A circular economy is one where nothing gets wasted, because energy and materials that would be wasted in a linear economy are   reintroduced into the supply chain. The aim of a circular economy constitutes the creation of a system that reuses and recycles products and materials. (Kraaijenhagen, Van Oppen & Bocken. 2016; Ellen MacArthur Foundation, 2016).

In this policy proposal we have developed three policy recommendations that build up on previous efforts by the EU. Firstly, we propose a mandatory reduction of food waste at 50% of all levels of the FSC by 2030 and at 70% at the consumer level. Secondly, we propose the development of a multi-functional EU food waste app that targets specific areas of food waste. Lastly, we aim to introduce the creation of a Food Waste Awareness Campaign on social media and other avenues with the goal of reaching as many people as possible.

Legal Framework

The legal framework of the EU on food waste is complex and it covers various areas of the value-chain of food. The legislative acts concern the issues regarding food waste generation, management, reduction, food use optimization and legislation with more than one implication for food waste (FUSIONS, 2016). Food waste is caused, on the one hand by the complexity and over-regulation of certain areas of the food chain and on the other hand by the complete lack of rules in other sectors.

Directive 2008\98 EC on waste, known as the Waste Framework Directive, sets the basis of waste management principles and it imposes to each MS to include food waste prevention into their general waste prevention programmes. It requires waste to be managed without endangering human health and harming the environment, and in particular without creating risk for water, air, soil, plants or animals. Moreover it should not cause any nuisance through noise or odours, and should not adversely affect the countryside or other places of special interest. The Directive introduces a waste management hierarchy that has to be adopted by each MS. This hierarchy has five stages: prevention, preparing for reuse, recycling, recovery and disposal. This policy brief mainly focuses on the prevention stage, which is the basis to foster a concrete and radical change in food waste behaviour (European Commission, 2008).

The Waste Directive in articles 2(1)(f) and 3(4)(a) and General Food Law in article 2 (Regulation EC No 178/2002 of the European Parliament and the Council, 2002) provide the definition of food waste, that covers all food, "whether processed, partial processed or unprocessed, intended to be, or reasonably expected to be ingested by humans" that is not being used and as a result is wasted. The term, hence, does not cover the plants prior to harvesting. Moreover, the Directive imposes the monitoring of the implementation of food waste prevention by measuring the levels of food waste on the basis of a common methodology. At the time of writing, this methodology has not been published yet.

The challenges that derive from the current legal framework concern the 'food information', 'hygiene rules' and 'marketing standards', these being covered in the Regulation (EU) No 543/2011, Regulation (EU) No 1169/2011, Regulation (EC) No 853/2004, Regulation (EC) No 589/2008, and Regulation (EC) No 852/2004. Much confusion is created in regard to *best before*, *use by* and *sell by* dates, which cause unnecessary food waste (see Annex X in Regulation (EU) No 1169/2011 of the European Parliament and of the Council, 2011). Raise of awareness or providing an alternative terminology could lead to the consumers' understanding.

The Common Agricultural Policy creates the legal basis for free distribution of vegetables and fruits that are withdrawn from the market. This constitute an instrument for prevention of food waste. Food donation is also regulated by the EU, however the strict conditions for donation make the food waste unavoidable. There is a vital need to make the rules more flexible, without any further need for extensive interpretation.

In 2017, the European Former Foodstuff Processors Association was founded (Regulation (EU) No 2017/ 1017, 2017). The Association support the donation of food that was withdrawn from the market due to errors or surplus, can be donated to people in need.

Currently, public and private actors joint their powers to pursue the goals of EU Platform on Food Losses and Food Waste, that aim at reducing the food losses by 50% until 2030. What can be considered revolutionary and powerful is the EU platform on food losses and food waste that has been created in order to achieve the main goal, thanks to the cooperation of all the actors in the value chain, that must be involved and committed in this issue, making the difference and achieving a real change becomes more possible.

Some of the issues discussed above are intended to be re-considered in the Delegated Act of Waste Framework Directive 2020. However further research and revise of the legal frameworks might occur in order to diminish the food waste in EU and to have a smooth transition to circular economy.

Problem framing

Causes of food waste
The roots of the problem of food waste are complex and wide-ranging. The agricultural sector must meet the demands of the retail sector, whereby this is a reflection of consumer preferences and demand which are typically high, as a variety and abundance of food is generally the expectation of consumers. The retail sector responds to this by ensuring a certain margin of security, thereby a certain amount of overproduction by farming is common. Occasionally this can lead to the cancellation of orders from the retail sector dropping the burden of cost onto the agricultural sector. The unwanted food does not reach consumers and thus becomes waste. This occurs due to unfair trading policies and out-grading of irregular fruit and vegetables.

A lack of a universal measuring system that accurately collects data on food waste at all levels of the food supply chain could be contributing to the food waste issue. The scope of the food going to waste is likely underestimated, considering food waste is occurring at all levels of the FSC and all over Europe, and data so far is based on small scale models of food waste. In addition, food lost at the harvesting stage is not considered to be waste and is currently not measured at all. This lack of a common data collection system creates additional problems which can exacerbate the scope of food waste, such as not knowing where to implement best strategies along the food waste pyramid (Figure 1), as well as not accurately knowing whether the funding for these strategies has been put to good use.

53% of food waste occurs at the household or consumer level (European Commission, 2016). This is partially due to a lack of education and information, consumer preferences and a lack of awareness. Europe-wide, there is a lack of understanding by consumers on the "best before" and "use by" food shelf-life dates (Marco Valetta, 2019). This leads to food being thrown away unnecessarily while it is still good to consume. Similarly, consumers may lack the required input for how to use leftovers and/or use the whole food (vegetable/fruit). Food banks and start-up ideas such as discounted regional food or meals which can be found over an *app* to be picked up by the consumer are relatively new, and so the awareness of their existence is lacking. Over-availability of food in Europe has increasingly fuelled consumers' expectations on food availability in the past decades. This may be contributing to a lack of awareness of the resources and time required to produce food, as well as the lengthy process food goes through the FSC, thereby an awareness of the scope of the problem of food waste is lacking. In addition, consumers prefer "good-

looking" or "normal" fruit and vegetables, leading to out-grading at consumer but also retail level.

Figure 1 Pyramid of the levels for reducing food waste (Papargyropoulou et al., 2014)
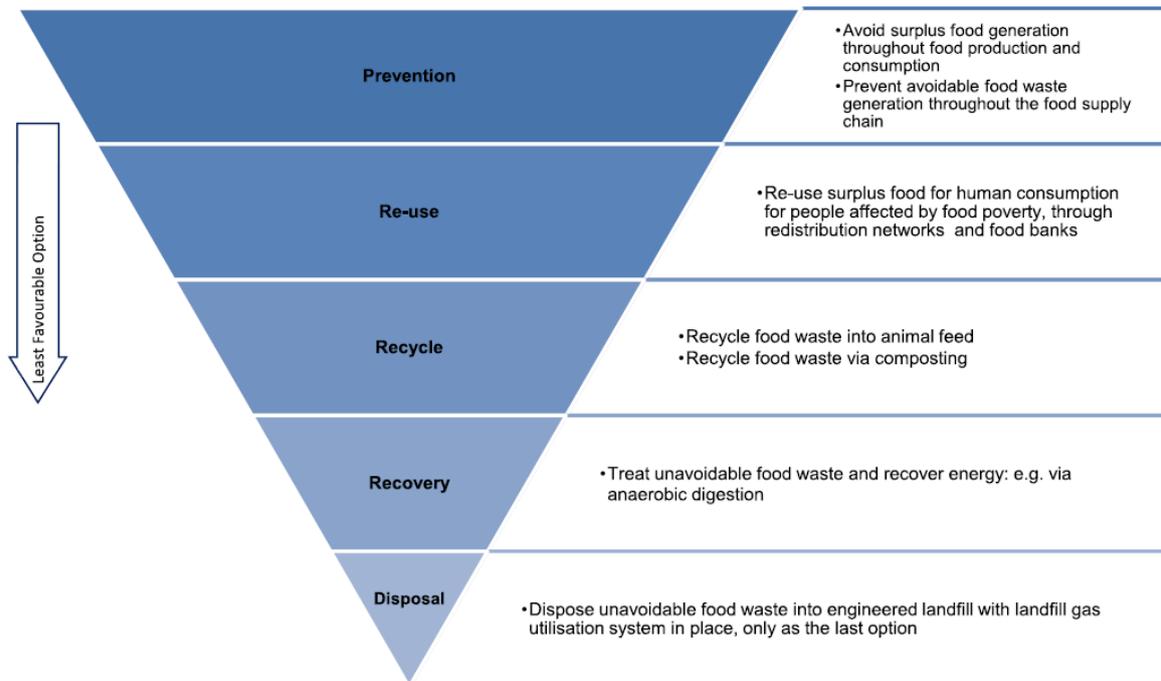
Consequences of food waste

The consequences of the problem are equally complex. As already outlined, food waste places an enormous burden on the economy. For 2007, the FAO estimated the value of the global food wastage at USD 750 billion (FAO, 2013). This economic loss occurs at all stages of the food supply chain, affecting producers and retailers, but also consumers. A study published in 2007 estimates the value of disposed food at £ 4.80 to £ 7.70 per week (WRAP, 2007). More recent numbers estimate the average amount that a Dutch consumer wastes at 145€ per person each year (Netherlands Nutrition Centre, 2018).

Next to the economic consequences, wasting food impacts the environment in several ways. According to the European Commission, the food sector causes approximately 22% of the global warming potential in the EU (European Commission, 2006). If food loss and waste were a country, it would be the third largest greenhouse gas (GHG) emitter in the world (FAO, 2015). Additionally, expanding areas for production of increasing amounts of food leads to an alarming rise of exploited resources (Papargyropoulou et al., 2014). Tragically, the FAO mentions the loss of biodiversity is occurring as an indirect consequence of food waste (FAO, 2013). At the same time, land that is currently used to compensate food losses, could be used for a variety of other purposes. According to the FAO, the total amount of food waste occupies almost 1,4 billion hectares (28%) of the world's agricultural land area (FAO, 2013). Thus, reducing food waste would also offer the possibility to

     a) shift farming towards a less intensive and more sustainable way and

     b) meet the demand of a growing world population.

In addition to its economic and environmental impact, wasting food is also associated with social consequences. Minimizing food waste is not only economically advantageous and reduces the exploitation of resources; but rather it is also a crucial step towards achieving worldwide food security (SDGs Goal 2). Thus, food waste also has an ethical and moral dimension (Papargyropoulou et al., 2014).

Taking into account the several causes as well as its enormous importance of minimizing food waste for a secured and sustainable future, we want to address the following **question** in our policy proposal: How can the tremendous amount of food waste in the European Union be significantly reduced by 2030?

In summary, the above roots and causes display the scope of the problem, thereby addressing this from several angles and with ambition is requited. Approaching the issue will not only address the SDG 12.3 of primary concern, but also environmentally- and socially-related SDG targets. Therefore, we propose the following policy ideas.

Policy proposal

1. Recommendation 1: Flexible Member States approach

The European Commission takes actions in reducing food waste. The first recommendation in this policy proposal addresses the member states: they shall have the possibility to choose actions taken to achieve the proposed targets on reducing food waste.

1.1 Setting mandatory targets on reducing food waste
Firstly, we propose to make two targets mandatory for all MS of the EU. These refer to the SDGs from the UN and additionally address the consumer level separately.
In order to monitor the target achievements, it is necessary to measure the food waste. According to the Waste Framework Directive 2018, a default methodology shared by every MS shall be introduced in order to prevent food waste and monitor the progress in actions taken to prevent/reduce food waste. The outcomes of food waste and food loss measurement shall be published on an annual basis and checked by the EU through national reports. If MS do not accomplish the targets, they can be fined (European Parliament, 2018).

This should be checked annually by the EU through reports. If states do not accomplish the goal they have to pay a fine.

Target 1: Mandatory reduction of food waste of 50% at all levels of the food supply chain (FSC) by 2030: In line with the UN 2030 Agenda for Sustainable Development and referring to the SDG sub-goal 12.3, MS are requested mandatorily to reduce 30% of food waste and food loss in every level of the food supply chain (FSC) by 2025 and target a 50% reduction by 2030 (European Parliament, 2018; United Nations, n.d.).

Target 2: Mandatory reduction of food waste of 70% at the consumer level by 2030
Households own the largest share of 53% of all Food Waste in the EU (Fusions, 2016). Therefore, urgent action is required at this level of the food production chain. We recommend in addition to the SDG 12.3 goal a mandatory reduction of 70% at the consumer level by 2030. This would encourage MS to focus especially on raising

awareness among their citizens. Some possible campaigns are provided in the sections 2 and 3.

1.1.1. Recommendations to achieve mandatory food waste reduction
MS of the EU are requested to implement policies to achieve the mandatory targets. The following presents suggestions based on best-practice models from France and Italy mainly focussing on target 2. Additionally, several existing guidelines can stimulate national action plans. At the national level thus, it is up to the governments to control supermarkets, hospitalities and restaurants.

- **French model on reducing food waste:** France became the first country in the world to ban supermarkets from throwing away unsold food. Indeed, under the new legislation, supermarkets are forced to donate surplus food to charities and food banks.
  According to the French regulation, large supermarkets are no longer allowed to throw away good quality food approaching its "best-before" date. This is an important step for reducing the total quantity of wasted food. Now, supermarkets of a certain size must donate unused food or face a fine (Chrisafis, 2016a; Durandsmet, 2018; Hinckley, 2018).

- **Italian model on reducing food waste:** Unlike the French model, however, which penalises supermarkets that fail to abide by new rules forcing them to donate unsold food to charities, the Italian law has instead focused on incentives for supermarkets that simplify giving food to charities (Kirchgaessner, 2016).

- For the purpose of a flexible approach for EU Member States guidelines should be provided by the European Commission. Numerous types of guidelines about dealing with food waste are already present. Guidelines for possible food donation in the existing legal framework were adopted in 2017 and a pilot project is launched between 2018 and 2020 to disperse these guidelines and foster the involvement of different actors (European Commission, 2017). In order to re-use food as feed, guidelines for EU Member States were adopted in 2017 in the Commission Notice containing guidelines for the feed use of food no longer intended for human consumption.

1.2 Food waste at pre-harvest stage
The EU defines food as processed or unprocessed substances or products which can be eaten by humans. It excludes "plants prior to harvesting". (European Parliament, 2002). Excluding plants prior to harvesting also excludes plants lost at the harvesting stage. These are not considered as food and therefore not included in the food waste monitoring, although they are ready for consumption. Thus, we recommend that a redefinition of food is required in order to include the pre-harvest food. In the following we propose the inclusion of a tenth goal in the CAP post 2020 and the establishment of a common methodology framework for pre-harvest food waste.

1.2.1 Inclusion of a 10th goal in CAP post 2020

We criticize the current structure of the CAP, as paying-by-size subsidies favours large-scale over small-scale farming (European Parliament, 2013; Jeffery, 2003). This however, needs to change urgently if food security, biodiversity and a strong local market should be assured (http://www.thebrokeronline.eu/Blogs/Towards-a-food-secure-world/Prioritizing-small-scale-farming). We thus, strongly support the new objectives of CAP for after 2020, see Figure 2 (https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/future-cap_en#keyaspects).

Figure 2: The 9 CAP Objectives for after 2020 by the European
Commission.

Nevertheless, in order to address the issue of pre-harvest food waste we propose to include a tenth goal 'Cutting Food Waste at Harvest Stage'. This additional funding given to farmers (for collecting "wonky" food whilst harvesting) and municipalities (for collecting and delivering it to manufacturers, charities, biogas producers) would contribute to a common understanding of the loss of valuable food at the very first production stage in the food value chain. Furthermore, it would reduce the burden on farmers that is currently put on them, due to unfair trading practices, whereby it is their responsibility to handle the unwanted surplus of food (unwanted because of decrease in demand or aesthetic reasons).
Exchange of information on how collect food shall be shared and promoted by the Commission according to the best practices and BREFs (European Commission, 2015).

1.2.2 Establishing a common methodology framework for pre-harvest food waste
Food lost at harvesting is disregarded from measurements as it is not part of the food definition. We suggest a common methodology framework like the recently introduced Delegated Act as part of the revised Waste Framework Directive that would require Member States to monitor and report regularly on also pre-harvest food waste.

Additional funding of research for the measurement of waste at harvest level would speed up the process as well as publishing the scale of waste would help realising future action on reducing this waste.

2. Recommendation 2: Develop an EU Food Waste App

In the age of digitalization, technological instruments, like a general EU Food Waste App, can be a helpful and easy to use tool in reaching our targets to reduce food waste. Hence, the second recommendation promotes the use of technology as an approach to reduce food waste. The EU Food Waste App could help in increasing transparency on food labelling and handling, actively include citizens to the problem through topic specific surveys, give them a platform to find food waste related initiatives on national levels and finally provide them with information on Member States' achievements in this field. Thus, this app would be a platform to raise EU citizens awareness on the topic of food waste and provide them with transparent facts and suggestions on how the targets can be reached. In order to fulfil this task, we recommend prolonging the mandate of the sub-group established under the EU Platform on Food Losses and Food Waste to support EU activities in relation to date marking and food waste prevention. Their objectives are to:

● "facilitate a comprehensive and informed debate through the contribution of all key players;
● analyse and recommend options (legislative/non-legislative) to improve the understanding and use of date marking by actors in the food chain including consumers as well as regulatory authorities;
● share experience and best practice in relation to date marking and food waste prevention." (European Commission, 2018).

Hence, we stress the need to establish this working group to work on a permanent basis. We consider it an important point that the working groups include as many stakeholders as possible related to the issue of food waste. Moreover, other working groups could be formed in order to cover all the initiatives that the App suggests.

2.1 Product information through barcode scanning
In order to facilitate access and increase transparency of food labelling in the EU, we suggest that every product is provided with a barcode that the EU Food Waste App could read. By scanning the product, the consumer would receive information on multiple aspects of the product. First, information on its "use-by" or "best-before" date. According to a recent study by the European Commission, it is estimated that "up to 10% of the 88 million tonnes of food waste generated annually in the EU are linked to date marking" (Date marking and food waste, n.d.). Thus, the barcode scanning function of the EU Food Waste App is a helpful tool to tackle this concrete problem. Second, the barcode would also include information on the other labels that the product might have, as well as transparent information on what this label means and includes (e.g. Fairtrade, organic, …). Third, the barcode could also entail information on recipe ideas on how to use the product after it expired, rated by food categories.

2.2 Survey

A second tool of the EU Food Waste App is a survey function. Through this function, the EU could involve its citizens on questions regarding food waste (e.g. renaming the "doggy bag" to make it more attractive). This way, citizens' awareness on the problem increases, while bringing the EU closer to its citizens through active involvement.

2.3 Smart Map
Another component of the Food Waste App would be the set-up of a common map providing information on existing start-ups and NGO initiatives. This would cope with the urgent need of promoting the access to innovative ideas and combine it to the lack of information at the consumer level. Examples of such start-ups are scanning products for toxic substances (Bund, n.d.) a Zero Waste Map for Berlin (ReMap) or mapping meals that have not yet been sold in restaurants (Too Good To Go). Those initiatives can register to be included and be visible in the Smart Map, which facilitates citizens' access and usage of these innovations.

2.4 Display food waste progress of each Member State
Furthermore, the app could be used to provide statistical information derived from the annual food waste measurement of the Member States in a visual, comprehensive way. This aims to increase transparency and making the EU and national targets more visible while raising awareness at the consumer level. People are thus able to compare how other EU Member States are dealing with the problem of food waste, which would encourage competition to reach the goals.

3. Recommendation 3: Create an EU-wide Food Waste Awareness Campaign

As shown above, citizens and private households have a central role to play in combating food waste. The majority of the food waste in developed states occurs in the end of the food value chain; in the EU, more than half (53%) of the food waste is generated at the consumer level (Fusions project, 2016). It is therefore crucial to raise the general awareness on this issue as well as specifically targeting the young generation. We suggest that this should be done by integrating this topic in primary and secondary education. Moreover, awareness-raising is a necessary component for changing consumption behaviours among EU citizens.
Furthermore, social entrepreneurs and innovative start-ups in Europe have already created several 'food saving apps' that contribute to reduce wasting still eatable food (Foodtank, 2018).

We therefore recommend that the EU should create an EU-wide food waste awareness campaign that goes in line with the target of reducing the food waste at the consumption level in the EU by 70% by 2030, as stated in recommendation 1. This EU-wide awareness campaign could be shaped in the following three ways:
   ● general advertisement,
   ● EU-wide social media challenge,
   ● EU-wide school competition for entrepreneurship.

3.1 Advertisement campaigns for raising food waste awareness in social media and public transport

In first line, the existence of information on food waste is not missing. Rather, the roots of the problem lay in reaching out to and spreading this information to the citizens. There are already factsheets and studies collected in the EU bodies (European Commission, 2018). We suggest that these EU documents should be re-translated in an entertaining way and communicated in through advertisement campaigns. These campaigns could be promoted in social media channels and throughout public transport in European cities. Campaigns can spread "infotainment" on the food waste issue (spread information in an entertaining way), and thereby communicate the personal economic and environmental gains of saving food. The campaign could for example aim to
- motivate citizens to buy more "ugly food" in the supermarkets, and
- throw away less edible food items.

3.2 Launch an EU-wide social media challenge
In order to further raise awareness among young Europeans, the EU could regularly launch EU-wide social media challenges.
Potential examples can be:
- **Creating hashtags** referring to actions on reducing food waste (e.g. #zerowastelifestyle etc.)
- **Social media competitions** for best-practices (e.g. "Food Waste Hero", "7-Days-0-Waste") these competitions could be rewarded by the European Commission with money or trips

3.3 EU-wide school competition: innovative business models to combat food waste
In order to focus on the young generation, we suggest to specifically address pupils in the secondary school system.

We propose that the EU support the development of an EU-wide competition where pupils, together with their teachers, are encouraged to develop innovative ideas and/or new business models for reducing food waste. The most innovative student ideas could be rewarded by study trips, scholarships or funding realize their business model. This would incentivize inclusive, creative and educational ways for EU pupils to engage in the issue of food waste.

Conclusion

Food waste is an environmental and social issue that we cannot ignore. Despite the achievements of EU in tackling the issue of food waste, this proposal offered three recommendations that could facilitate and minimise the problem of food waste.

First, we proposed a mandatory reduction on food waste of 50% at all levels of the food supply chain by 2030 and mandatory reduction of food waste of 70% at the consumer level by 2030. In order to achieve the goal, every MS can implement and develop their own policies. This proposal analysed the Italian and the French models as potentially viable methods to solve the problem. To target the issue of pre-harvest food waste, we proposed to include a tenth goal "Cutting Food Waste at Harvest Stage" to the Common Agricultural Policy after 2020.

Secondly, we proposed the creation of an EU food waste app that will enable people to be informed about each member state progress regarding food waste. Moreover, the app aims to facilitate access and increase transparency of food labelling in the EU.

Our third recommendation is to launch an awareness campaign on social media involving local governments, schools and advertising companies. We therefore wish to offer a comprehensive and inclusive approach to further develop the EU efforts on reducing the urgent issue of food waste.

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