

Available online at www.sciencedirect.com**ScienceDirect**

Agriculture and Agricultural Science Procedia 8 (2016) 282 – 289

Agriculture and Agricultural Science

Procedia

Florence “Sustainability of Well-Being International Forum”. 2015: Food for Sustainability and not just food, FlorenceSWIF2015

Food loss and waste in the EU law between sustainability of well-being and the implications on food system and on environment.

Nicola Lucifero*

University of Florence, Dip. Gesaaf, Piazzale Cascine, 18 – 50144 Florence (Italy)

Abstract

Food waste in the global food supply chain is reviewed in relation to the prospects for feeding a population of nine billion by 2050. The topic of this article is the “food waste”, an important issue which has been developed increasingly over the past few years in the context of the actions identified at international level to contrast the global food crisis, which in its various aspects involves not only food law – in terms of both food security and food safety – but environmental law as well. In this light, the analysis can be seen as included among the issues related to the sustainability of well-being with the aim of ascertaining the causes that underlie food losses and food waste, also in view of the legal obstacles, and of identifying the latest prospects indicated by national and European lawmakers to mitigate or limit such waste. In the context of the analysis on the sustainability of well-being, the issue of food waste represents also under a legal point of view a complex aspect, the result of modern society and the well-being that characterises it, which involves multiple interests and is part of food security. The issue evokes the fact that food insecurity continues to exist and indeed has worsened in many parts of the world and raises questions on the impact of food waste on global food security. Thus, the issue is linked to several quite significant aspects related to environmental and food issues such as the control of natural resources, the loss of biodiversity, climate change, soil erosion, the reduction of scarce resources such as agricultural soil and water, and the loss of natural habitats.

© 2016 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of Fondazione Simone Cesaretti

Keywords: Food loss and waste; Food law; Food security; Food safety; Environment.

* Corresponding author.

E-mail address: nicola.lucifero@unifi.it

Tel. +39 0553288225

1. Introduction. The paradox of the *food waste*.

The topic of my speech will focus on “food waste”, an important issue which has been developed increasingly over the past few years in the context of the actions identified at international level to contrast the global food crisis[†], which in its various aspects involves not only food law – in terms of both food security and food safety – but environmental law as well. In this light, the analysis concerns also the issues related to the sustainability of well-being with the aim of ascertaining the causes that underlie food losses and food waste, also in view of the legal obstacles, and of identifying the latest prospects indicated by national and European lawmakers to mitigate or limit such waste.

The extent of this theme is very significant considering that an increasing amount of healthy, edible food is lost along the food chain, or, once placed on the market, is consciously discarded by the consumer. According to the Food and Agriculture Organization (FAO), data, about one-third of the food produced worldwide is wasted every year; in Europe, the Member States produce approximately 89 million tons of food waste[‡]. This is an evident and emblematic paradox of our times: on one hand food waste is reaching critical levels, and on the other, as is well-known, we are facing a global food crisis generated by the scarcity of food supplies[§]. In a world with an excess of man-made goods, often harmful and of little use, having to lament a state of food insecurity is a real paradox, compounded by the fact that a significant part of humanity still suffers from malnutrition, or indeed starves to death, with children hit hardest. In these terms, the issue of food insecurity, which is the result of a series of policy measures that, though they may have benefited some operators or developed some productive sectors, have brought the whole planet to a state that renders insecure the most important, and indeed essential, of supplies, in other words our food supplies.

Today, food waste is the focus of an intense debate on international, European as well as national levels, and is an integral part of the political agenda in several EU countries. Over the last few years, also on the initiative of the food industry, there has been increasing awareness of the need for a framework for the development of effective policies to improve the tools for the fight against food waste and food losses. The issue was raised firstly in the work of the Committee on World Food Security, sponsored by the FAO, the IFAD and the World Food Programme, which brings together representatives of governments and NGOs, at international level, on the many facets of food security, to come then to the attention of the EU institutions.

At the European level, the need for a policy framework for action on food waste prevention emerges, increasingly, due to a rise in awareness as regards the issue of food security and to the increase in food needs on a worldwide basis. However, especially at the beginning, the issue of food is not addressed separately, but in the wider context of the protection of all resources, and therefore also food resources, and their use, by which the steps needed for sustainable and efficient growth in terms of resources have been defined and in relations to which the Commission, *inter alia*, has stated the goal of halving edible food waste by 2020^{**}. Since then, the issue of food waste prevention has been the subject of several actions, albeit of soft law, taken to address and update it through various Community policy instruments. At first by identifying strategies to improve food chain efficiency in the EU^{††}, subsequently by identifying prevention as the strategy for reducing food losses and food waste^{‡‡}, then in the EU’s 7th Environmental

[†] According to the latest edition of the annual report on hunger (*State of Food Insecurity in the World 2015, The State of Food Insecurity in the World 2015 – SOFI*), published on 27 May 2015 by the Food and Agriculture Organization (FAO), the International Fund for Agricultural Development (IFAD) and the World Food Programme (WFP) of the UN, the total number of people suffering from hunger in the world has dropped to 795 million - 216 million less than in the biennium 1990-1992, and 167 million less over the past decade - but this still means about one in nine people on the planet.

[‡] This quantity corresponds to a waste of about 1.6 billion tons of food (including the non-edible portion of the food); 1.3 billion tons if one considers only the edible part. The volume of food waste amounts to 179 kg per person per year, broken down as follows among the various links in the food chain: 42% comes from families, 39% from the food industry, 5% from distribution and 14% from mass catering.

[§] See Costato L., *Dalla food security alla food insecurity*, in *Riv. Dir. Agr.*, 2011, I, 3; Jannarelli A., *La nuova food in-security: una prima lettura sistematica*, in Germanò A. and Rook Basile E. (directed by) *Agricoltura e in-sicurezza alimentare, tra crisi della PAC e mercato globale*, Milan, 2011, 17.

^{**} See the Commission’s Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions of 20 September 2011 “*Roadmap to a Resource Efficient Europe*” [COM (2011) 571 final].

^{††} See the European Parliament Resolution of 19 January 2012 on food waste prevention and on strategies for improving the food chain efficiency in the EU (2013/C 227 E/05).

^{‡‡} See the Opinion of the European Economic and Social Committee on “*Civil society’s contribution to a strategy for prevention and reduction of*

Action Programme^{§§} and in the Communication “*Building a Sustainable European Food System*”, up to the recent Communications No. 397 of 2 July 2014 and No. 398 of 25 September 2014 on the so-called “circular economy” with which the Commission set the goal to reduce food waste by 30% between 2017 and 2025, and proposed to Member States to develop national food waste prevention strategies.

It is the scientific studies, conducted mainly by the FAO^{***}, that it is highlighted the importance of the issue in all its complexity, its underlying reasons and the consequences related not only to ethical, social and nutritional aspects, but also to health and environmental issues, since the enormous amount of unconsumed food contributes strongly to global warming, as well as the difficulty in defining a large-scale concerted action plan since the phenomenon varies considerably from country to country and from season to season. This is a very complex issue, which is subject of multiple studies even now, but whose relevance is extraordinarily broad and with very distinct aspects. In fact, the approach to the issue is found in the contrast between the data on food waste and the data on food security^{†††}, but it also forces one to address the additional and significant impacts that occur on a global basis with regard to the adequacy of the natural systems, the control of natural resources, the loss of biodiversity, climate change, soil erosion, the reduction in scarce resources such as agricultural land and water, and the pollution caused by the use of chemicals. In other words, the issue has immediately shown its complexity and interaction with multiple aspects, highlighting its global reach considering that it is linked to the phenomenon of the global food crisis.

In legal terms, the issue raises many questions, first in terms of definition and of the relevant legislation applicable in relation to the contact points with the regulations governing food, environmental and waste management matters in particular. It is the food law rather than environmental law aspect that mostly reveals certain critical issues – as mentioned, relating to economic, social and legal issues – that underlie the phenomenon, and certain actions that, in a preventive perspective, can mitigate the risk of food waste.

2. Food loss and waste: the European framework and the search for a uniform definition.

Despite the growing attention to food waste shown by the European institutions, to date, there are no specific, complete and unified regulations on food waste prevention. In addition, there is no unambiguous definition of “food waste”, a fundamental step not only to determine an organic legal reference framework for prevention policies, but also to set reduction targets and to monitor the long-term effectiveness of the policies undertaken. However, it must be pointed out that there are some minor regulatory actions taken by individual Member States which, although sector-related and addressing a single aspect of the problem (food waste), affect this issue.

The absence of a harmonised definition of “food waste” has led to the use of a very heterogeneous range of terms in international literature, which, again on the basis of the studies carried out by the FAO^{†††}, then led to the distinction between food loss and food waste. Specifically, the term food loss “is taken to relate to decreases in food quantity or quality rendering it no longer available for human consumption”, meaning food that is somehow dispersed along the food chain or that otherwise suffers a decrease in quality before being processed into the final product or offered for retail sale; therefore, this is involuntary waste. By contrast, food waste “is used to refer to losses due to behavioural issues and often connected to conscious decision to discard food”, meaning the food that, in retail sale or during consumption, for negligence or by conscious decision, is thrown away without being eaten^{§§§}.

In other words, the distinction is based on the fact that waste is characterised by the intent of the action, whereas loss implies that the defining event is not directly attributable to the individual. In this sense, scientific literature highlights that food waste is mainly due to poor organisation and below-par infrastructures of the production chain,

food losses and food waste” of 20 March 2013 (2013/C 161/08).

^{§§} See the Decision 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on an Environment Action Programme of the European Union until 2020 entitled “*Living well within the limits of our planet*”.

^{***} See FAO, *Food Wastage Footprint. Impact on Natural Resources* (2013); FAO, *The State of Food Insecurity in the world 2014*, (2014); *The Food Wastage Footprint* (2014).

^{†††} Food waste is a phenomenon that highlights the imbalances in world consumption and the social disparities between people who waste and people who have nothing to eat. The FAO reports that 222 million tons of food are thrown away in industrialized countries, a figure equal to the food production of sub-Saharan Africa (230 million tons).

^{†††} FAO, *Global Food Losses and Waste. Extent, Causes and Prevention*, 2011, cited.

^{§§§} In numerical terms, one needs only to note that 30% of the cereal crops, 45% of the fruit and vegetable crops and 20% of meat products are wasted worldwide. 32% of the agricultural production and 22% for its conservation are wasted along the production chain and the same percentage of food is thrown by the producer. In European countries, household food waste reaches 42%.

and this is a typical situation of low-income countries (but not only, similar situations are also present at the national level, in which, because of the economic situation in the food chain, the producer has difficulties accessing the market, because it is too far or not convenient) where financial and organisational deficiencies weigh on the company structure, resulting in food losses because of storage or weather problems or difficult access to the market; on the other hand, the causes of food waste – typical of high-income countries – are related primarily to several factors: sociological (changes in family structure and lifestyles); consumer behaviour resulting also from the well-being that characterises the society; overproduction and the quality requirements imposed by the sector legislation or company targets regarding the appearance, size or certain characteristics of the product, or by rules governing the food chain (packaging rules or provision of information to the consumer); or inadequate marketing strategies.

That said, the question arises in a hermeneutical key: since the concept of food waste, as said, crosses various sectors and involves multiple interests, including the protection of environment, health and consumers, and does not have its own regulatory framework, it is addressed from an environmental rather than from a food perspective, in the context of waste legislation (Directive 2008/98/EC). From a legal point of view, the concept in question can be referred to the regulation of “food” and “waste” which have their legal references in different EU legislation. Now, without going into detail, it is sufficient to observe that the rules on waste addresses the issue in a different way than in the past, considering that if in the past this legislation focused mainly on the *management* of waste taking it for granted that waste was a necessary and unavoidable product of society, nowadays it aims increasingly to prevent and dramatically reduce the formation of waste****. This type of interpretation, which, as mentioned, intends to identify ways of preventing the production of waste, becomes also appropriate for legislation on food waste by shifting the focus on the phase prior to its formation with the view towards preventive measures.

The issue must be examined also from a different perspective: beyond the distinction between food loss and food waste, the significant point is the recovery in the food chain of the discarded product which, being still edible, can be intended for human consumption and used by people for food††††. Viewing food waste prevention in interpretation terms, this is how one must consider Article 2 of Regulation 178/2002/EC which gives rise to a problem of interpretation due to the correlation of the two legal concepts under examination: the definition of *food* as “any substance or product, whether processed, partially processed or unprocessed, intended to be, or reasonably expected to be ingested by humans”†††††, in fact, excludes live animals for these purpose, unless they are prepared to be placed on the market for human consumption (letter b), and plants prior to harvesting (letter c), therefore, not everything that can be ingested, and that is a product of the food chain, can be considered food. In these terms, the exclusion of live animals and plants prior to harvesting from the notion of food may be relevant to the fight against food waste. Moreover, a problem emerges with regard to the fact that destination for human ingestion is susceptible to different interpretations, also depending on the eating habits of the various EU countries (some products that are not intended for human consumption as food in some Member States, may be used in others and could be important in respect of food waste).

3. The proposed amendment to Directive 2008/98/EC and the definition of “food waste”.

The proposed revision of the European legislation on waste with the introduction, *inter alia*, of specific references to “food waste”§§§§ is worthy of note. This proposal is part of the broader context of promoting the so-called circular economy, i.e. of a development strategy in contrast to the current linear model, based on the paradigm “take-process-consume-discard”, in which economic growth occurs without an increase in the consumption of resources,

**** To this regard, Article 4 of Directive 2008/98 identifies the so-called “waste hierarchy” which determines the order of priority of the various possible options in terms of policy and legislation on waste in order to prioritise the best choices from an environmental point of view; prevention ranks first, followed by preparation for reuse, recycling, other recovery and, lastly, disposal.

†††† On this point, see SCHNEIDER, *Review of food waste prevention on an international level*, in *Waste and Resource Management*, 2013, Issue WR4, 187.

††††† Article 2, paragraph 1, Regulation 178/2002: “For the purposes of this Regulation, «food» (or «foodstuff») means any processed, partially processed or unprocessed substance or product, intended to be ingested, or reasonably expected to be ingested, by humans”.

§§§§ See COM (2014) 397 final, Proposal for a Directive of the European Parliament and of the Council amending Directive 2008/98/EC on waste, 94/62/EC on packaging and packaging waste, 1999/31/EC on waste landfills, 2000/53/EC on end of life vehicles, 2006/66/EC on batteries and accumulators and on battery and accumulator waste, and 2012/19/EU on waste electrical and electronic equipment.

the products retain their added value as long as possible and there is no waste^{*****}. The conditions for the new strategy can be found in *Europe 2020 Strategy* and in particular in the context of the related initiative on the efficient use of resources while respecting the ecological limits of our planet^{†††††}.

In particular, the Proposal provides for the inclusion at page 4a of Article 3 of Directive 2008/98/EC of the definition of “food waste” as “*food product (including inedible parts) lost in the food supply chain, excluding food redirected to uses of materials such as bio-products, animal feed, or intended for redistribution*”.

The establishment of a legislative framework in the field of food waste is a major issue that goes hand in hand with the indication of a goal, even if not binding, of a 30% reduction in food waste. As to the definition, it appears broad and overcomes the issue relating to the relevance to be attributed to the inedible food parts, providing a comprehensive notion of these parts, and establishes the boundaries of the notion itself, not considering as food waste the food that is redirected for use of in materials such as bio-products, animal feed or that is intended for redistribution. It should be noted, however, that there is no reference at all to the concept of food and this confirms that the lawmakers’ perspective in this matter remains oriented towards aspects related to the environment and, in particular, to waste.

4. The legal obstacles to food waste reduction.

The analysis of the legal aspects examined thus far highlights the complexity of the issue of food waste. A complexity determined by many factors which in various ways affect the food chain - such as inefficiencies in the food chain, inefficient inventory management, marketing strategies and marketing standards - or consumer behaviour, which in turn generate food waste. The problem cannot be limited to a sectoral approach, but must be analysed in terms of supply chain, from the production to the consumption stages^{†††††}, passing through the intermediate processing and distribution stages. In this context, one finds that certain obstacles are of a legal nature, i.e. they are contained in legal provisions, or are due to contractual agreements between food business operators. In particular, it is possible to identify certain causes in the quality standards which define the material properties of foods (e.g. gauge, colour, dimensions, etc.); non-compliance with these marketing standards means that foodstuffs, although edible and free from any defect, will be discarded by the operators. The use of quality standards issued by the private sector is a widespread phenomenon in food distribution in more developed markets, since compliance with them allows distributors to market products on a large scale that are not only fully homogeneous, although manufactured by or obtained from different companies and in different geographical areas, but also to protect consumers’ expectations and the goals set in terms of the product’s quality, aesthetics and safety^{§§§§§}. In this sense, the mere application of the mandatory public rules, in fact, does not allow distribution companies to ensure the conformity and homogeneity of products that only the adoption of the production rules themselves can allow.

Another relevant regulatory aspect involves food labelling, and in particular certain obligatory communications regarding the expiry date and the date of minimum durability (Regulation 1169/2001/EU), given that there is some confusion on the part of the consumer in distinguishing between the two terms. It is known that there is a substantial distinction between the expiry date and the date of minimum durability: the latter is the date until which food retains its specific properties when properly stored; the expiry date is used in the case of highly perishable food from a microbiological point of view that may present a danger to human health not long after its production and placement on the market. For these products, therefore, the date means the deadline by which the product is to be consumed, whereas for the other non-perishable products the deadline is the date within which the food retains its taste and sensory characteristics and nutritional properties and, if it is well preserved, presents no health risks. Although distinct in legal terms, they cause quite a few headaches to the reasonably well informed average consumer,

***** See COM (2014) 398 final, Commission Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Towards a circular economy: A zero waste programme for Europe.

††††† See the Decision No. 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on an Environment Action Programme of the European Union until 2020 entitled “Living well within the limits of our planet”.

††††† See the Opinion of the European Economic and Social Committee on “Civil society’s contribution to a strategy for prevention and reduction of food losses and food waste” of 20 March 2013 (2013/C 161/08).

§§§§§ On this topic, see RUSSO, *Fare cose con regole: gli standard privati per la produzione alimentare nel commercio internazionale*, in *Riv. dir. agr.*, I, 2007, 608.

inducing him/her to throw away products with no food issues in terms of its safety. In order to overcome this confusion, in addition to the implementation of measures to provide information, a recent proposal has been put forward to amend Regulation 1169/2011/EU, extending the list of food products exempted from indicating the date of minimum durability.

It should also be noted that operators highlight among the causes of food waste, the rigidity of certain mandatory rules on food safety, such as for animal feed, pesticide residues and contaminants, and on the hygiene of products, which prevent the distribution of surplus food for social purposes.

In addition it should be said on this point that the distribution of surplus food for social purposes is a widespread practice both in Europe and internationally, and which was recently adopted also by our country as part of the “National Plan for waste prevention” and through some interventions of regional legislatures^{*****}. From a social and ethical perspective, food waste is not only an intolerable contradiction considering the growing number of people assisted by the charities, but also a lost opportunity for all those organizations which daily support people in need with their work by collecting surplus food and unsold products along the food supply chain. According to the 2013 AGEA Report on the distribution of food to the needy^{†††††}, the number of people reached in Italy by the system for distributing foodstuffs to the needy (through the seven charities listed in the Register set up at AGEA) reached the figure of 4,068,250 in January 2013 to people, an increase of 47.2% (equivalent to 1,304,871 persons) compared to 2010.

While food distribution for social purposes – for that matter also called for and promoted by many European Member States^{†††††} – is undoubtedly an effective and immediate tool to counter the demand for food at local and international levels, it must be said that certain legal provisions conflict with this order.

The issue arises in terms of the legislation on food safety, since it holds liable all those who are under the obligation to guarantee food safety, and therefore applies also to those individuals who distribute donated food free of charge. In other words, there are no exemptions or derogations in the field of food safety in the case of donations of surplus food for social purposes^{§§§§§}. The problem affects both food banks and charitable organizations that distribute food directly, and food business operators, whose concerns about such issues are considered as posing a strong deterrent to donations.

In this respect it is worth noting that most recently a kind of compatibility has been established by a Community regulation which, on the footprint of the US Good Samaritan Food Donation Act, limits the liability for those who donate food and those who distribute donated food free of charge. Nationally, Law no. 155 of 25 June 2003, which governs the distribution of foodstuffs for social solidarity purposes, if at first it leaned towards releasing charitable organizations from the bureaucratic obligations laid down by food legislation, in particular in terms of health and hygiene, the entry into force of the Health And Hygiene Package (Regulations 852/2004, 853/2004 and 854/2004), which do not include the release of liability in favour of such organizations, had created a problem of uncertainty for the system. Subsequently, all doubts were removed by Article 1, paragraph 236, of Law 147/2013, which seems to have abandoned the approach of exceptions to food safety legislation in favour of an approach of self-control and self-regulation without compromising the ultimate goal of protecting the health of the most vulnerable recipients of the foodstuffs.

The attitude of consumers towards food waste is of import from a different perspective, not legal but behavioural. The increase in agricultural productivity in the European Union in recent decades has allowed to ensure the supply of the population at reasonable prices. This development, coupled with an increase in disposable income, has greatly

***** See Regional Law of Campania no. 5 of 6 March 2015 on “Regional interventions for the reconversion of surplus food”; Resolution of the Regional Council of Emilia Romagna no. 104 of 24 March 2014, “Guidelines for the recovery, distribution and use of food for social solidarity”.

††††† See AGEA, Report on the distribution of food to the needy 2013, available at <http://www.agea.gov.it>.

§§§§§ In France, last month the Paris City Council unanimously passed the law banning large supermarkets and shopping malls, exceeding 400 square meters, from throwing away unsold products that are still good but no longer marketable for various reasons. From now on, companies will have to work with charities to arrange for the donation of these products. Alternatively, the unsold food may be composted or reused as animal feed or compost for agriculture or even for the production of energy. Breaches are sanctioned with penalties of up to EUR 75,000 Euros and two years’ imprisonment.

§§§§§ See Law 147/2013, Article 1, paragraph 236 (2014 Stability Law), which sets forth that *the non-profit organisations that provide food to the needy and the food business operators that donate this food to the non-profit organisations must ensure a proper state of preservation (...) and that the said objective is achieved through the preparation of specific manuals for the application of good practice in accordance with the provisions of Regulation 852/2004/EC validated by the Ministry of Health.*

reduced the incidence of food on the budget. There are also other contributing factors such as changes in the composition of the diet, again thanks to disposable income, and the search for products from faraway places, which thanks to the globalisation of markets reach practically every supermarket shelf worldwide.

These *phenomena*, together with changes in lifestyle, represent the most uncontrollable factors that contribute to cause food surpluses and are the result of the well-being of today's society.

5. Conclusions.

In the context of the analysis on the sustainability of well-being, the issue of food waste represents a complex aspect, the result of modern society and the well-being that characterises it, which involves multiple interests and is part of food security context. The issue briefly outlined brings to light the fact that food insecurity continues to exist, and indeed has worsened in many parts of the world, and raises questions on the impact of food waste on global food security. Thus, the issue is linked to several quite significant aspects related to environmental and food issues, e.g. the control of natural resources, the loss of biodiversity, climate change, soil erosion, the reduction of scarce resources such as agricultural soil and water, and the loss of natural habitats.

Food security is a major concern in large parts of the developing world. Food production must clearly increase significantly to meet the future demands of an increasing and more affluent world population. This study illustrates that one of the first means to fight imbalances and reduce tensions between the necessary increase in consumption and the challenging increase in production, is to also promote food loss reduction which alone has a considerable potential to increase the efficiency of the whole food chain. In a world with limited natural resources (land, water, energy, fertilizer), and where cost-effective solutions are to be found to produce enough safe and nutritious food for all, reducing food losses should not be a forgotten priority.

In conclusion, it is not realistic to believe that the issue of food waste can be eliminated, but it can be mitigated and reduced through a strategy against food waste at the European, if not global, level, which, starting with a common definition and uniform quantification methods, clearly indicates the actions to be taken, the target to be reached and the methods for monitoring the results obtained over the long term. In other words, the concept must be considered on a global scale in terms of its components, such as economic development, social progress and the evolution of society, and of the protection of food and environmental resources. These are interacting elements that must be balanced so that all interests linked to them can be satisfied in harmony. This balance is considered crucial to meet the objective of continuous improvement in the quality of life and the desire of allowing the entire planet to evolve and be able to hand down its potential to future generations. In this respect, it should also be considered necessary and urgent, given the need to keep the globalisation process alive, a phenomenon that ultimately appears inevitable, for the States and the EU to reacquire control over food sovereignty and to put in place an effective policy to provide support to farmers, to improve the supply chain in order to ensure access of food products on the market, also bearing part of the supply in order to achieve a policy of holding stocks to counter their scarcity^{*****}, such scarcity being incomprehensible in a society whose goals must include also the objective of preventing food supplies problems.

References

- AGEA, Relazione Piano di distribuzione degli alimenti agli indigenti 2013 - consuntivo delle attività realizzate al 30.04.2013.
 BIOIS, Preparatory study on food waste across EU 27, available at http://ec.europa.eu/environment/eussd/pdf/bio_foodwaste_report.pdf, 2010.
 Buffaria, B., Il programma europeo per la distribuzione di derrate alimentari agli indigenti: quale avvenire?, in *Agriregioneuropa*, 2011, 24.
 Costato, L. Dalla food security alla food insecurity, in *Riv. Dir. Agr.*, 2011, I, 3.
 FAO, Food Wastage Footprint. Impact on Natural Resources 2013.
 FAO, The State of Food Insecurity in the world 2014, 2014.
 FAO, The Food Wastage Footprint, 2014.

^{*****} Thus COSTATO, *Dalla food security alla food insecurity*, cit., 15.

- FAO, Global initiative on food loss and waste reduction, 2014.
- FSA. Consumer attitudes to food standards. UK: Food Standards Agency, 2008.
- Germano' A. e Rook Basile E., Manuale di diritto agrario comunitario, Torino, 2014, 335-403.
- Gonzales Vaqué , L., Food Loss and waste in the European Union: a new challenge for the Food law?, in European Food and Feed Law, 2015, 1-14.
- Jannarelli, A., La nuova food in-security: una prima lettura sistematica, in Germano' A. e Rook Basile E. (a cura di) Agricoltura e in-sicurezza alimentare, tra crisi della PAC e mercato globale, Milano, 2011, 17.
- Lattanzi, P., Gli ostacoli di ordine giuridico alla riduzione dello spreco alimentare, in *Riv. Dir. Agr.*, 2014, I, 273.
- Lipinski, B., Hanson, C., Lomax, J., Kitinoja, L., Waite R., Searchinger T., Reducing food loss and waste, World Resources Institute, Washington, 2013.
- National Academy of Sciences Post-harvest food losses in developing countries. Washington, DC: National Academy of Sciences, 1978.
- Nellemann, C. *The environmental food crisis*. Kenya: United Nations Environment Programme, Nairobi, 2009.
- Parfitt, J., Barthel M., Macnaughton S., Food waste within food supply chains: quantification and potential for change to 2050, available on <http://rstb.royalsocietypublishing.org/>, 2015.
- Schneider, F., Review of food waste prevention on an international level, in *Waste and Resource Management*, 2013, Issue WR4, 187.
- Waarts, Y.R., Eppink, M., Oosterkamp, E.B., Hiller S.R.C.H., Van Der Sluis A.A., Timmermans T., Reducing food waste, Wageningen University, 2011.
- World Economic Forum. Redesigning business value: a roadmap for sustainable consumption, Geneva, 2010, 16.
- World Food Programme. Hunger and markets. London, Earthscan, 2009.
- WRAP, The food we waste. Banbury, 2008.
- WRAP, Household food and drink waste in the UK, Banbury, 2009.