



**Fondazione  
Barilla**

*il tuo cibo, la tua terra*

people, environment, science, economy

# COMBATING WASTE

DEFEATING THE PARADOX OF FOOD WASTE



**WE THROW  
AWAY OVER  
4 MILLION  
APPLES  
EVERY DAY**

**LOVE  
FOOD**  
hate waste

GUIDO BARILLA  
SOLEDAD BLANCO  
BCFN YES!  
BARBARA BUCHNER  
ANDREA SEGRÈ  
JONATHAN BLOOM  
REN WANG  
ROBERTO CAVALLO  
TRISTRAM STUART  
FREEGANS  
MORENO CEDRONI  
DANIELLE NIERENBERG



## 5<sup>th</sup> INTERNATIONAL FORUM ON FOOD AND NUTRITION

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## BARILLA CENTER FOR FOOD & NUTRITION

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The contemporary world is experiencing a major food emergency. The food we choose to eat, its production chain, the ways and places in which we consume it, and its inequitable distribution in different parts of the planet have a profound effect on the mechanisms that govern our society and our times. In recent years, it has become necessary to compare the different points of view of the actors involved in the field of food. Ever since its creation in 2009, the Barilla Center for Food and Nutrition has established itself as a privileged platform for this choral dialog and for a wide range of issues about food and nutrition.

The BCFN's aim is to become a collector and connector between the different voices, offering solu-

tions and proposals, and putting science and research in communication with policy decisions and governmental actions.

The BCFN is dedicating an area of study and research to every crucial issue related to food and nutrition, to address current and future challenges: from the problem of access to food and its distribution in the world (*Food for All*) to the rebalancing of the unstable relationship between food and health through healthy lifestyles (*Food for Health*), from reflection on the food chain and assessing the impact of production on the environment (*Food for Sustainable Growth*) to the history of the relationship between man and food, in order to find some good solutions for the present (*Food for Culture*).

EDITORIALS

- 4**  
**Food, a value to defend**  
 by Guido Barilla
- 6**  
**Europe combats food waste in the food chain**  
 by Soledad Blanco



- 8**  
**Food to lose**
- 14**  
**A production chain of waste**  
 edited by Anastasia Lidia Scotto
- 20**  
**Creating a new food system**  
 edited by Elisa Bianco
- 28**  
**The supply chain that preserves food**  
 by Barbara Buchner
- 31**  
**We are what we do not eat**  
 by Andrea Segrè
- 32**  
**BCFN Yes! Young Earth Solutions**  
 by Marta Antonelli  
 Martina Sartori  
 and Natia Bejanidze

COMBATING  
 WASTE

DEFEATING THE PARADOX  
 OF FOOD WASTE

In this second issue of its magazine, the Barilla Center for Food & Nutrition addresses the global problem of food waste. This is a paradox in which food is allowed to be wasted along the path from production to consumption, often in the same countries where many people suffer from hunger. And it is a real social pathology that is harmful to people and the environment, and negates the value of food. Institutions and associations have been at work for years to counter it, as told by Barbara Buchner and Danielle Nierenberg (BCFN), Ren Wang (FAO), Soledad Blanco (EU), Andrea Segrè (Last Minute Market). In addition to the BCFN's research, Tristram Stuart (Freegans), Jonathan Bloom and Federica Marra instead describe wastage in different parts of the world. This issue of the magazine also devotes ample space to the everyday life of reusing and saving food, with the work of Roberto Cavallo, the actions of the individual consumer through new initiatives such as food sharing, the collection projects, and the culinary philosophy of Moreno Cedroni. And there is more: leftovers as a theme that links the past and the present, from historical books that explain how to cook leftovers to the app that teaches us not to ignore them.

WASTE IN THE WORLD

- 34**  
**United States of Waste**  
 by Jonathan Bloom
- 44**  
**The ecological modernization of Japan**  
 by Federica Marra
- 46**  
**Food losses in developing countries**  
 by Ren Wang

COMBATING WASTE

- 40**  
**A treasure of waste. Freegans, Feeding the 5K, FUSIONS**  
 a conversation with Tristram Stuart  
 by Alessandra Viola
- 52**  
**Recycling leftovers: an art with a capital "A"**  
 by Roberto Cavallo
- 55**  
**Food Sharing: sharing to avoid wasting**  
 by Pamela Pelatelli
- 60**  
**Preventing waste is the best way to save**  
 by Danielle Nierenberg

FOOD CULTURE

- 56**  
**A matter of common sense**  
 a conversation with Moreno Cedroni

COLUMNS

- 50**  
**Men(yo)u**
- 62**  
**APPetite**

62

8



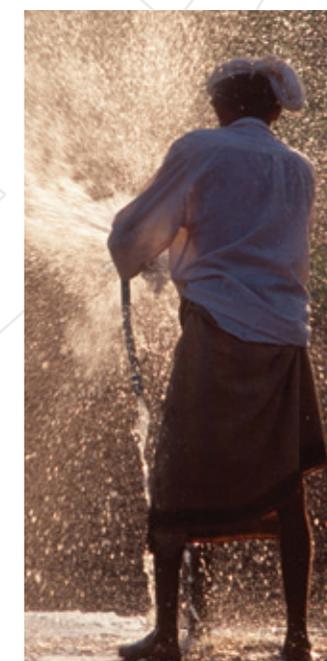
34



40



46



20



# FOOD, A VALUE TO DEFEND

by **GUIDO BARILLA**  
BCFN President

**F**ood waste is one of the most severe social, economic, and ecological pathologies among those facing our planet. For three reasons. The economic assessments are the most obvious. At a time in history when, every year, nearly one billion people are still dying of hunger or have to settle for inadequate nutrition, it is unacceptable that over a third of the world's food remains abandoned in the fields or ends up in landfills. Then, there is a reason of an environmental nature. Today, we know that every product not only generates CO<sub>2</sub> throughout its life cycle – and therefore has a carbon footprint – but by consuming water, it also has a water footprint that weighs heavily on climate change. Producing food that will never end up on a table – because in many cases it will be taken directly from the refrigerator or pantry to the trashcan – means unnecessarily aggravating the health of our planet.

But there is also a psychological reason, which I consider to be the most obvious symptom of this disease: the loss of the value of food. After years of agricultural industrialization, the decline in the prices of food has been unstoppable and this phenomenon has fueled the hopes of those

who have believed that it would be possible to feed everyone on the planet. Unfortunately, the main result has instead been the loss of people's perception of the real value of food.

Every day, all of us are careful not to waste what we attribute value to (time, money, talent), and yet, we waste a lot of food. This is not only due to logistics problems (transport, warehouses) or to overly-aggressive marketing by the seller (discounts, promotions, advertising). The reason should be sought in a cultural change that has characterized the last (few) decades of our history and has relegated that which mankind has always rightly regarded as a primary good – and thus, something to preserve and defend – to the role of a generic and ephemeral commodity.

If it is true that only those who do not give any value to food are prepared to waste it offhandedly, I hope that reading this publication will help all of us regain the awareness that food will always be the foundation of our existence and that caring for it is the only way to preserve our health and the health of our planet.

*Guido Barilla*

# EUROPE COMBATS FOOD WASTE IN THE FOOD CHAIN

by **SOLEDAD BLANCO**

Director for Sustainable Resources, DG Environment, European Commission

In 2006, more than 89 million tons of food waste was generated in the EU. This represents an average of about 180 kg per person. Food is wasted across the entire food chain, from the agricultural production stage to the storage, processing, distribution, management, and consumption of food. Wasting food is economically bad, environmentally wrong, and morally unacceptable, especially when considering the true scale of the resources required to produce those tons of food. According to the UN Food and Agricultural Organization (FAO), if current demand trends continue, the rise in the world's population from 7 billion to 9 billion by 2050 could push food demand up by as much as 70%. By tackling food waste, as much as three-fifths of the total supply increase needed could be realized.

Retail waste accounts directly for about 4% of total food waste in the EU, but the influence of retail companies on waste generation both up and down the food chains is much, much higher. The EU Retail Forum for Sustainability, a multi-stakeholder platform co-chaired by the European Commission and retailers, has recognized the important role retailers can play in helping to reduce food waste. The Forum published a document on waste minimization in October 2012, giving specific recommendations

to retailers, policy makers, and other stakeholders, to be implemented in the coming years. As an example, retailers should “offer discounts on products and, where possible, donate products approaching their ‘use by’ and ‘best before’ dates,” and should “inform consumers about the actual meaning of ‘use-by’ and ‘best before’ dates; provide advice to consumers on how to handle, store, and use food more efficiently;” and “adapt packaging sizes, increase sale of loose foodstuffs.” The implementation of all the recommendations will be followed-up and monitored in the context of the Retail Forum meetings.

In addition, a voluntary waste agreement was signed in October 2012, at the Retail Forum Annual Event, by 19 retail companies and associations committed to implementing at least two awareness-raising initiatives on waste reduction, including food waste, by mid-2014.

This year, building on the objective of halving edible food waste by 2020, the European Commission will present a policy document on Sustainable Food, which will have a strong focus on food waste. Achieving that ambitious goal would require the participation of all the relevant stakeholders, including food producers and retailers. This is not only in the interest of people and the planet, but clearly also in the interest of competitiveness in the food sector.



# FOOD TO LOSE

*Food waste is common to the whole world as a consequence of economic and productive policies, organizational shortcomings in the food chain, or food habits, and in addition to the loss of food, it means big economic losses globally. This is a worldwide phenomenon of impressive scope and a vicious cycle that needs to be interrupted in order to meet the food demands of a growing population.*

edited by **ANASTASIA LIDIA SCOTTO**

**F**ood is simply too good to waste is the slogan of the Natural Resources Defense Council (NRDC), an American non-profit organization at the forefront in the fight against food waste. Yet food waste is a huge phenomenon which concerns both the more or less avoidable losses that arise along the supply chain, and the actual wastage itself. Its dimensions were highlighted in 2011 by the Food and Agriculture Organization (FAO), which estimated global food waste at 1.3 billion tons, about one third of the total production of food for human consumption.

Today, the figures published by the UN in its report *How to Feed the World in 2050* indicate that the world population will reach 9.1 billion people by 2050 and this will lead to a 70% increase in food production. Yet every day, a huge amount of food is lost or wasted along the entire food chain,

from the first phase of production in the field to that of its transformation and distribution, to its final consumption. But how much is thrown away and which sector of the supply chain produces the most waste?

The first problem to solve for meeting the challenge against food wastage is to quantify it correctly, because there is no global common definition of food waste and different countries have associated different meanings to this term.

This makes it difficult to compare the data, as does the lack of a common methodology for estimating the wastage. In fact, the methods may change from one stage of the supply chain to another (database consultation, interviews, etc.), making it impossible to compare the data collected and preventing the identification of the most critical areas in the production of waste, and the development of targeted strategies.



**+70%**

the increase in food production required by 2050 to meet the demand for food

**3/5**

of the supply required by 2050 could be achieved by reducing waste

The causes of food waste can be many and include: environmental and climatic factors which may lead to the destruction of crops; limits of agricultural techniques; economic reasons, such as aesthetic and quality standards (which may lead to the elimination of those products that fail to meet certain canons); market laws that determine the major or minor convenience in harvesting a product; and consumers' choices, resulting in perfectly edible food being thrown away. The problem of food waste, especially in a time of crisis like this, has driven the European Parliament thinking to proclaim 2014 as the "European year against food waste" and to adopt a resolution that will hopefully lead to a 50% reduction of waste by 2020.

mers do not perceive the convenience of avoiding waste. According to the USDA, in 2008, the total of losses of fruits and vegetables by consumers corresponded to \$91.54, which is 2.4% less than what an average American spends on food.

The second major factor that affects food waste is the trend in mature markets to not discourage wasting, since the more food is wasted, the greater the sales. This "vicious cycle" can be found throughout the food supply chain: at every stage, wastage downstream is translated, in practice, into the ability to sell more upstream.

The interaction between food abundance, low costs, technical or climatic factors, economic reasons, and the laws of the market has led to the current scenario.

vegetables. In most cases, the foods eliminated are those that do not correspond to specific standards required. In his book *American Wasteland* (2010), Jonathan Bloom says that a big American company which deals with the packaging of tomatoes has estimated that the amount of tomatoes that are not eligible for sale but are still suitable for human consumption could fill a truck with 10,000 kg every 40 minutes.

Going forward from the early stages of the supply chain, the food thrown away by large and small supermarkets is approximately 20 million tons – mostly made up of fruits and vegetables – and this waste accounts for almost 10% of the total availability of food in the retail sector. In this case, the problem is that the losses within supermarkets are

American families throw away about 25% of the food they have bought and domestic waste per capita is equal to 109 kg. Portions that are too abundant, confusion regarding the descriptions of the expiry dates stated on the labels, and "three-for-two" offers that remain in the refrigerator are just some of the causes at the basis of domestic waste.

## EUROPEAN FOOD WASTE

In Europe, the data collected by Eurostat in 2010 indicates that the amount of food lost each year along the supply chain amounts to 89 million tons. Therefore, every European citizen throws away an average of 180 kg of food. In this case, too, families are the major cause of food



## A COMPLEX PHENOMENON

But why is so much thrown away? Besides the reasons listed above, the problem of the wastage of food products originates from the interweaving of two different factors. The first is that food is a relatively inexpensive good, and most of the population has access to large amounts of food at low prices, and thus spends too little, which means that consu-

## THE CASE OF THE UNITED STATES

In the United States, in 2012, 40% of the food produced was thrown away. An average American today wastes ten times more than an inhabitant of Southeast Asia and up to 50% more than an American living in the 1970s. According to the NRDC, in the first stage of the supply chain, that of production, 20% of the food losses is made up of fruits and

seen by managers as a "part of the business." The director of the famous American chain Trader Joe's has stressed that "the truth from the point of view of someone who runs a supermarket is that a store that does not throw away much makes you think that there is not a large availability of products and that the customer will not be able to be satisfied." However, the greatest wastage takes place in the home, accounting for 60% of total food waste.

waste: in fact, 42% of the total agri-food waste comes from this sector. In particular, Germany throws away 11 million tons of food per year, which means that every German citizen throws about 81.6 kg of food into the trash (equal to an economic value of 235 euros), 53 kg of which could be perfectly avoidable. France, however, seems to be a much more virtuous country. In fact, French families throw away about 30 kg of



**1.5 mln**

tons of agricultural products  
each year remain in the fields

food per year. According to data collected by Eurostat, the most wasteful country is the Netherlands, with every Dutch citizen throwing away 579 kg of food.

In Italy, the data collected in 2011 by Last Minute Market and UniBo indicates that each year around 1.5 million tons of agricultural products remain in the fields, accounting for 2.73% of total agricultural production. Furthermore, a survey conducted by analyzing small and large supermarkets has shown that in the distribution sector, 270,776 tons of perfectly edible food are thrown away every year. Instead, in order to understand how virtuous Italian families are, 3,500 households were interviewed.

The data collected showed that about a third of the respondents were aware of throwing away a large part of the food they purchased, while another third declared they eliminated little or nothing. On average, Italian households throw away food no more than once a week, and the

trash is still the most commonly used means for getting rid of what is not consumed, while composting or the donation of food that is no longer wanted are “recycling” methods that are still relatively unknown and adopted too little.

### EMERGING WASTE

Food waste, however, is not just a problem in the Western world. According to data presented at the World Water Week held in Stockholm last July, in China about 20% of the food produced is lost along the food supply chain.

This figure is particularly serious when one considers that China is an emerging economy facing the problem of food security, and is dealing with scarce water and limited land.

Producing so much food that then becomes waste means wasting about 17-20% of the country's water resources, equal to the water consumption in France.

## COMBATING WASTE: EVENTS IN 2013

### June 6-7, 2013

Sustainable Food Summit  
Amsterdam, The Netherlands

### June 7, 2013

FUSIONS - Regional meeting  
organized by BIO Intelligence  
Service, Paris, France

### June 20-21, 2013

Fourth annual OECD Food Chain  
Analysis Network Meeting  
Paris, France

### June 26, 2013

Caterraduno against waste  
Senigallia, Italy

### September 28, 2013

Trieste Next, award for 100  
European Good Practices  
Trieste, Italy

### September 29 - October 2, 2013

First International Conference on  
Food Security, Noordwijkerhout,  
The Netherlands

### October 4, 2013

Feeding the 5000  
Copenhagen, Denmark

### October 16, 2013

World Food Day

### October 17-18, 2013

FUSIONS - First meeting of the  
European platform, Amsterdam,  
The Netherlands

### November 16-24, 2013

Fifth European Week  
for Waste Reduction

### Occasions that will include Save Food events:

### November 3 - 6, 2013

The Global Food Equipment  
& Technology Show  
Chicago, USA

### November 26 - 28, 2013

Food Processing and Packaging  
Exposium, Nairobi, Kenya

An aerial photograph of a large shipping yard. The yard is filled with numerous stacks of colorful shipping containers in various colors including red, blue, green, yellow, and white. Many of the containers have logos for major shipping companies such as Maersk, Evergreen, and COSCO. Several large blue gantry cranes are visible, positioned over the stacks of containers. The perspective is from a high angle, looking down on the yard.

# A PRODUCTION CHAIN OF WASTE

*The value of food also depends on the energy utilized to produce it and get it to us. This is why wasting food is not just a matter of creating refuse, but means wasting the consumption of valuable resources such as water, land, oil, and energy; and a doubling of carbon dioxide emissions, first for its production and then for its disposal.*

edited by **ANASTASIA LIDIA SCOTTO**

When it comes to the impacts of food waste, we immediately think of the carbon dioxide emissions associated with the disposal of products that have become refuse. However, this is only a part of the total impact generated by food wastage. Any food that arrives on our tables every day has experienced a long journey that started in the fields where it was produced, went to the industry that transformed it, continued in the markets and supermarkets that distributed it, and ended up in our homes, where the food can be further modified and finally consumed or thrown away. This long journey “from cradle to grave” involves a consumption of resources, labor, and, consequently, of greenhouse gas emissions. So, when considering a foodstuff throughout its life cycle, you must also take into account the water, energy, and resources that are consumed, and therefore wasted when this food becomes refuse. From the environmental point of view, the wasting of food determines a waste of fertilizers and pesticides, and the fuel used to transport food which causes a strong emission of methane, a climate-altering gas that is 21 times more powerful than carbon dioxide. The problem of environmental impacts associated with the waste of food takes on an even greater weight when one considers that, according to data collected in 2012 by the Institute for Environmental Protection and Research (ISPRA), the agricultural sector alone emits as much as 33 million tons of CO<sub>2</sub>, and thus, after that of energy, it is the second largest emitter of greenhouse gases nationally. However, this estimate only includes greenhouse gas emissions associated with the first stage of the food chain, or in the field, without taking all the others into consideration. According to the 2009 Agricarbon report of the Institute of Food Services for the Agricultural Market (ISMEA), if we take a step back and analyze the emissions associated with the food industry sector (which include not just those related to agriculture, but also those generated by the processing of the products, their transport, and packaging), we see that this is responsible for 20% of Italian greenhouse gas emissions. These figures show how much weight the agri-food production has on the

environment when limited to analyzing only the first two stages of the supply chain. If we take distribution and final consumption into account, the impact of the food chain on national greenhouse gas emissions is even greater. Once food has been thrown away, as well as all the carbon dioxide emitted in vain for its production, you also have to add that which is associated with its landfill disposal. To get an idea of the scale of the problem, ISPRA tells us that even today, approximately 40% of municipal waste ends up in landfills and these are the largest source of methane emissions. According to a study conducted in the UK by the non-profit organization Waste & Resources Action Programme (WRAP), eliminating food waste from landfills would lead to a reduction in greenhouse gas emissions equivalent to that which would be obtained by removing one fifth of the cars from the nation’s roads. In Italy, according to a study done in 2011 by the University of Bologna and Last Minute Market, the wasta-

**80%**

the percentage  
of drinking water  
consumed by  
agriculture in the USA

ge of food products along the supply chain, from production to distribution, emits about 4 million tons of CO<sub>2</sub>, and this value corresponds to approximately a quarter of what Italy should cut in order to comply with the Kyoto agreements. Along with the environmental

matter associated with it. According to the study cited earlier, in Italy food wastage corresponds to approximately 3% of the country’s energy consumption. For the production of the one and a half million tons that are left in the fields, the energy wasted in agriculture corresponds to approximately 98,000 toe (tons of oil equivalent), an amount that is equal to what would be needed to heat 67,000 apartments of 100 m<sup>2</sup> for a year. The University of Bologna data also indicates that food wastage in the food industry corresponds to 80,000 toe, a quantity that could heat 55,000 apartments of 100 m<sup>2</sup> for a year. Then, added to the waste of energy, there is also the waste of oil. It is estimated that food wastage in Italy leads to a waste of about 19 million tons of barrels of oil, equivalent to throwing away about one billion two hundred thousand euros. Waste Watcher, the national observatory on food waste, estimates that the total economic



**15 bln  
euros**  
the value of food  
wastage in Italy



## Throwing away food means having unnecessarily consumed water and land

value of waste along the food chain amounted to more than €15 billion in Italy, more than 1% of its GDP. Besides the energy wasted in the production of food waste, there is another form of energy that is lost: chemical energy. In a study conducted by the Last Minute Market in a supermarket in Bologna, it was found that, in one year, up to 92,000 pounds of edible food, or an average of 252 pounds per day, comprised mostly of fruits, vegetables, and meat are disposed of as garbage.

This enormous amount of refuse corresponds to a waste of 310,000 kcal per day. This food that is unnecessarily removed from a supermarket could provide a complete and balanced diet for 18 people a day, and fully satisfy their energy needs. Even in the United States, food wastage has a strong impact on the environment and energy. According to a survey carried out in 2012 by the Environmental Protection Agency (EPA), the food that ends up in the trash is responsible for 16% of national emissions of methane and is equivalent to wasting \$165 billion every year. The data collected indicates that the energy consumption associated with food wastage accounts for 2.5% of the total and is equal to wasting 300 million barrels of oil each year. But it is not just energy and oil that are being wasted. According to the United States Department of Agriculture (USDA), agricultural production in the United States is responsible for 80% of the consumption of drinking water across the country and uses about 50% of the usable land. Throwing away food means having consumed all this water and land to no avail.

And added to the waste of resources, there are also the consequences of having to manage a large quantity of waste that would actually be avoided.

In fact, the food products that end up in landfills correspond to about 12% of municipal solid waste in the United States and the cost for their disposal is approximately \$1.3 billion.

To realize the extent of the wasting of resources, energy, and money associated with food being needlessly thrown away, in 2011 an American study was published in the "The Journal of Consumer Affairs," analyzing tomatoes, in particular. According to data collected in 2008, about 415 million tons of tomatoes were lost or wasted along the supply chain.

Having thrown away this huge amount of tomatoes is equivalent to having unnecessarily consumed about 9,000 hectares of land and 15 billion liters of water, and having wasted an average of 7 million working hours. The disposal of the tomatoes that were thrown away costs about \$17 million, and caused 311,845 tons of greenhouse gas emissions.

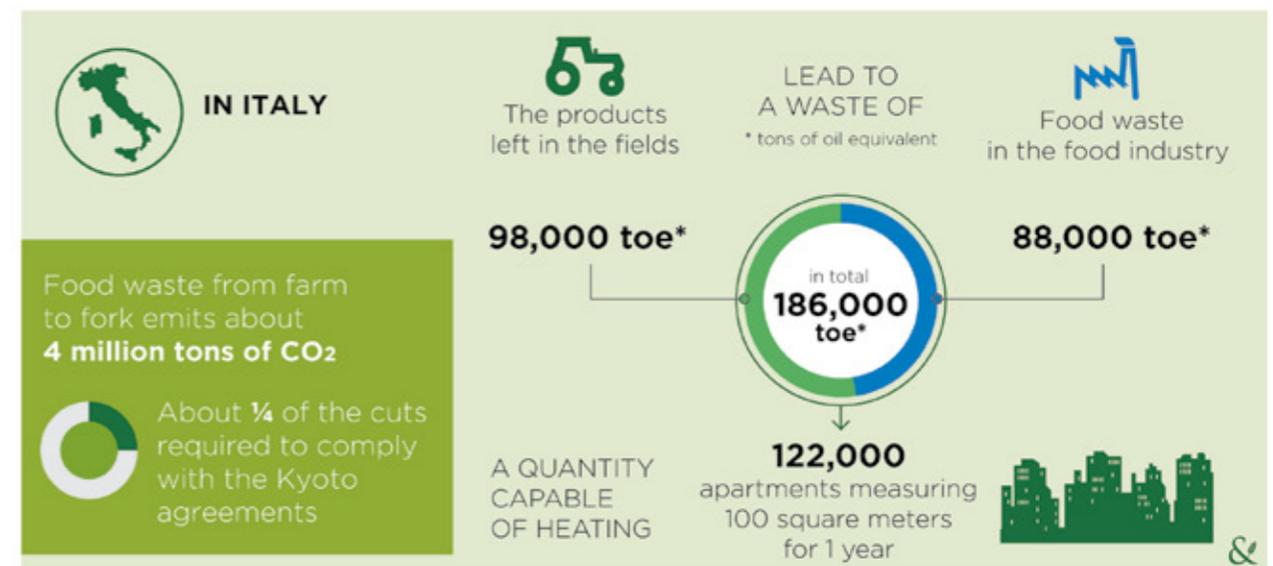
According to the EPA, avoiding the wastage of these tomatoes would reduce greenhouse gas emissions by an amount equal to that obtained by the elimination of 55,471 cars. Reducing food waste even by just 15% would be enough to feed more than 25 million Americans a year, and this is particularly important when one considers that, in this period of crisis, one American in six is unable to feed their family.

In Europe, the data collected by DG Environment in 2009 indicated a production of food waste along the supply chain (considering the stages ranging from distribution to final consumption) of approximately 90 million tons. The production and disposal of this food waste leads to the emission of 170 million tons of CO<sub>2</sub> and consumes 261 million tons of resources (which include both the land and the water consumed).

## FEED THE WASTE OR FEED THE HUNGRY?



### FOOD WASTE: DIMENSIONS AND IMPACT ON THE ENVIRONMENT



Sources: FAO (2011) - Kummu et al. (2012) - Segrè and Vittuari (2013)

# CREATING A NEW FOOD SYSTEM

*Bringing home the bottle of wine that you opened at the restaurant, equipping a supermarket with a kitchen, discounting products close to their expiration date, distributing surplus food, and, above all, spreading information: these are just some of the initiatives of public and private institutions, associations, and individuals that are aimed at limiting the wastage of still perfectly edible food.*

*And restoring its proper value.*

edited by **ELISA BIANCO**

**M**any food products that are still perfectly good often end up unsold for reasons that have nothing to do with the quality of the food: damaged packaging, near the expiry date, surplus production, programmed replacement of the stock, impulsive purchases, and so on. To retrieve these still edible but unsellable products, many initiatives have come into being around the world; they can be distinguished by the nature of the subject promoting them, the set objective, and the type of action undertaken.

## DISTRIBUTING SURPLUSES

The first initiatives that come to mind are represented by the direct distribution of food aid by for profit and non-profit organizations. In most cases, these are voluntary (such as City Harvest in the United States) or private associations (such as Last Minute Market in Italy) that collect donations from the industry, distribution, or food services for their distribution to facilities devoted to the assistance of needy and marginalized people. In some cases, the

food may come from public receptions, catering, or concerts (The Rock and Wrap It Up!), or organizations that recover wasted food that can be used in meals served in canteens or by organizing charity dinners and public events (such as the initiative Feeding the 5000). Sometimes, these are government agencies and public institutions that promote the reuse of foods, especially through information campaigns or certifications of commitment achieved by a particular structure. In many cases, however, the awareness campaigns are also carried out by private associations and entities, whose initiatives, usually aimed at the general public (such as Teller Statt Tonne in Germany) become even more effective if targeted at schools, because they can help train future generations of producers and consumers (such as the Edible Schoolyard Project in the United States). Moreover, since 2011, FAO has also begun to be involved in this area, with its adhesion to the Save Food campaign promoted at the trade fair in Düsseldorf. Starting from the idea that the food left in the fields of countries in the developing world and the leftovers in the homes of developed



countries can be used to feed those who need it, Save Food tries to act globally on the entire food chain, allowing a vast number of partners, from the industrial to the research sectors, and from politics to civil society, to communicate with one another. For its part, the European Union has also begun to take important steps: among the projects funded in 2012 under the Seventh Framework Programme, one of the main instruments of support for the field of research of the European Commission, the foremost is FUSIONS (Food Use for Social Innovation by Optimising Waste Prevention Strategies). Begun in August 2012, the project has a four-year duration and aims to establish a more efficient use of resources in Europe by reducing food waste through social innovation. One of the main tools for the achievement of FUSIONS' objectives is the creation of a platform to bring together those individuals who can affect food waste at every level: each member brings their own experience and knowledge to arrive at a 50% reduction in food wastage and a 20% reduction in the demand for resources throughout the supply chain by 2020.

## FROM THE SHELF TO THE TRASHCAN

In some cases, the initiatives are guided by producer cooperatives which redistribute that portion of production which fails to reach the market in the local community, such as the Grow Sheffield's Abundance Project in Great Britain. However, the products that arrive at supermarkets are often wasted: due to business strategies and sales policies, many foods do not even reach the shelves, others remain unsold or perish in the fridge at home because customers, fascinated by promotions, have bought too much. Therefore, some retail chains have launched initiatives for reducing waste that include: the collection and redistribution of surplus food, the possibility of deferring sales promotions with purchases at separate times (the Buy one, get one later initiative of Sainsbury's and Tesco), the use of food waste as fuel to generate electricity, improvement of packaging (Morrisons and Marks & Spencer in Great Britain), and suggestions for storage conditions on the label or on the Internet (Morrisons in the UK). Recen-

tly, the Spanish chain Mercadona has also started to collaborate with the food banks: it has made 217 of its supermarkets available as collection points, helping to recover more than 300 tons of food. In some parts of the world, there are also an increasing number of websites on the Internet that sell products close to expiry at reduced prices.

## EVERYTHING IS REUSABLE

Then there are initiatives, other than distribution, that are promoted by the restaurant sector. In some countries, such a system is already widespread – instead, in others, restaurant-goers do not always bring home leftovers of food and drink; hence the usefulness of campaigns such as The good that's left in Lombardy or Buta Stupa in Piedmont. In some cases, the local community is involved in initiatives promoted by individual structures, as in the case of the People's Supermarket in London, a supermarket that aims to meet the needs of the local community by offering products at affordable prices. The supermarket is run by a cooperative that customers may also join, and who, in exchange for a small fee (25 pounds per year) and their commitment to carry out four hours of volunteer work per month within the structure, can get a 10% discount on all products sold there. The People's Supermarket is also committed to reducing trash and food waste thanks to a kitchen installed inside the supermarket, where the food close to expiry are used as ingredients in the preparation of ready-made meals (soups, salads, cakes, etc.) Finally, not to be forgotten are the commercial initiatives that exploit waste and the transformation of residues by using them in the production of other commercial goods, as in the case of the cosmetics line IoMiAmo (I love myself). From an institutional point of view, some countries more than others have undertaken an official commitment in the fight against food waste in Europe: France, for example, is in the lead, while as to the rest of the world, Brazil deserves a special mention.

## GROCERY STORE SOLIDARITY

In France, numerous initiatives include ministries and government agencies among their partners, as demonstrated, for example, by the commitment of the French Agency for Environment and Energy, which has included in its areas

of intervention the fight against food waste, with the aim of reducing and preventing the production of waste.

The project of the Association Nationale de Développement des Épicerie Solidaires (ANDES) is especially noteworthy. Founded in 2000, the ANDES network brings together the épicerie solidaires, that is to say, supportive stores in which people with a low income can buy products of daily use at 10-20% less than the normal selling price.

Thanks to national and local agreements with manufacturers, food industries, and distribution chains, local businesses are supplied through the collection from the distribution channels of the unsold and edible products that would otherwise be destroyed.

ANDES' partners include two ministries, various local and national government agencies, industry representatives (such as Ferrero France), distribution (such as Carrefour and Simply Market), and several charities.

The stores in solidarity also play an important social role: they cater to a range of poor people who cannot afford access to standard distribution channels, but who also would never appeal to charitable organizations, which they perceive as a form of social exclusion.

The ANDES network, therefore, achieves several objectives through its activities: reduction of the wasting of fruits and vegetables, promotion of healthy eating habits among the less well-off, the social inclusion of people currently excluded, and the recovery of national food surpluses. At the end of 2012, ANDES counted 240 épicerie, about 130,000 customers, and more than 1,300 tons of fruits and vegetables had been recovered from the wholesale markets in Rungis, Perpignan, Lille, and Marseille (of which 5 tons per day from Rungis alone, one of the largest markets in the world).

## DEMOLISHING WASTE AND HUNGER

Among the developing nations, Brazil is a virtuous model. This South American country is among the world's top producers of food, yet many people there live below the poverty line and every year more than half of the food for domestic consumption is wasted somewhere along

## REGIONS AND MUNICIPALITIES

The goal of the Zero Waste Charter, signed in December 2012 by more than 50 mayors from the region of Emilia Romagna and by 1,000 mayors in Padua for the “Mille sindaci a spreco zero” project, is to stimulate actions for reducing food waste. The initiative has been promoted as part of the campaign entitled “A Year Against Waste” (unannocontrolospreco.org).

Sharing, discussing, and networking: these are the objectives bringing so many administrations

together. And also of Save Food, the project to raise awareness of the problem of food waste in the Municipality of Settimo Torinese: the unsold food is retrieved and distributed to the most disadvantaged citizens, thanks to a network created with the distributors, Caritas, and the Military Red Cross.

In 2012 alone, in this town of about 48,000 inhabitants, about 26,000 pounds of food were recovered that otherwise would have been wasted.

## INDUSTRY: AUSTRIA AND FRANCE

The French multinational Sodexo, which is also active in catering, has placed itself at the forefront with the project “Stop Wasting Food,” to create awareness against the waste in canteens. It has eliminated the use of trays (thus reducing wastage by 30%); it asks that people serve themselves a little at a time, in several helpings; and it provides information, explaining how food waste affects CO<sub>2</sub> emissions.

Instead, in Austria, a country with a strong tradition of bread-making but with an annual wastage of 60-65 thousand tons of unsold bread, Ring and Salzkammergut-Bäckerei, the giant manufacturer and supplier of bakery products, provides explanations on how to store bread, inaugurates initiatives for ordering bread – with advantages for the consumer –, and communicates a new way of selling and buying. Variety, not abundance: because even if we cannot find exactly what we were looking for, there will always be something that resembles it as to taste and nutritional properties.

## RETAILERS: TESCO

Tesco, the British chain of grocery stores, has been countering the idea that large retailers are always responsible for great food wastage. With its campaign BOGOF (Buy One, Get One Free Later), begun in 2009, it seeks to reverse the trend of waste often caused by the logic of 2x1. In this way, you always buy two products (vegetable or fruit) at the price of one, but the second one can be picked up the following week, thus avoiding the risk of not being able to consume it. The need to conserve products is also at the basis of the new Tesco packaging, which – thanks to a particular strip that absorbs ethylene, the plant hormone that causes decay – is able to maintain vegetables fresh for a long time. The result? One and a half million tomatoes and 350,000 avocados that did not have to be thrown into the garbage every year.

the supply chain: 20% during the harvest, 15% in the processing, and 20% within homes. The program *Fome Zero* (Zero Hunger), launched in 2003 by President Lula, caters to 44 million people, and thanks to Mesa Brasil ([www.sesc.com.br/mesabrasil](http://www.sesc.com.br/mesabrasil)), in 2012, every day a million and a half people were able to receive food aid. Mesa Brasil, a program of food and nutrition security stemming from an initiative launched in 1991 in Parana by the Serviço Social do Comércio (SESC), manages astonishing numbers: in 2012, it recovered and redistributed more than 41,000

tons of food, it is active in 408 cities, it has more than 3,000 partner companies that donate food, and it carries out nearly 5,000 educational and training activities in the fields of nutrition and social work. Another successful program has been launched in the city of Curitiba, Garbage that is not garbage, where in exchange for every 4 kilos of recyclable waste collected and delivered to the collection unit, you can receive 2 kilos of food. In addition, the institutional commitment has been further increased recently with the enactment of laws that aim to reduce food wastage.

## COLDIRETTI AND CARITAS

According to data collected by Coldiretti, in Italy about 30% of all food that is purchased ends up in the trash, and to limit domestic waste, more readily concerning fresh products, fruits and vegetables should be purchased in smaller quantities and more frequently, preferably unpackaged and in season. But above all, we should devote more time to cooking. Because what we call “waste” is the basis of many dishes, some of which are traditional: meatballs, pasta omelets, jams made from fruit peels,

candied peels, Tuscan soup, and many others. Coldiretti prepared these recipes on the occasion of the XI International Forum for Agriculture and Food in Cernobbio for the “waste table.” With the collaboration of chef Paul Cacciani, Caritas of Rome, together with the Association of Bakers belonging to the CNA in Rome and the Consumers Association of Lazio - already the protagonists of the food donation campaign “Today I’m buying” - has put them in the book *Your recipe against waste*.

## BANCO ALIMENTARE THE FOOD BANK

The management of large amounts of food is something that industry, catering, and large organized distribution have in common, and, consequently, the need to resolve the problem of tons of waste and excess material. Banco Alimentare (The Food Bank), an association that has been active in Italy since 2003, is responsible for turning these surpluses into resources, and distributing them free of charge to associations and charitable organizations. The donated products come primarily from: the Agency for Disbursement in Agriculture (AGEA) of the European Union, which distributes food in excess according to the European food aid program; the food industry, a network of 700 large and small companies that have to reallocate

unmarketable products - due to packaging defects or sampling, or for reasons of seasonality or being close to the expiration date - and that have preferred donation as a solution; mass distribution which, for the same reasons as industry, possesses a wide range of products that can no longer be sold; and catering, which would otherwise have to throw away still perfectly edible ready-made meals that cannot be proposed again, for example, in canteens. This complex network is based on the work of more than 1,600 volunteers and it allowed for 61,000 tons of food to be donated in 2012 alone: recirculating food, in a society that is experiencing an ever-increasing demand for food aid.

## WHAT TO DO? - THE SMART DECALOGUE



### SMART SHOPPING

Before shopping, check out what is really needed.



### SMART COOKING

When you cook, pay attention to the quantity.



### SMART REFRIGERATOR

In the fridge, put foods about to expire in the front.



### SMART FREEZER

Freeze foods you won't be able to eat soon.



### RECIPES AGAINST WASTE

Use leftovers and food scraps.



### FRESH AND SEASONAL PRODUCTS

Favor purchasing from the producers.



### IS IT TOO MUCH FOR YOU?

Give some to your neighbors.



### ARE YOU UNABLE TO FINISH WHAT YOU ORDERED AT THE RESTAURANT?

Don't worry, just ask to take your leftovers home in a doggy bag. Even Michelle Obama does it...



### "BEST BEFORE..."

This means that foods are still fit for consumption on and after that day. Check carefully before you throw them out.



### TRUST YOUR NOSE

Before throwing away food, smell it, look at it, and if its appearance is good, taste it.

SOURCE: BCFN - Segrè A. (2013) "Vivere a spreco zero. Una rivoluzione alla portata di tutti"

**AWARENESS-RAISING INITIATIVES**



**INITIATIVES OF DISCOUNTS FOR EXPIRING FOOD**



**INITIATIVES OF MAJOR RETAILERS**



**REDISTRIBUTION INITIATIVES**



**IOMI AMO**  
FOOD for BODY  
**BUSINESS INITIATIVES**

**CITYSLICKER FARMS**  
**INITIATIVES IN THE AGRICULTURAL SECTOR**

**THE PEOPLE'S SUPERMARKET**  
**INDIVIDUAL INITIATIVES**

**FUSIONS** **save FOOD**  
**INSTITUTIONAL INITIATIVES**

**ilBUONOche** **Buta Stupa** **PORTAMI**  
**CATERING INITIATIVES**

**INITIATIVES FOR REDUCING RE-USING AND RECYCLING**



# THE SUPPLY CHAIN THAT PRESERVES FOOD

*A world that wastes so much food is a world with a food chain that does not work as it should. To reverse this trend and rebuild an order that restores the value of food, it is necessary that changes take place at every stage of its production and consumption. The BCFN reflects on who should be dealing with these changes and how.*

by **BARBARA BUCHNER**

**F**ood waste is a problem that affects everyone. Not only because it occurs all over the world, but because of its massive manifestation: it now has a heavy impact on society – and will have even more so in the future. Continuing to lose food along the food chain in a world in economic crisis means losing the opportunity to work on a system that does not work; it means preventing people who suffer from hunger from having access to this excess production; but it also means not having a clear picture of just how many people we are producing for today, and how much we will have to produce in the future. This is why, in recent years, the Barilla Center for Food & Nutrition and many institutions, organizations, and associations have decided to take a stand against waste.

## DEFINE IN ORDER TO QUANTIFY

There are many practices that need to be enacted in order to drastically reduce, if not eliminate, a global phenomenon as entrenched as that of food wastage. First of all, according to the BCFN,

we need a clear definition of what wasting food means. *Food losses, food waste*: wastage or loss? Defining the one and the other helps to better know their features and possible solutions, and to quantify and analyze their causes. Some have already been identified, others have yet to be explored, and it is for this reason that all the phases of the food supply chain still need to be observed and understood so as to be able to correct it.

## A MATTER OF POLICY

It is also necessary for governments to examine why food wastage seems to have become cost-effective, especially in a world that should be saving its resources. The reduction of losses and waste must appear with the right priority on policy agendas; it is important that institutions in Europe and around the world assess the impacts involving food waste at every stage of the supply chain – by increasing and improving research and investigation of the current situation – in order to study maneuvers and appropriate regulations, and to set standards to be

1

Defining the problem, understanding the causes

2

Stimulate the attention of governments and institutions

3

Create a network of cooperation

4

Promote events of consumer information

5

First reduce, then recycle, and share where appropriate



If everyone does their part, food will take another route than the one which causes it to be rejected and discarded

.....

met in order to reduce waste. Because before even thinking about how to recover our waste, how to recycle it and use it for composting and producing energy or animal feed, it is important to adopt certain practices to reduce it. In fact, we need to re-dimension the problem right at the root by limiting the number of resources necessary for putting the phase of its re-use into practice.

## REDISTRIBUTION OF SURPLUS FOOD

In fact, there is a part of waste that is inevitable, but first of all, it should be given another chance to become food for those who may need it. This can be done through donation and redistribution initiatives for segments of the population in need. There are many that have come into being around the world, but it should be a well-founded daily practice and not just sporadic or isolated initiatives: supermarkets, open-air markets, companies, and canteens should allocate the food, that for some reason can no longer be sold, to those who cannot afford to buy it. Only after traveling this road, any surpluses that still exist, or those that are not edible, can be – and should be – allocated for animal nutrition and conversion into bio-energy.

## SUPPLY CHAIN COOPERATION

In addition to cooperation between distribution and humanitarian associations, or those involved in the distribution of food aid, the BCFN considers it essential to also establish a network of far-

mers to facilitate the concentration of supply, as well as communication between production and distribution, allowing to program and respond properly to the demands of the consumer, both with regard to the quantity that is actually necessary, and in order to meet quality requirements. In this way, supply and demand can be balanced, and food waste can also be greatly reduced. If everyone does their part, food will take another route than the one which causes it to be rejected and discarded. However, this process of correcting the supply chain cannot be complete without an intervention concerning its last phase: domestic consumption. The behavior of each of us is indeed of paramount importance, and if people are to change their attitude toward food, there needs to be commitment, respect, attention, and imagination; but first of all, we need to understand the issue. The BCFN firmly believes in the positive role of adequate information concerning the effects on the environment and the economy when food that has required many resources to grow is thrown away and will have to be disposed of. Consumers should also be informed on how to prevent waste and preserve food, and how to interpret the expiration date. The chain of waste that we know today must therefore become an industry that is attentive at every stage, with strategies aimed at reducing waste, implementing its re-use wherever possible, and redistributing the surpluses.

*Barbara Buchner is the Senior Director of Climate Policy Initiative Europe. She was a researcher at the IEA and she is a member of the advisory board of BCFN.*

# WE ARE WHAT WE DO NOT EAT

by **Andrea Segrè**

President of Last Minute Market, a University of Bologna spin-off

In countries which once considered themselves wealthy, nowadays food waste is “concentrated” in the home: what is wasted at home counts much more than all the rest, as to value and quantity. In Italy, for example, the order of magnitude is about 5 to 1. We are what we do not eat, Ludwig Feuerbach would say today – if he could. Qualitative analyses conducted by the Waste Watcher Observatory of Last Minute Market-SWG reveal that Italians are beginning to perceive the phenomenon more clearly, including in terms of its impact on the environment. At least potentially, there is a growing community that is very alert, active, and willing to share in the best practices to reduce food waste and foster responsible consumption.

Therefore, it is worthwhile to try to collect all the actions that can be put into play. Local administrations – which are the closest to citizens – can do much in this direction. The Charter for a network of zero waste administrations is a concrete example of what can be done by going beyond individuals, associations, and movements. The Charter, signed in May 2013 by over 700 administrations, includes the following commitments:

- to share and promote the “One year against waste” campaign, sponsored by the European Parliament, to raise public awareness on the positive value of food and the economic, environmental, and social dimensions of food waste;
- to make some of the indications contained in the “European resolution against food waste” immediately operational, in order to contribute to the objective of halving waste by 2025;
- to support all the initiatives at the local level – public and private – that recover unsold and discarded products along the food chain and redistribute them free of charge to those categories of citizens below the minimum income level;

- to change the rules governing public procurement of catering and hospitality services so as to favor – other conditions being equal – those companies that promote measures to reduce waste and encourage food redistribution;

- to establish programs and nutrition education courses to make consumers aware of their wastage and its impacts by teaching more sustainable methods of purchasing, storage, preparation, and disposal;

- the regulation of discounted sales when a product is close to expiring or is defective (against wastage and against the economic crisis);

- the simplification of food labels: one single expiry limit but with two dates, a commercial date (until which it can be sold) and one regarding its consumption;

- the establishment of a national observatory for the reduction of waste in order to minimize any losses and inefficiencies in the supply chain, promoting the direct relationship between producers and consumers, and involving all the people affected. Although several European countries have already implemented this tool, Italy has yet to do so;

- to compare, share, and create a website of good practices – technologies, processes, and projects to prevent food waste – and, ultimately, to constitute a network of municipalities with zero waste.

Please ask the mayors of your towns to sign the Zero Waste Charter, thus creating a spate of aware and responsible citizens, millions of drops that will make the difference. As the poet Tonino Guerra said, one drop plus one drop does not make two drops: it makes a bigger drop. A drop as big as Italy, as big as Europe. A wave that will submerge waste, after which – finally – we will once again be what we eat.

# BCFN YES!

## YOUNG EARTH SOLUTIONS!

The BCFN actively promotes the development of young ideas to promote concrete contributions and solutions regarding food and nutrition. Ten ideas are evaluated each year at the BCFN International Forum.

(BFCNYES.COM)



## How much water do you need to be a chef?

by **Marta Antonelli**  
and **Martina Sartori**  
(BCFN Yes! Finalists in 2012)



The fact that water is an essential factor in agricultural and industrial production processes is perhaps known to many. But how many people are aware of the actual amount of water used to produce the food that we put on our table? Some estimates speak of 3,496 liters per day, or about 85% of the total water consumption in our society. This implies that, if we want to reduce our “water footprint” we must not only reduce the domestic consumption of water, but first and foremost, we must revise our food consumption choices, orienting them toward goods that are more sustainable in terms of water. For example, preferring products with a reduced water footprint or those from rain-fed agriculture rather than irrigated agriculture. Promoting effective management and more sustainable use of water resources in the food production chain me-

ans, first of all, making the final consumers aware of the use of these resources. A simple way could be to indicate the volume and the source of water used for its production on the packaging of the final product. This idea is the basis of the project *How much water do you need to be a chef?*, proposed for the first edition of the BCFN YES! competition and selected as one of the ten finalist ideas at the fourth International Forum. Specifically, the proposal is intended for pasta (widespread throughout the world), with recent marketing policies that have included recipe suggestions on the package: the packaging thus contains the calculation of the amount of “virtual water” of the entire dish.

## Waste-free

by **Natia Bejanidze**  
(BCFN Yes! Finalist in 2012)



The economic progress of a country depends on the growth of its national income; this is only feasible through the rapid development of its processing industry and its technological renovation/re-equipment, and through the development and implementation of eco-pure, waste-free technologies. An agricultural country cultivates great quantities of vegetables and fruits. Therefore, it is essential for the country to have sufficient manufacturing capacities for the waste-free processing of its fruits and vegetables into high-quality, competitive products that are profitably marketable both at home and abroad. The great amount of unutilized excess is dumped, and its decay deteriorates the local ecological situation, resulting in the pollution of the soil, water, and air. Radical improvement in this field is possible only through the development of a combined technology that will supplement the

conventional fruit processing technology with the electromembrane and baromembrane processes. This technology will allow several procedures to be performed within a single technological cycle, resulting in: the maximum yield of essential oils from the fruit peels; high-quality, storage- and sediment-resistant, sterile, pure fruit and vegetable juices; the simultaneous production of potable water, an acid, and an alkali to be subsequently used in the dilution of concentrated juices; and the production of pectin and vitamin P from the juice press cake. Usage of this technology in the industry represents a true opportunity to fill the domestic market with the new, highly competitive, and high-quality products needed to ensure public health.

# TACKLING AMERICAN FOOD WASTE

*The nation that produces twice the amount of food needed per person per year is a perfect example of the consequences caused by the culture of abundance, perfect-looking food, and low costs. A journey undertaken by Jonathan Bloom among producers, store shelves, and private homes: how a mistaken conception of the way food should be produced and consumed is slowly being changed.*

by JONATHAN BLOOM

I walked into the supermarket back room expecting a gentle start to my first day of work. Instead, my new boss, Gary, told me to grab an apron and head toward the refrigerated case of washed and cut fruits and vegetables. He instructed me to pull out any packages with a “sell-by” date of that day or earlier and throw them away. “Throw them away, as in put them in the dumpster?” I wondered.

I asked Gary to repeat himself, just to be sure I had understood him correctly. Because what he was telling me to do, discard perfectly good food, didn’t make much sense. Yet, as I would come to learn in my few months at the store, this was an appropriate introduction to the way things were done at American supermarkets.

I took the job in order to see and understand retail food waste as research for the book I was writing, *American Wasteland*. Yet I didn’t expect to see it so quickly and in such volume. That first day, and most others, I discarded hundreds of pounds of out-of-date products and produce that didn’t look quite perfect enough. And the average

supermarket throws away 700 to 800 pounds of food daily. American food waste is certainly not restricted to supermarkets. Food is discarded at every step of the food chain, from the farm to the home. Indeed, 40 percent of the food we produce never reaches anyone’s spoon or fork. And food waste has increased by 50 percent from 1974 to 2006. How can that be? Why are we wasting so much food in a nation where 50 million Americans don’t get enough to eat? Further confusing the situation, how can waste, hunger, and obesity all coexist?

## WHY WE WASTE

Yolanda Soto sits by the phone in her Nogales, Ariz., office. With her Frida Kahlo self-portrait peering down from the wall, Soto awaits the first of many calls that will soon arrive from among the 200 produce wholesalers (in a city of 21,000). There are so many distributors in Nogales because more Mexican produce enters the U.S. at that border crossing than anywhere else. The distri-



Food waste has increased by 50 percent from 1974 to 2006

In the USA the average supermarket throws away 700 to 800 pounds of food daily

butors call Soto's Borderlands Food Bank with offers to donate pallets or even an entire truckload of tomatoes, peppers, melons, and other fresh food. Except during the slower autumn season, Soto receives roughly 100,000 pounds of donated food every day.

Every day! That occurs largely because distributors require loads to be 85 percent good or better product, because they know that retailers will not accept anything less than perfect. Soto's fleet of five tractor trailers (with paid drivers) because thanks to Soto's outreach during her 19 years at Borderlands, most distributors are more likely to donate that food rather than discard it. Still, they only intercept a fraction of the food going to waste. "I probably get a fourth of imported food that is edible and could be donated," said Soto. "The-

ture Earl Butts, combined with continuous technological advances, has created more and more available calories. That annual glut prompts surpluses of commodity crops, and means we now see food everywhere, creating the sense that we don't have to be careful with our food or with our health.

Another common root cause of both waste and obesity is the massive portions. As Lisa Young illustrates in her book *The Portion Teller*, the size of the average soda, hamburger, and French fries have all nearly doubled in the last 30 years. And, sadly, many of us bring those warped notions of portion size into our own homes.

Cost is a major reason why Americans waste so much food. Despite rising food prices, Americans spend less than 10 percent of their house-

son our waterways and soil to produce. Both factors will have major costs in the future.

The desire for perfect-looking food causes further waste throughout the supply chain. I visited an asparagus packing plant in Caborca, Mexico, where workers were creating those familiar bunches we find at American supermarkets. As the asparagus stalks zipped down the line, the sorters gathered the thicker stalks and discarded the smaller ones onto a conveyor belt that snaked through the building.

Local vendors eventually sold the thin stalks in Mexico – where there is a market for non-homogeneous, pristine produce. Once the workers had gathered a bunch of asparagus together, they used a contraption similar to a paper cutter to create a uniform length. To reach that desired

from the Ugly Tomato brand of fruit. Shoppers say they would be willing to buy slightly imperfect goods, but retailers say that their customers' practices show otherwise.

As Kevin Moffit, president of the Northwest Pear Bureau, told me, "People will say they'll take fruit that's a little rough, but in reality, they buy with their eyes. The consumer says one thing and, frankly, does something different."

This perfectionism is not exclusive to fresh foods. Senior Gleaners, a food recovery group in Sacramento, Calif., has an entire room filled with salvaged "center aisle" foods with damaged or incorrect packaging. These included dented cereal boxes, cookie packages damaged when the boxes are slit open, and out-of-date promotions (2012 Olympics energy drinks).



re's just a lot of food being dumped." The work at Borderlands illustrates the three main reasons why the American food system has come to include so much waste: abundance, beauty, and cost. Nationally, America produces about twice the amount of food needed per person per year. Yet, the U.S. Department of Agriculture's official policy is still maximum production by growing from "fencerow to fencerow." That mindset, first espoused in 1974 by then Secretary of Agricul-

ture Earl Butts, combined with continuous technological advances, has created more and more available calories. That annual glut prompts surpluses of commodity crops, and means we now see food everywhere, creating the sense that we don't have to be careful with our food or with our health.

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end, they sliced off an edible portion of most stalks. In part, that preferred homogeneity is a reflection of practicality – so the asparagus bunches can fit in the yellow plastic boxes for the journey north. While there is growing acceptance for oddly shaped produce among backyard gardeners and farmers' market shoppers, the vast majority of the supply chain feeds supermarkets that have no place for heterogeneity in appearance, aside

Furthermore, the long-distance nature of our food system causes yet more waste.

At the Taylor Farms vegetable operation in Salinas, Calif., I learned that many items are discarded because the company knows that items won't have the roughly two-week shelf life when they arrive at their destination thousands of miles away. Many food items that could be eaten locally are discarded locally because of the national (and international) food chains.



97 percent of the food waste created in America ends up in a landfill or an incinerator, where it becomes an environmental liability

## WHO CARES?

I often encounter the following attitude: “It’s my food. I paid for it, so I’ll do whatever I want with it.” While that logic captures a certain American independent streak, it ignores the ethical and environmental impact of our food waste.

From an ethical perspective, the juxtaposition of wealth, waste, and hunger in America is unprecedented. To live in a nation of such abundance – agricultural and economic – and still have about 15 percent of Americans without guaranteed access to food is morally callous. And it is even more shameful considering our 40 percent waste.

From an environmental perspective, wasted food represents squandered natural resources. In the U.S., that means a great deal of oil, or energy. Our food system is so dependent on oil that 4 percent of all U.S. energy use is embedded in the food we discard. Similarly, so much water is employed in food production – 80 percent of fresh water usage – that America wastes the equivalent of the Great Salt Lake every year through the food squandered. Meanwhile, given our overproduction and the rate of land usage, we do not allow the soil to regain its fertility.

Food scraps are the largest portion (21 percent) of the U.S. waste stream sent to landfills. There, food rotting without air produces methane, a

greenhouse gas more than 20 times as potent at trapping heat as carbon dioxide. We are aiding climate change from our kitchen waste bins. Larger landfills and all newer ones are required to have systems to capture or destroy methane, but the landfill closest to my house – and countless others – has pipes slowly venting methane into the atmosphere (to prevent fires).

Making matters worse, there is little “recycling” of food waste. Only 3 percent of the available food scraps are composted or turned into energy through anaerobic digestion. In other words, 97 percent of the food waste created in America ends up in a landfill or an incinerator, where it becomes an environmental liability.

## THE TIME HAS COME

In December, a group of activists and interested citizens in Austin, Texas, persuaded the city council to declare 2013 the Year of Food Waste Prevention and Reduction. What the European Commission contemplated and ultimately delayed doing, Austin is actually pursuing. There are plans to raise awareness, rescue more food, and expand composting programs.

Austin is an anomaly in declaring war on food waste, but increasingly, more attention is being paid to food waste in America. Plenty is being done to reduce the amount of waste created,

and to redistribute and recycle the inevitable excess. In 2007, St. Joseph’s College eliminated trays from their all-you-can-eat cafeteria in an effort to reduce food waste, and water and energy usage. Stuart Leckie, general manager of dining at the Maine school attended by only 1,000 students, noticed during a weekend trial period that 40 percent less food was wasted by removing trays and thus making it impossible for students to carry three plates at once. That simple act of preventing waste by removing trays has spread nationwide. Today, more than half of American colleges and universities have gone tray-less.

Most American cities have food recovery groups to capture edible but unsellable food, and redistribute it to those in need. New York’s City Harvest launched the idea of rescuing edible but unsellable food in the early 1980s and D.C. Central Kitchen followed suit in our nation’s capital later in that decade. Borderlands Food Bank in Nogales, Ariz., is in that same line of work, supplying many hunger relief agencies like The 3,000 Club, which increases access to fresh fruits and vegetables with its Market on the Move program, that sells 60 pounds of produce for \$10 in lower income areas.

Where the U.S. lags far behind Europe is in recycling its food waste. In 2009, both San Francisco and Seattle made composting compulsory. There are now more than 200 communities in

the U.S. which have curbside composting programs, said Juri Freeman, Senior Environmental Analyst at SERA, Inc.

And the number of composting programs should increase in years to come. “Food scrap composting is one of the fastest growing sectors of solid waste management,” said Freeman. “The trend is continuing to spread across the U.S. due to a combination of market forces, demand for services, community goals, and regulatory mandates.” The increased attention on food waste has prompted one more exciting development with food waste recycling: Massachusetts and Vermont have both pledged to ban organic materials from landfills in the coming years. That one step will likely alter how Americans approach food at all levels of the food chain. After all, if we weren’t allowed to throw away food, we would all probably try harder not to create that waste in the first place. And as anyone who has ever peeked into a supermarket dumpster can attest, that behavior change is long overdue.

*Jonathan Bloom, journalist and expert in food waste, is the author of “American Wasteland” (2010), which explores the phenomenon along America’s entire food chain; he is also the author of the blog Wasted Food.*

A CONVERSATION WITH TRISTRAM STUART

# A TREASURE OF WASTE

FREGANS, FEEDING THE 5K, FUSIONS

*Freegans, people who are of gatherers of food that others leave, lead a nonconformist life. But their ideals and their projects are known throughout the world and are considered good solutions against food waste, even in the European Union. And to talk about Freegans and their initiatives, means talking with Tristram Stuart*

by ALESSANDRA VIOLA

From now on, every time you throw something away, think again: this gesture is the latest in a long chain of social injustices perpetrated on a global level. It not only deepens the distance between those who have (and can waste) and those who do not, but also produces pollution, is based on the indiscriminate exploitation of resources and people, and, perhaps, even sustains some dictatorships. Freegans (the term is composed of “free” and “vegan”) are convinced of this, and in order to avoid becoming complicit in all that, they have adopted a decidedly unconventional lifestyle. Freegans do not buy: they collect (usually from trash bins), separate, recover, and recycle. They do not have cars, at most, they hitchhike. As far as possible, they do not work, to avoid supporting a capitalist system, which, on the contrary, they seek to oppose by any means. They live in a community to save money

and support each other, and sometimes occupy empty houses in the name of the fact that the right to housing is worth more than “the obsolete concept of property.” Their stated intent is to boycott the current economic system, based on its systematic wasting of resources, and (above all) food. The data collected by the leader of the British Freegans, the thirty-six-year-old, award-winning British researcher Tristram Stuart, is really overwhelming: the United States alone throws away about 40 million tons of food each year. Suffice it to say, it is a quantity that would clearly be enough to feed all the hungry people on the planet (about a billion). To produce the meat and dairy products that get thrown away every year by British and American families, 8.3 million hectares of agricultural land are used, while the water used globally to grow food that will not be eaten would be sufficient to meet

We need to rethink the entire production chain, from the field to the fork but there is no need for revolutions; sometimes what is needed is just a little common sense





#### GLEANNING

Gleaning is the term for the practice of collecting that part of the crop which farmers abandon in their fields because they consider it unmarketable. It is a very ancient tradition, mentioned even in the Bible, and it has recently been restored and made famous by the Free-gans movement.



the water consumption needs of 9 billion people. Precisely the number of people that it has been estimated will populate the planet in 2050, and who instead run the risk of being left high and dry. “We need to rethink the entire production chain, from the field to the fork” – Stuart says in no uncertain terms – “but there is no need for revolutions; sometimes what is needed is just a little common sense. For example, in England, between 20% and 40% of fruit and vegetable products are discarded before they reach shops, mainly because their shape or size does not respond to the “cosmetic” standards of supermarkets, which establish how long carrots or how large zucchini should be. It is all nonsense, since that food is perfectly suitable to be eaten. To focus the spotlight on this problem, in England we have decided to reintroduce gleaning, an ancient practice that consists in gathering the plants that were abandoned in the fields after harvest, to then be distributed to the poor. The point is that when farmers are harvesting, they discard a priori what cannot be sold because it has the wrong shape and so they leave it to rot in the field. This is a loss for the entire community, from the producer who has an economic loss, to the consumer who finds higher

prices.” This is a hot issue and the gleaners are quickly attracting converts. There are already hundreds all over the world, and since last year, they have recovered more than 300,000 tons of fruits and vegetables in Kent, Sussex, and Lincolnshire, while new groups are already forming in Manchester and Bristol, and individual initiatives are also underway in France, Germany, and Portugal. “When we launch a collection, people come from all over England: collecting fruits and vegetables is a lot of fun, it is great and makes you feel useful, because you know that otherwise the food would have been wasted and instead, it will go to those who need it, and it will be cooked and eaten. However, we do not intend to stop with just the collection. Gleaning is not the solution in the countryside, just as collecting food from trash bins is not the solution in the cities. I did not start eating from the trash to suggest that you could or should live like this, but so everyone would understand that the food was still good and should not have been in a dumpster. This is why we are now building a gleaning network, to raise the awareness of consumers, farmers, and distributors in order to solve the problem at its root: the demand for ‘imperfect’ fruits and vegetables has al-

ready grown a lot and nowadays you can find them in many English shops. Sometimes they cost less; in other cases, merchants have already started to be smart and sell them at the same price as those that are ‘perfect,’ perhaps by writing ‘ideal for jams’ above them. This is a sign that people’s mindset is already changing and they are beginning to understand that even food has value and should not go to waste.” Stuart experienced the world of wastage when, at the age of fifteen, he decided to raise a pig. “Keeping it was expensive,” he remembers, “so I started to feed her leftovers. I gathered food from the school canteen meals that had been thrown away and sometimes I rummaged in supermarket bins. There I learned that good things were wasted every day.” A Cambridge graduate and author of bestsellers on the topic of waste that have also been translated into Italian, his interest in food and the many, and sometimes perverse, mechanisms that lead wealthy nations to waste staggering amounts can be traced back to those years. Today, he is the coordinator of the Feeding the 5000 initiative, within the European project FUSIONS: “We organize major events where we collect, cook, and distribute free food that would otherwise be thrown away,” he explains, “and those who eat it realize that the food is good and this, together with our information campaigns, produces new awareness. We have already held dozens of meetings of this type in England, Paris, Turin, and Oslo, and we have a lot planned for the next six months, from Sydney to New York. These meals are great catalysts of collective alliances among citizens, businesses, and political entities, a push toward making commitments and conveying energy. It is not just a matter of social justice: the cost savings, too, are enormous. Meanwhile, however, the first thing to do is to learn more and find out how much and what kind of food is thrown away. We have very little data about that.” According to the data already collected by the European Union, which is carrying out a more detailed monitoring with the FUSIONS project, food production is responsible for 17% of greenhouse gas emissions and 28% of the overall use of available natural resources. Wasted food also involves tremendous economic costs for its disposal and it is estimated that the simple decrease in the amount of food thrown away every year would result in an average savings of €595 per household. In these times of crisis, this gives us one more reason to pay attention.



## FUSIONS

FUSIONS (Food Use for Social Innovation by Optimising Waste Prevention Strategies) is a European project aimed at halving food wastage in the 27 EU countries by 2020. There are thirteen nations participating, including Italy, and they are engaged in monitoring and collecting data on food produced and consumed, in research, and in the development of guidelines to be adopted in the context of EU policy on food. FUSIONS, which is funded by the European Commission, also involves private partners and non-profit organizations, and will have a duration of 4 years (2012-2016).

JAPAN

# THE ECOLOGICAL MODERNIZATION OF JAPAN

by FEDERICA MARRA

Nineteen million tons of food were wasted in Japan in 2009, of which 5 to 9 million tons were still edible. Corrective measures have been implemented only recently, in particular, the adoption in 2001 of the law for the recycling of food waste – unique in the history of the fight against food waste – requiring companies to recycle 48% of their waste by 2006. Already in 2005, 59% of commercial and industrial food waste was recycled, and the latest revision of the legislation set the target at 66% by 2012. Industry is at the forefront in the fight against waste in Japan, and so far, the process of “ecological modernization” has only concerned the economy and politics. But thanks to the growing diversification of institutional and cultural policies, the role of civil society and social movements in promoting the fight against waste has emerged: the food bank *Second Harvest Japan* and the committee for the adoption of doggy bags are addressed directly to citizens, with limited but tangible results.

According to representatives of key environmental institutions (ministries of agriculture and consumers, Mitsubishi Research Institute, FAO Liaison Office, Second Harvest), in Japan the difficulty is inherent in its culture of consumption. The increase in the quality of life and the entry of women into the labor market have led to a radical change in eating habits: meals began to be consumed outside the home and the massive presence of culinary delights has turned the average consumer into a real gourmet. In the same way, expectations about nutritional properties and safety have been raised, with a great fear of food scandals and a low tolerance to risk. For better or for worse, Japanese consumers have become “hyper-aware,” because their high aesthetic and quality standards cause huge amounts of waste. Sociological research and government action so far have been rather scarce. However, there is an ongoing project of the Ministry of Agriculture to create a working group that encompasses repre-

sentatives from all sectors of the industry to improve the entire system of the supply chain, working as a mediator to facilitate communication and the organization of production, distribution, and retail, with the aim of reducing as much as possible the restitution or disposal of unsold goods within two thirds of the time prior to its “best before” date (“the rule of 1/3”). The project and the new Eco-Cooking initiative to spread notions of purchase, preparation, and cooking without wastage were presented to the general public in March with the participation of important institutions (FAO LOJ, Ministry of Consumer Affairs) and NGOs (Second Harvest). At the beginning of the year, the Foodloss Challenge Project was founded by FAO LOJ, with the participation of Hunger Free World and Keio University. In its first year, the project intends to raise consumer awareness on the issue of waste by means of a new prototype of doggy bags and the popularization of conservation techniques

and sustainable cooking. Based on the results obtained, during the second year the initiative will propose service solutions and innovative products throughout the supply chain resulting from the collaboration with all its stakeholders. The advantages will be an extensive partnership (between the government, NGOs, think tanks, and universities) and an inclusive process and co-creation that will look into the social aspects, such as actual market needs. So, Japan is changing its strategy concerning the environment and food wastage, perhaps inspired by the many initiatives underway globally. The first changes will begin to be seen at the end of this year, but it is only in 2014 that it will be possible to assess the true impact of these new policies.

*Federica Marra was the winner of the 2012 BCFN YES! competition. She is receiving a degree in Japanese Studies from the University of Leiden (The Netherlands) and is researching food waste in Japan.*



## WHAT A WASTE!

“Mottainai” is a Japanese term that expresses regret when the intrinsic value of an object or resource is not recognized. It is quite common to see it associated with the waste of food and time, as well as that of talent, dreams, and expectations.

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FAO  
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# FOOD LOSSES IN DEVELOPING COUNTRIES

## THE SAVE FOOD SOLUTION

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*Almost half of the food wasted each year is dissipated in developing countries, where the contribution of the food sector to the GDP is as much as 30% and in some areas (southern and eastern Asia, Africa) as much as 70% of the population lives in rural areas and depends on agriculture. The Save Food initiative led by FAO aims to reduce the losses and the wastage of food, in order to improve food security.*

.....  
by **REN WANG**

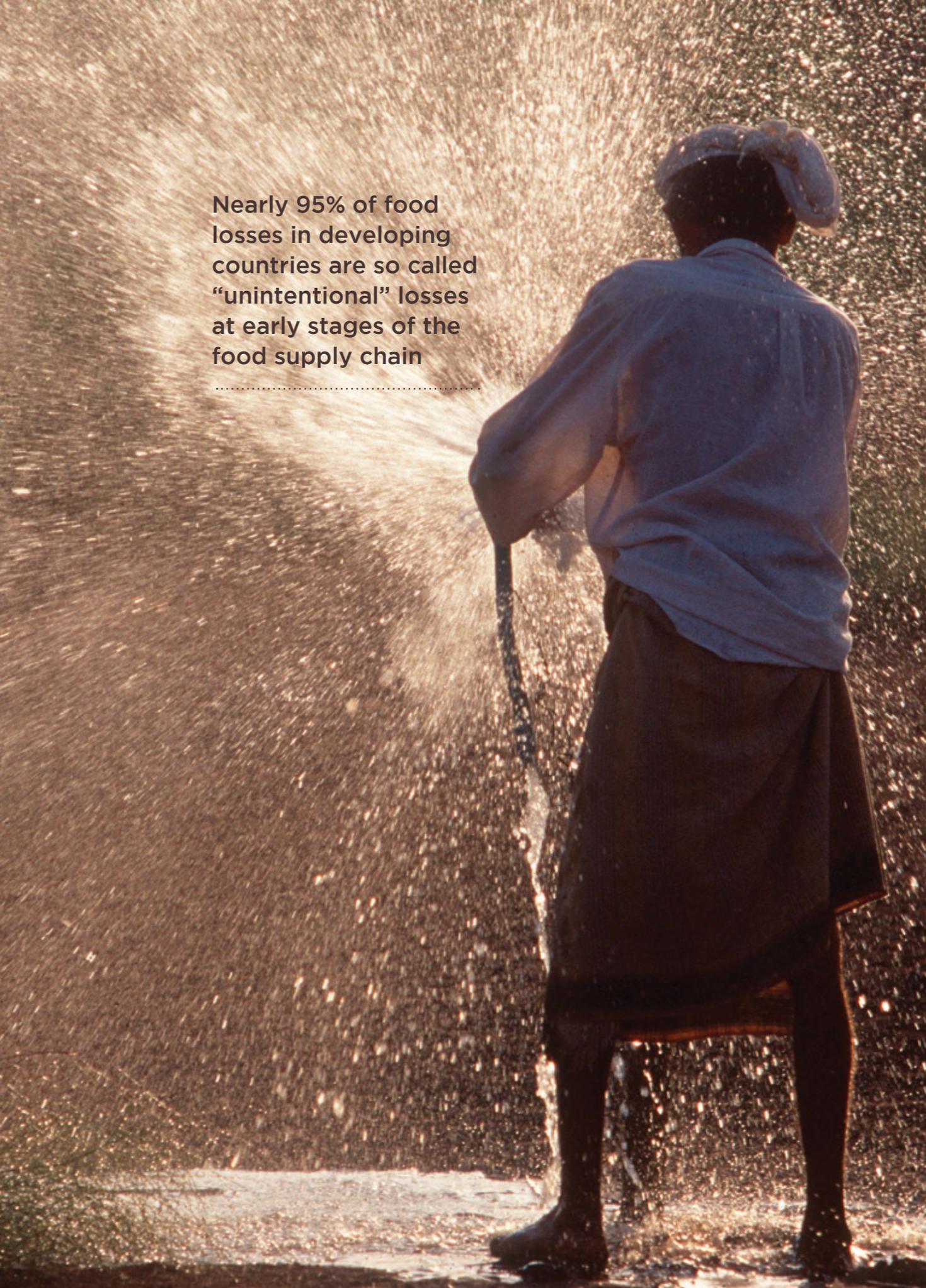
Assistant General Director of FAO

One third of the food produced worldwide is never eaten. This is occurring everywhere, but for different reasons. Many old black and white films and television shows featured scenes where cream pie fights became epic moments of celluloid comedy. The waste was also disconcerting for some, perhaps because in real life they had watched as their banana plants were destroyed by hurricanes. Throughout history, there have been places where food has been both abundant and taken for granted. Not anymore. Enormous challenges are on the horizon, with a sharp increase in the world's population and the planet mired in climate change. The major problem in the developing world is not the food that ends in garbage cans and in landfills. The food goes bad even before reaching the market, sometimes just a short distance from many people who go to bed without a meal.

### WHAT IS THE SCOPE OF FOOD LOSS IN THE DEVELOPING WORLD?

The Food and Agriculture Organization of the United Nations (FAO) commissioned a study entitled "Global Food Losses and Food Waste" which revealed that roughly 1.3 billion tons of the food produced in the world for human consumption every year gets lost or is wasted. Nearly half of this amount is dissipated in developing countries.

The developing economies, and their inhabitants, rely enormously on agriculture and livestock. According to the World Bank, the contribution of the food sector to the GDP in developing countries is as much as 30%. In southern Asia, Africa, and eastern Asia, as much as 70 percent of the



Nearly 95% of food losses in developing countries are so called "unintentional" losses at early stages of the food supply chain

.....

population lives in rural areas and depends on agriculture.

In monetary terms, the global food losses and waste are estimated at worth one trillion U.S. dollars. One third of this amount is lost in developing countries. Reducing food losses in the developing world will improve food and nutrition security, but will also improve livelihoods, and minimize the environmental impact. It is becoming increasingly clear that we need to save food.

## THE SAVE FOOD INITIATIVE

The magnitude and complexity of the problem of food losses and waste require the collaboration of all the actors and entities involved, as no organization acting alone can achieve meaningful results. SAVE FOOD is the global initiative on food losses and waste reduction led by FAO, in partnership with Messe Düsseldorf, with particular attention to the most needy countries. SAVE FOOD is aiming at networking stakeholders in industry, policy, research, and civil society by encouraging dialog and helping to develop solutions along the food value chain. The global initiative currently focuses on four main areas:

1. Increasing awareness of the impact of, and solutions for, food loss and waste. This is being achieved by a global communication and media campaign;
2. Collaboration and coordination of worldwide initiatives on food loss and waste reduction. Information on problems and solutions are exchanged, while methodologies, strategies, and approaches are harmonized;
3. Policy, strategy, and program development. This includes a series of field studies on a national-regional basis to determine food loss reduction interventions that provide the best socio-economic impacts from investment.
4. Support for investment programs and projects, implemented by the private and public sectors. This includes technical and managerial support for food supply chain actors and organizations, as well as capacity building (training) initiatives. SAVE FOOD's web site ([www.fao.org/save-food](http://www.fao.org/save-food)) provides detailed information, including a call for new partners from the private sector and non-profit organizations to join the effort and contribute their expertise.



## ISSUES AND CAUSES

Urgent hunger problems can be temporarily alleviated with improved cultivation of, and access to, edible grains, but the food loss issue in developing countries goes beyond staple foods. In fact, fruits and vegetables, plus roots and tubers, have the highest loss and waste rate of any food. This is particularly worrisome as the intake of fresh produce confers remarkable health benefits.

Very few developing countries produce enough fruits and vegetables to reach the level of availability that could ensure the consumption-per-capita recommended by the World Health Organization. After considering post-harvest losses of fresh horticultural commodities in the same equation as food availability, it can be concluded that a daily balanced diet is a rare occurrence in many societies. While several reasons for food losses in developing countries are known, there is little academic knowledge of where, to what extent, and exactly why the losses continue to be overwhelmingly high in certain points of the food chain. It is estimated that nearly 95% of food losses in developing countries are so called “unintentional” losses at early stages of the food supply chain.

These are attributed to financial, managerial, and technical limitations in harvesting techniques, handling, storage and cooling facilities, public infrastructure, transportation means, packaging, and marketing systems.

## CHANGING, ONE STEP AT A TIME

FAO has been promoting the dissemination of knowledge and technology that is readily available and proven to help in reducing food losses. The use of household metal silos is one alternative to the frequent claim that food losses affect farmers the most. In Kenya, metal silos with no added pesticides lowered grain losses significantly, surpassing the benefits obtained with other technology. In Afghanistan, a recent FAO project provided metal silos to 18,000 households. The silos resulted in a food loss reduction from 20% to as low as 1%. An additional benefit with metal silos has been the business created for local tinsmiths and their families. The use of plastic crates has revolutionized the local food market in the Philippines, Colombia, and Central America, stimulated by pioneering retailers who provided the logistics for washing and sterilizing the crates used by the small-scale farmers. Understanding the need for handling food rapidly after harvest, without direct exposition to sunlight, has saved food and allowed shipment to distant markets. This was tested during the training of human resources in desert areas of Mexico and Peru that base their economies on vegetables prone to a high water loss rate. There are many places still awaiting solutions. In these scenarios, an integrated approach or macro-level decisions may be required. For instance, a Moldovan grower may express discontent over low market prices and not being able to make a profit. Meanwhile, his workers stack used banana boxes

full of ripe peaches into 2-ton trucks with no ventilation. The inappropriate handling of the fruit in bulk, and in closed conditions, will reduce shelf life considerably, and will result in high food loss. The farmer aggravates his own income through a lack of knowledge of the requirements further on down the food value chain. Just across the road, a dog is sniffing one of the thousands of peaches going to waste in fields infected with *Monilinia* fungus.

While this fruit is not marketable, leaving it in the fields will enable the fungus to also infect next season's fruit. Growers in the Dominican Republic and their Haitian workers are sweating and shouting in unison “one, two, three” as they dump vegetables grown for ethnic Asian markets in North America. The international prices have fallen and the product is not sellable on the local market. Not even the workers' families know what to do with it. Reducing food losses is one clear way to improve food and nutrition security. The problem of world hunger is complex and needs multifaceted approaches. Actions must be socially, environmentally, and economically feasible. There is a need for more actions than just questioning the waste caused by pie fights in the old television shows. It is not about re-locating food when it is about to go bad, but making sure food is consumed long before that point.

*(The author would like to thank Ib Knutsen, Camelia Bucatariu, Jorge Fonseca, and Robert van Otterdijk of the Save Food Initiative Group for their invaluable help in preparing this article.)*



# MEN(YO)U

## THE HISTORY OF LEFTOVERS



There was never any waste nor leftovers from cooking in most Italian homes, up until the first quarter of the 20<sup>th</sup> century. For a population that, at the end of the 19<sup>th</sup> century, still spent more than 70% of the family income on food, the priority was to cook while spending as little as possible and to conserve everything. This is why certain literature dedicated to “inexpensive” cooking proliferated in Italy, literature which also explained, without necessarily being explicit, how not to let anything go to waste. In *The unpretentious cook, or cuisine that is easy and inexpensive*, published in 1834, Odaleschi gave recipes with their relative costs, such as being able to prepare German dumplings for 16 people with only 0.89 lire and braised beef with just 1.17 lire. In 1845, *The new inexpensive servant* taught how to “conserve eggs so they last until the next grape harvest,” whereas in 1851, *The modern Italian cook* proffered dishes with unattractive names but which were apparently inexpensive: Cheap soup-bone broth and Natural soup (bread and broth). Learning to

conserve and making do with simple ingredients were also the rules of *The universal cook* (with recipes for oven-baked apples, pears, and dried cherries) and *The king of chefs* (where rice is simply cooked with turnips, cabbage, and celery). In 1891, Artusi’s *The Science of Cooking*, a book that has left its mark on culinary literature, continued to alternate rich recipes (stuffed cutlets) with other more “lean” ones (such as Lenten spaghetti).

Leftovers officially made their first appearance in cookbooks during the war in 1918, with *The art of using leftovers from canteens* by Guerrini. This book, in which the ingredient never to be thrown away is bread (reheated for soups, in little balls in soups, and in bread puddings), inaugurated a kind of literature that was to become highly successful, especially since the Seventies.

Today, food wastage has been recognized as a global problem and Italy continues to publish initiatives that raise our awareness of the enhancement of food in all of its aspects and tell us how to re-use it, without sacrificing taste.



## BOOKS ON OUR PLATE

### YESTERDAY

- ODESCALCHI, A., *The unpretentious cook, or cuisine that is easy and inexpensive*, Como: Ostinelli, 1834
- The new guide of inexpensive cuisine and beliefs that hereinafter gives a range of rich, lean and oil-based dishes*, Milan: Tipografia Motta, 1845
- The modern Italian cook, or the friend of economic gluttons and convalescents: work required for the heads of families who wish to do cooking that is inexpensive, familial and healthy ...*, Livorno: E. Vignozzi, 1851
- The universal cook: the art of spending little and eating well*, Venice: C. Coen, 1870
- The king of chefs, or the way to cook well at little expense*, Florence: Salani, 1874
- ARTUSI, P., *The Science of Cooking and the Art of Eating Well: hygiene, economy, good taste. A practical manual for families*, Florence: Printing Press of S. Landi, 1891
- GUERRINI, O., *The art of using leftovers from canteens*, Rome: Formiggini, 1918

### TODAY

- IMBRIANI, L., *Recipes with leftovers*, Milan: Fratelli Fabbri, 1973
  - Imagination in the kitchen: how to use leftovers*, Milan: U. Hoepli, 1975
  - AGNELLO, R., *The cooking of the poor but good. How not to lose the taste for good food in times of crisis*, Palermo: Flaccovio, 1993
  - NUCCIOTTI, L., *Leftovers people. The art of recycling all the leftovers from cooking: stories, recipes and tips*, Viterbo: Stampa alternativa/ Nuovi equilibri, 2009
  - BAY - GUATTERI, F., *The leftover gourmet*, Milan: TCI, 2003
  - PICCHI, F., *Without vices and without waste: virtue in cooking and the passion for leftovers*, Milan: Mondadori, 2010
  - SEGRÈ, A., *Cooking without waste*, Milan: Ponte alle Grazie, 2012
- Source:  
Gastronomic Library of Accademia Barilla  
[accademia-barilla.com](http://accademia-barilla.com)

LESS WASTE

# RECYCLING LEFTOVERS:

## AN ART WITH A CAPITAL "A"

*Wastage is the result of an unnatural tendency of people to accumulate more than is necessary for their own needs. Roberto Cavallo, an environmental consultant for the government, explains this to us, but also tells us about new positive signs against wastage that are coming from associations, consumers, institutions, and even animated films.*

by **ROBERTO CAVALLO**

Food scraps account for over a quarter of our trash, and in some regions, even half. A good part of that is real garbage, whose reuse is complicated, if not impossible, and the best option is certainly its differentiated collection for subsequent composting, so as to continue the extraordinary cycle of nature. The recycling of the organic fraction through composting is an option that combines a significant recovery of organic matter to be returned to the soil with a reduction of greenhouse gas emissions, especially if, as is too often the case in Italy, this fraction is directed to a landfill, where it contributes to the formation of biogas.

Among the biodegradable waste, an important part consists of food. Unfortunately, it is very often food that is still good, discarded for trivial reasons or due to poor storage. Thus, it appears

that the etymology of the word "food," that is to say, "what is necessary to the maintenance of a human being for a day" is not only unknown, but now even obsolete.

The unnatural tendency of humans to accumulate more than their requirements is certainly at the base of a dangerous spiral of wastefulness. In Italy, every day we throw away 4,000 tons of food that is still good, which means that, of the 32 million tons of municipal waste produced in one year, six million tons of it are food. 15% of bread and cooked pasta ends up in the trash every day, and in Milan alone, as many as 180 tons of bread are discarded. The situation is no better for 18% of meat and 12% of greens and vegetables. This means that, by removing the parts that really are no longer edible, each of us throws 60 kilos of food into our trash every year. In these

60 pounds, there are all those leftovers from meals that our grandparents would have made us eat at all costs, and woe to those who rose from the table without finishing what was on their plate. According to an ADOC report, our food wastage amounts to an average of €454 per year, equivalent to 8% of the total expenditure of each family.

In this regard, the animated film *Over the Hedge* has an extraordinary teaching moment when the raccoon RJ manages to accompany

home, public and private canteens (schools, hospitals, municipalities), and distribution sites, especially large supermarkets. Made to store food, today the refrigerator has become its grave, when upon opening the door, we discover moldy cheese or salami, spoiled tomato sauce, and expired mozzarella or yogurt. So allow me to give you some advice on ecology and home economics: when you come home with your bags of groceries, open the refrigerator, take out everything in there, put in your



the turtle Verne and his friends into the house of humans, illustrating how their whole life revolves around food.

There is a crescendo of scenes showing the paradoxes of the relationship between humans and food, until the raccoon says: "We eat to live, they live to eat! And wouldn't you think they have enough? No! Because for humans, enough is never enough!" Food waste can be traced to 3 main places: the refrigerator at

new purchases and then rearrange what you removed so that it remains within view and is consumed first.

Public canteens "waste" food during the preparation of their dishes because some portions are not served, others remain in the baking trays, and some fresh produce, typically bread and fruit, are displayed and not consumed. In this case, some felicitous experiences, like the one organized by the Municipality of Turin

with its collection company (AMIAT) in collaboration with the Food Bank and some charitable facilities (SERMIG, Caritas, St. Vincent's), show that it is possible to recuperate bread and fruit: in one school year, more than 8 tons of bread and 20 tons of fruit were recovered and redistributed by a score of schools.

Instead, large-scale organized distribution throws away still-good food for different reasons (packaging defects, close to the expiration date, partially damaged, etc.).

Increasingly widespread experiences such as the Good Samaritan in Turin or Ugly but Good in Ferrara have shown that it is possible for medium-sized supermarkets to retrieve more than 100 tons of food and distribute it to the neediest people.

Turin, or "The recipes of savings" of the Val d'Aosta Region or "The leftovers cookbook" of Iren Emilia in collaboration with Academia Barilla.

This is not a matter of innovation: just think of the beautiful text by the poet and critic Olindo Guerrini *The art of using leftovers from canteens*, published posthumously in 1918. "Except for two or three pamphlets translated from French, the art of cooking with leftovers was not considered separately, but scattered here and there in a few laconic recipes in the most celebrated treatises, as if it were something to be ashamed of; and I thought that the Art of utilizing leftovers in France went hand in hand with the bourgeois Cook." The recovery of leftovers is a real Art with a capital "A" and something to be proud of, because of all the benefits that it entails.



WE ARE WHAT WE EAT. WE ARE WHAT WE THROW AWAY  
Photography project by Paolo Grinza and Silvia Vaulà (Plastikwombat Photo Studio)  
One of the great challenges for a sustainable future will be to minimize the packaging of goods for daily use, and above of all, those for food. A visual reflection on the risk of us indirectly "eating" our own refuse unless it becomes limited and managed with targeted policies. The project was presented at the fourth edition of Play With Food.

In recent years, interesting initiatives for the recovery of leftovers, promoted especially during the European Week for Waste Reduction (which this year will be November 16 to 24), have re-evaluated traditional habits and recipes for leftovers: such as the project "Cooking with leftovers" of the Consortium COVAR14 in the Province of

*Roberto Cavallo is the founder of ERICA, a leading company in technical consulting and environmental communication for public administrations. He is the author and protagonist of the play (which then became a book), Less than 100 pounds. Recipes for a diet of our trash.*

## FOOD SHARING: SHARING TO AVOID WASTING

by Pamela Pelatelli

Because of the food that is dispersed and wasted every year, it is as if only one in three apples in the world ever came to be eaten. In rural cultures, leaving a fruit attached to the tree was a sign of empathy with nature. Modern man has turned a rite full of good omens into a fatuous and superficial gesture; digital man rediscovers the value of food and uses technology to share and distribute locally the leftovers and the excess in production, spending, and domestic consumption. From London to Berlin, from Catania to Helsinki, the citizens of this opulent and wasteful part of the world are organizing to ensure that pasta, bread, zucchini, eggs, and milk intended for the trashcan end up in the hands of those who are hungry, needy, or simply cannot buy enough. In order to do so, they go through the Internet: the network facilitates the meeting of those with common interests and encourages the encounter between supply and demand.

In Germany, in the past five months, more than 1,800 food baskets were exchanged in this way. The website that gives families, restaurants, retailers, and manufacturers the ability to offer and share their extra food with their own community is Foodsharing.de, conceived and created by Valentin Thurn (the author of the documentary *Taste the waste*) and Stefan Kreutzberger. Instead, a new website has just landed on the Internet in Italy, Ifoodshare.org, a platform created by four young Sicilians which now allows you to put your offering of food online for families, but most of all for charities, churches, and social organizations involved in feeding the elderly and the newly poor. You register, list the products to donate, including description and expiration dates, and come to an agreement concerning their

consignment. The remains of a buffet or packages of yogurt close to expiry come out of the pantry and end up on the tables of the hungry.

Although the Internet cancels the distance between people, the exchange of food can only take place through a physical handover. So all the better if you are neighbors. Thus, casserole-club.com came into being, the English website produced by Future Gov, a company that aims to improve the impact of a number of services of a social nature through the use of digital technologies, bringing people who are willing to cook an extra portion together with those residents of their neighborhood who need it. After a pilot experiment of two hundred shared meals, the platform was opened and sees the elderly in particular benefiting from the service. Instead, young but by no means carefree, are the boys responsible for the project Discosoupe. This is the name given to entire sessions of collective cooking hosted in various French cities where, to the rhythm of music, participants are invited to prepare and eat soups and salads made from unsold vegetables gathered from markets. Dates and times are announced via the Facebook event page: the rest is done by pots and pans and DJs. Thanks to the support of the Ministry of Environment, testing began in the Roihuvuori neighborhood of Helsinki on a food sharing collection point where the local population can deposit ready-made meals, vegetables, and unopened products whose expiration date is imminent. The name of the initiative is Saa syödä, which literally means "license to eat" in Finnish: the website that updates people on the project also lists the ten steps by means of which anyone in the area can trigger a kind of delicatessen of leftovers.

.....  
A CONVERSATION WITH MORENO CEDRONI  
.....

# A MATTER OF COMMON SENSE

.....  
by NICOLA FERRERO

**M**oreno Cedroni is one of the most renowned chefs in Italy. Born in 1964 in Ancona, he has an international reputation based on innovative cuisine of the highest quality. When he was only twenty years old, he opened his restaurant *Madonnina del Pescatore* in Senigallia and embarked on a path that would lead him to be awarded two Michelin stars: through years of studying and traveling, he has honed his art and elaborated the concept of sushi according to a vision of the Marche region, renaming it “susci.” In 2000, he opened another restaurant called *Clandestino* in a charming corner of Conero Park in Portonovo that carries out his rationale and insights on raw fish. He also launched his own line of products called *Officina* (Workshop) and opened *Anikò*, the first fish charcuterie in the world, also in Senigallia. Notwithstanding his many commitments, he found time to write a book (*Strawberry mayonnaise. The Art of having fun with your kids in the kitchen*) and, last summer, got involved in an event organized by Caterpillar, a radio program of Radio 2, to raise public awareness on the issue of waste in the food industry, a topic that we wanted to discuss further with this chef who is truly a star.

**The theme of waste has been widely covered by the media in this time of crisis and hardship. Do you think that this different sensitivity can also affect consumer awareness and that this could lead to less wasting of food?**

I hope it will, and if we were to rediscover the value of things, perhaps we would go back to eating what is left over from the day before, as my mother always made me do. It will be difficult, though. We have all become barons: we leave food on our plates, we squander it, throw it away without even thinking about what we are doing, and without thinking about the real value of what ends up in the trash.

**Last summer you were involved by the folks at Caterpillar in “First, do not waste. Dinner Against Waste,” in collaboration with the Last Minute Market of Professor Andrea Segrè. Would you tell us how it went and what your impressions were?**

It went very well. A bit tiring actually, but to succeed in cooking for 1,000 people made me a happy cook. Giving dignity to hundreds of pounds of vegetables that would otherwise have ended up in the trash allowed me to launch many positive messages which, if repeated on a small scale at





home, would lead to an exponential reduction of waste. I hope to have thrown a few stones against the bad habits that our well-being has brought, because when we were kids – 40 years ago, in my case – they did not exist. I remember that you bathed with water heated on the stove: today if the temperature in the house isn't at 20 degrees Celsius, all you do is complain... However, the menu was composed of spicy pasta with anchovies, parsley sauce, and parmesan cheese mousse, then lasagna with tomato and basil, baked caponata (an eggplant dish), and strawberries with yogurt.

**It is a fact that Italians are not very good at grocery shopping (and they throw away 240,000 tons of food per year). What are the difficulties that a chef like yourself finds in dealing with this problem in a two-star restaurant?**

As I said before, due to the education I received, we try not to throw anything away and to find a different use for raw materials that lose their freshness, such as using them in recipes for the staff lunch, because at this level, customers expect the best products. At the same time, I could not make great dishes with raw materials that have wilted. It is normal with a wide-ranging and difficult menu that, not knowing what will be requested more and working mainly *à la carte*, there are dishes that, having reached their last day "of goodness," should be shifted from the dining room to

the kitchen staff. Then, having eight cooks and many interns in rotation, it is very important to inculcate in everyone common sense and a sensibility that limits the maximum wastage. I have always tried to explain that parsley has the same value as caviar, so that equal respect is given to all the ingredients.

**Listed on the menu of Madonna del Pescatore, there is Tiramisù made with day-old bread. To me, that seems like quite a philosophical and ethical, as well as a gastronomic, statement...**

Of course, it is nothing more than the bread that my mother would put in her bowl with milk and coffee at breakfast, and which would double in volume if I delayed five minutes in eating it. That smell and that flavor have always stayed in my mind, so much so, that this cake was created. In this way I also avoided the discussions between the lovers of Savoyard lady fingers and those of the Pavesini cookies...

**In your book, "Strawberry mayonnaise. The Art of having fun with your kids in the kitchen," you say: "Avoid wastage in the kitchen by buying top quality products which will reduce your waste by 25/30%." Why?**

Mainly because an ingredient of choice will have a perfect ripeness and you can use all of it, or at least a higher percentage.



**You have written a book focused on the relationship with your daughter and how, in fact, the kitchen is an excellent place for playing, learning, and mediation. How important is family tradition and education in forming a more aware consumer?**

Family tradition is very important in forming education in general. It was my luck to be born in a house with no luxuries but where I always ate very well, thanks to my mother and grandmother. If many habits are not corrected within the family, then it will be extremely difficult to recuperate them. Today, grandmothers who make pasta at home have almost disappeared, mothers spend less and less time on the pleasures of cooking, and children, by constantly eating French fries, may not have ever seen a real chicken and would not know whether carrots grow in the ground or on trees. My mother made me eat grilled sardines with my hands: unique flavors that I still carry within me. Today, for fear of fish bones, children only eat fillets of pangasius or perch, which is an insult to all our excellent blue fish.

**Do you believe there really is an awareness of the impact on the environment that food waste has? It seems to me that people are being more careful, for example, with regard to the consumption of electricity or water, than they were a few years ago. But I do not think that people are aware of how much a field of corn or raising cows for slaughter costs in terms of water and energy.**

No, it's true, people do not have this type of environmental impact in mind yet. It is a concept known almost exclusively by professionals and this is a pity, because otherwise, it would be easier to reduce the presence of red meat in the weekly diet, for example. I think the time has come to shout it out: there should be taste education in the schools of a country like ours, which is perhaps the richest in raw materials of excellence, but with the highest rate of ignorance toward them.

# PREVENTING WASTE IS THE BEST WAY TO SAVE

LESS WASTE, LESS HUNGER

by DANIELLE NIERENBERG

It is hard to believe, but 1.3 billion tons of food are wasted each year worldwide. And one of the biggest myths about the food system is that we don't produce enough to feed the world – and that lack of food is the reason why nearly one billion people in the world are malnourished. But we already produce enough calories to feed every woman, man, and child on the planet. Those 1.3 billion tons of food that are wasted annually would be enough to feed the 868 million people who go to bed hungry each night. In developing countries, bad roads, lack of storage facilities, mold, and pests result in 40 percent of crops being lost. In sub-Saharan Africa alone, where more than 265 million people go hungry, farmers are in a battle against post-harvest losses caused by flooding and drought, fungus and mold, or inadequate storage. FAO reported that annual post-harvest losses for grains, tubers, fruits and vegetables, and meat and milk amount to roughly 100 million tons each year.

Food waste tends to be insidious: a little is lost in the field, a little is lost in storage, a little is lost in transport – and a little is wasted by retailers, at restaurants, and in homes. In industrialized countries, consumers waste roughly 30 percent of food. The cost of this waste is not just to our wallets. As food waste decomposes in landfills, it releases methane, a potent greenhouse gas with 26 times the heat-trapping capacity of carbon dioxide. There are ways to prevent waste in both developing and industrialized countries alike. According to the Barilla Center for Food & Nutrition, policy-makers, manufacturers, and people everywhere need to take definitive steps to prevent waste in fields, stores, and homes. In Asia, Africa, and Latin America, farmers are developing simple, and inexpensive, innovations to prevent food waste. In Gambia and India, for example, solar-powered dehydrators are used to dry papayas and mangos, reducing fruit going to



There are ways to prevent waste in both developing and industrialized countries alike

waste at the peak of the season and providing a great source of vitamin A throughout the year. In Bolivia, farmers are using driers to preserve a number of different crops, such as tomatoes and potatoes. In Africa, hermetically sealed bags protect crops from moisture, insects, and fungus. Researchers from Purdue University are working with farmers to protect cow peas, a legume crop that is high in protein, and to help distribute the bags across Niger, Nigeria, Mali, and beyond. This technology has the potential to save farmers in the region around \$44 million annually. Author Tristram Stuart's Feeding the 5000 project is showing consumers in the United Kingdom how to use what Stuart calls "wonky" (or irregularly shaped or imperfect) fruits, vege-

tables and other crops to create delicious meals. Italian food waste expert and BCFN contributing expert, Andre Segrè, is working with the Last Minute Market to recover food from universities and businesses that would have otherwise been wasted. When you make meals or eat out, make sure you do not buy more than you need and consider composting those scraps. And remember, the abundance of food is all around us.

*Danielle Nierenberg is the co-founder of the think tank Food Tank, and the director of the project Nourishing the Planet for the Worldwatch Institute. She is a member of the advisory board of the BCFN.*

COLUMN

# APPETITE

Since the crisis began, less food is being wasted. However, it remains a huge problem, summed up in one fact: by limiting wastage to 10%, a lavish banquet could be set on the tables of the 3.7 million Italians who in 2012, according to Coldiretti, were forced to turn to associations because they could not financially support their daily food expenditure. How can we prevent our leftovers from being added to the ten million tons of food wasted every year? If part of the supply chain is beyond the control of consumers, then technology can direct it toward a more eco-friendly approach.

by **ELISA BARBERIS**

## A GOOD START

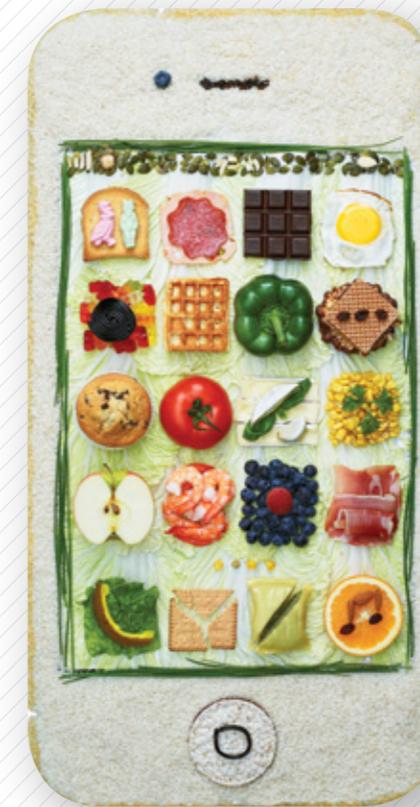
We make many mistakes in planning our spending, and are often confused by promotional offers or by the difficulty of correctly interpreting the product labels. However, you can start off on the right foot. How? By preferring foods at zero distance and in season: the time of maturity will be the natural one and they will spoil less quickly. Moreover, the fact that the food has not traveled much or at all to get to the point of distribution decreases its carbon footprint, and it benefits in taste and health. NATURMIA tells you where to buy these products, with its complete list of Italy's organic markets and a detailed list of all the varieties of fruits and vegetables, plus lots of nutritional properties and methods of preservation. And what if a product intrigues you but you do not speak "ingredientese"? The app E-CODES: FOOD ADDITIVES provides you with a complete description of all possible additives, as well as warnings and contraindications for children or categories at risk of toxicity.

## THE PERFECT FRIDGE

For those who own an iPhone, once you are at home, there is MY FOOD REMINDER, which helps us organize the refrigerator and pantry, or FOOD WASTE DIARY, for an Android brand Smartphone. Different graphics but the same objective: to catalog what we have bought on the basis of quantity, expiration date, and price, with the possibility of taking pictures and specifying the reasons for which it was purchased (stock, special offer, sudden change of culinary program).

## MEALS FOR SEVEN DAYS

Today, mothers are challenged by managing a job and raising a family. It all becomes a bit simpler with LOVE FOOD HATE WASTE, available on the Google Play store. Goodbye improvisation, now it is possible to plan all the lunches and dinners for the week. Portions are counted, and there are fewer scraps left on the plate. Fish on Mon-



day, pasta on Wednesday, and chicken for lunch on Saturday. And what if there are only carrots and broccoli in the fridge? The recipes are tailored to what we find in the house, because the password is "save."

## LEFTOVERS, AND HOW TO USE THEM

Cooking is a pleasure but having to do it every day requires a lot of imagination. RECIPIES BACKWARDS can be an excellent source of inspiration, especially for those who are not at their ease among pots and pans.

No need to rush to the supermarket, just fill the virtual pantry with the ingredients you have and that's it: there are more than 9 thousand first and second course dishes, explained step by step.

## THE "SHARING" REVOLUTION

"Sharing" is the new verb that has become compulsory. As a measure to curb wastage, "food sharing" has come into being,

creating a network of citizens and organizations with the aim of putting a daily meal together without emptying wallets or damaging the environment.

Thus, BRING THE FOOD was founded, which facilitates the encounter between small businesses and restaurants with surpluses to be disposed of and entities that can "redirect" it to canteens for the poor. Donors insert their offers, the data is geo-localized, and the "gatherers" choose the one that interests them. The high level of quality for the whole system is guaranteed.

## GREEN LIVING AT 360°

Do you want to do more for the environment? Start by calculating your energy impact, but not only in the kitchen. With ECOLOGICAL FOOTPRINT, available from the Apple Store, you can evaluate all housing-related consumption (heating, gas, and electricity), as well as transport and food.

## COMBATING WASTE

### DEFEATING THE PARADOX OF FOOD WASTE

JUNE 2013

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#### Design and layout

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#### Infographics

centimetri.it

#### Images

Corbis, Getty, Studio fotografico Plastikwombat

ISBN 978-887578390-7



Printed in May 2013  
at the Stamperia Artistica Nazionale  
Trofarello (TO)

## RESEARCH AREAS

### Food for All

Access to food and malnutrition: the BCFN reflects on how to promote a better food system on a global scale and how to enable a more equitable distribution of food resources, encourage social welfare, and reduce the impact on the environment.

### Food for Health

The relationship and the delicate balance between diet and health: the BCFN has collected the recommendations of scientific institutions around the world and of the most qualified experts, and explains its proposals to facilitate the adoption of a proper lifestyle and a healthy diet.

### Food for Sustainable Growth

An analysis of the food chain aimed at signaling the existing weaknesses and assessing the environmental impact of production and consumption. The BCFN proposes good practices and recommends personal and collective lifestyles that are able to have a positive impact on the environment and resources.

### Food for Culture

The relationship between mankind and food, its stages throughout history, and an analysis of the current and future situation. The role of the Mediterranean diet in the past and, according to the BCFN and major scientific studies, the current important task: rebalancing the relationship of people with their food.

## BCFN PUBLICATIONS

### 2012



Nutrition & well-being for healthy living

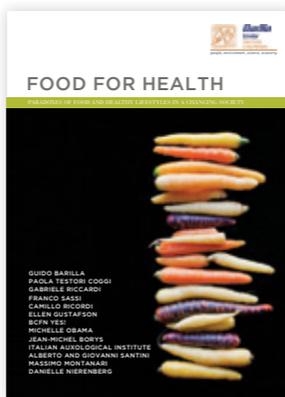


Obesity: the impacts on public health and society



Double Pyramid 2012: enabling sustainable food choices

### 2013



FOOD FOR HEALTH  
Paradoxes of food and healthy lifestyle in a changing society



Food waste: causes, impacts and proposals



Sustainable agriculture and climate change



Eating in 2030: trends and perspectives



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# BCFN YOUNG EARTH SOLUTIONS YES!

Young ideas for the future of our Planet



## THE 2ND EDITION WILL END SOON!

The call for ideas is open until **July 1, 2013** and is dedicated to all **young students and researchers** around the world who are interested in proposing original solutions on the topic of:

**Food and Sustainability: how to reduce our environmental impact, guaranteeing health and access to food for all.**

The ten finalist ideas, selected on the basis of feasibility and originality, will be presented at the **5th International Forum on Food and Nutrition** to be held in Milan on **November 26-27, 2013.**

The author/team of the winning idea will participate in a BCFN research project in 2014.

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