Executive Summary

Recognising that approximately one third or more of food is lost or wasted globally every year, this represents a significant challenge to food security. At the same time, however, the reduction of this waste/loss represents a major opportunity to strengthen food security and economic and social development. Yet various fundamental obstacles exist that hinder actions to tackle food waste and loss, including a lack of a universally agreed definition of key concepts and (by consequence) a lack of internationally comparable data.

Despite such obstacles, the private sector is voluntarily working to reduce waste and loss throughout the food supply chain. This is a win-win approach: the private sector benefits through increased productivity and economic returns, while at the same time food security, economic growth and development are all strengthened.

However, in order to scale-up and incentivise private sector-led solutions, the right enabling policy conditions need to be put in place. This should involve first-and-foremost reaching a workable definition of food waste and loss, while also improving consistency in data collection around the world. Furthermore, BIAC encourages policymakers to consider the following:

- Ensure that any actions for addressing food waste or loss are directed towards the entire food chain
- Encourage innovation
- Ensure that any global initiatives for addressing food waste or loss are adapted to suit local circumstances
- Improve consumer education about food waste and loss
- Invest in improving infrastructure and storage facilities, particularly in developing countries
- Foster closer linkages between farmers and processors, particularly in developing countries
- Review “appearance quality standards” where appropriate

In BIAC’s view, the OECD can play an important role in ensuring greater global coordination on the issue of food waste and loss, particularly concerning the issues described above. BIAC looks forward to co-operating with the OECD in this work.
I. Setting the Scene

The global food and agricultural system is beset with mounting challenges that are testing its ability to feed the world and support economic and social development. Increasing demand, climate change, water stress, soil degradation and shifting diets are just some of the threats facing global food security. Yet even where such challenges are overcome and food is successfully produced, the unacceptable fact is that around one third of it is lost or wasted globally every year\(^1\). Apart from the negative impact this has on food security, it also represents a serious economic cost: the value of the lost/wasted food equates to USD 680 billion in industrialised countries and USD 310 billion in developing countries\(^2\).

It is important to bear in mind that food waste or loss occurs throughout the entire supply chain. However, the volumes of waste or loss vary significantly depending on the part of the food chain, the geographical region, the level of development, the type of foodstuff, and other factors. For instance, in medium- and high-income countries food is often wasted to a large extent at the consumption stage, while in low-income countries it is often wasted at or near the farm.

Food waste/loss represents a huge problem, but its reduction offers a major opportunity for strengthening food security as well as economic and social development. As shown in an FAO study\(^3\), if food wasted or lost could be reduced by just a quarter, this would be sufficient to feed 870 million people suffering from chronic hunger in the world.

Recognising this huge potential, this BIAC paper examines the role that the private sector can play in reducing food waste and loss. We identify key opportunities that, if facilitated through appropriate policy reforms, could help to unleash greater private sector efforts to reduce waste/loss. We encourage the OECD to consider these policy issues and private sector approaches in its ongoing work on food waste in the supply chain.

II. Defining the issue

According to the FAO\(^4\), food loss refers to the decrease in edible food mass throughout the part of the supply chain that specifically leads to edible food for human consumption. This means that food loss can take place at production, post-harvest and processing stages in the food supply chain. The FAO notes that food loss also occurs at the end of the food chain (at retail- and consumer-level), but is more often referred to here as “food waste” due to the fact that it relates to retailers’ and consumers’ behaviour.

The definition of food waste and loss, however, is subject to continued debate. For instance, the European Union’s FUSIONS project is establishing the basis for defining food waste within the European context. FUSIONS is discussing how to define food waste according to environmental, nutritional or economic aspects, and how to define a start and end point in

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\(^1\) FAO (2011) “Global Food Losses and Food Waste: Extent, Causes and Prevention”.
\(^2\) FAO (2013) “Save Food: Global Initiative on Food Losses and Waste Reduction – Key Findings”.
\(^3\) Ibid.
\(^4\) Ibid.
the food supply chain. Discussions continue as to whether only the edible fraction of food waste, or whether both the edible and inedible fractions, should be considered. Moreover, the FUSIONS project is favouring use of the term “food wastage” instead of “food waste” to avoid conflict with the legal EU definition of waste.\(^5\)

The case of FUSIONS is just one regional example showing that there is still no universally-accepted definition of food waste and loss. With the lack of an agreed definition, there will inevitably be a lack of internationally comparable data on food waste and loss. By consequence, coordinated policy responses are difficult to design and implement.

### III. What can the private sector do to reduce food waste or loss?

Despite the ongoing discussions over definitions and data, the private sector is taking important steps to improve efficiency along the food chain, thereby reducing food waste and loss. After all, the private sector has an innate objective to reduce waste in order to reap the greatest potential from limited input resources. This is a clear "win-win" approach, as it increases economic returns for companies while improving food security, environmental outcomes and people’s livelihoods.

While not an exhaustive list, the following paragraphs illustrate areas where the private sector is already investing in approaches to reduce food waste/loss\(^6\).

#### Capacity-building for farmers and processors:

To address loss in the harvesting and storage process, companies are investing in capacity building approaches, such as on-farm training and improved management systems.

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**Example:**

General Mills founded the *Partners in Food Solutions* programme, which helps improve the capacity and expertise of local food processors through the sharing of scientific, technological and food-innovation knowledge. The programme now brings together General Mills, Cargill, Royal DSM and Bühler with local processors in Kenya, Malawi, Tanzania and Zambia. The programme includes objectives such as improving product quality and shelf life, and improving sourcing, logistics and distribution.

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\(^5\) A final published definition by the FUSIONS team is expected in late autumn 2013.

\(^6\) This section draws largely upon the BSR report “Waste Not, Want Not: An Overview of Food Waste” (March 2011).
Example:
The crop protection industry trains farmers on good agricultural practices in order to protect their crops from weeds, pests and diseases. Integrated pest management (IPM) and responsible use programmes led by CropLife International have trained nearly 2 million individuals in 63 countries since 2005 and are helping farmers harvest high quality crops.

In Ivory Coast, CropLife Cote D’Ivoire has initiated a training programme to educate local cocoa farmers on IPM and responsible use of crop protection products. Proper use of these techniques on cocoa farms in West Africa has been shown to improve yields and raise farmer profitability, while providing protection during post-harvest storage and transport to market to reduce food losses. The activities are part of the Cocoa livelihoods programme that aims to improve the incomes of smallholder cocoa farmers in West Africa, ensuring the sustainability of their farms and livelihoods.

Encouraging innovative solutions

Innovation plays an important role in generating new solutions to reducing food waste and loss. For example, biotech seeds with built-in protection against insects and targeted crop protection products enable farmers to significantly reduce food losses from pest damage in their field. Indeed, some studies show that global crop losses would double each year without crop protection products. After harvest, proper storage facilities together with post-harvest crop protection products can ensure food remains safeguarded as it travels from a farmer’s field to global markets. In the coming years, new biotech traits that delay fruit ripening may improve the shelf life of fruits and vegetables, thus reducing retail-level and consumer-level waste.

Example:
In the future, biotech fruit and vegetable seeds with delayed ripening traits may be able to extend the shelf life of fresh produce, which will benefit retailers and consumers. Public and private sector research is working on delayed ripening in papaya and melons for areas such as Hawaii and the Philippines where long transport times from the field to market can cause high rates of spoilage. Regions such as Southeast Asia, where papayas are a staple food, stand to benefit with significantly increased availability of nutritious produce for consumers, more income for small-scale farmers and less food waste at the retail level.

Another example is that of converting food waste into fuel. Some vehicles can be powered by used grease and vegetable oil from quick-service restaurants, while cheap biogas can be produced from certain food waste.
As a further example, the use of specific fertilizers, particularly those containing calcium (Ca), boron (B) and potassium (K), can reduce the incidence of physiological disorders (breakdown and softening) in fruits, vegetables and tubers during the pre- and post-harvest and extend their storage, distribution and shelf-life in the food chain. Fruit, vegetables and tubers which are firmer are also more resistant to pests and diseases post-harvest, and there may also be improvements in processing quality of produce. All of these benefits from specific fertilizer use will result directly and/or indirectly in a reduction in waste/loss in the food chain.

**Improved production processes**

Rather than discarding damaged products during production processes (such as bruised fruits or meat scraps), companies are seeking ways to make use of these resources in order to maximize efficiency.

*Example:*

Unilever reduced the amount of food waste in one of its factories by 50% in South Africa. The waste - such as tea dust, spice, stock powders - is instead being used in municipal compost schemes.

**Improved packaging solutions**

A range of packaging solutions is adopted by the food packaging industry to reduce food waste along the food chain, such as anti-microbial packaging, leak-resistant packaging, hermetic seals, vacuum packaging, modified atmosphere packaging, portion control packs, re-sealable packaging, and so on.

*Example:*

In early 2012, Marks & Spencer introduced strips that absorb ethylene (the hormone that causes fruit to ripen and then turn mouldy) into the packaging of strawberries. This works to extend shelf life in store and for consumers. The company estimated that the ethylene absorbing strips could accomplish a minimum waste saving of 4% in the UK market for strawberries. Plans are underway to use these ethylene absorbing strips across a wider range of fruit & salad products.

**Improved sales and marketing techniques**

By incorporating food waste reduction strategies into sales and marketing, companies are working to reduce wasteful behaviour.
Example:
Using a single date code on products is expected to reduce food waste. Tesco has piloted the use of a single date code on meat, fruit and vegetables in UK stores. On meat, a single ‘use by’ date was tested. On fruit and vegetables, Tesco piloted ‘best before’ on its packs, with ‘use by’ only being used when necessary on prepared foods. Encouragingly, not only have these changes been well received by Tesco customers, dropping ‘display until’ on these items has not created problems in stores – in fact pilot stores have actually seen reductions in food waste for items with a single date code. As a result, Tesco has rolled out the single code to pre-packed meat sold in over 3000 stores in the UK. The simplified date coding system for fruit and vegetables will be rolled out by the end of the year.7

Training for foodservice staff
Some companies are taking steps to train or raise awareness among kitchen staff in restaurants in order to reduce food waste. This should go hand-in-hand with consumer education, such as encouraging demand for containers for leftovers (doggy bags).

Example:
Unilever Food Solutions works with chefs to help them run their kitchens more efficiently, reduce waste and save money. Unilever Food Solutions' developed the "Wise Up on Waste" toolkit and app9 to help professionals conveniently monitor and reduce food waste. It contains a step-by-step audit to establish current waste levels, menu ideas that use frequently wasted ingredients, and a pragmatic guide to make kitchens less wasteful. The initiative is also working collaboratively with food industry colleagues and external partners by encouraging "United Against Waste" coalitions across the world.

Reducing in-store food loss and partnering with food redistribution programmes
Recognising that food loss can occur often in supermarkets, some retailers are implementing strategies to significantly reduce waste.

7 For more information, see: www.tescoplc.com/index.asp?pageid=590
8 Available online by clicking here: http://www.unileverfoodsolutions.co.uk/our-services/your-kitchen/wiseuponfoodwaste/tools
9 Available online by clicking here: http://www.unileverfoodsolutions.co.uk/our-services/your-kitchen/wise-waste-app
Example:
Walmart has set a goal to reduce food waste in its stores in emerging markets by 15% and by 10% in other markets by 2015. It is working towards these objectives through better ordering and in-store inventory management as well as partnering with food donation programmes and others in the local community for whom food waste can be a resource.

Some companies are partnering with food shelters and charitable organisations to redistribute food that would otherwise go to waste.

Example:
In Spain, the initiative led by AECOC “Food is too good to waste” seeks to foster good practices for food waste prevention and reduction along the food chain and also aims to optimise the redistribution of food. This initiative, in collaboration with the Spanish Federation of Food Banks, involves different actors (including industry and charity organisations) working together throughout the agri-food chain to reduce waste of products in order to be able to redistribute food with all proper safeguards.

The main objectives of the initiative are to [1] help improve processes relating to food bank activities (such as transport and logistics, food safety guarantees, information exchange, etc.), [2] put in place mechanisms to monitor the received quantities of food, types of products, and equitable sharing, and [3] to increase the percentage of redistributed food.

Consumer education
According to the US Environmental Protection Agency (EPA), food is the single largest component of municipal solid waste reaching landfills and incinerators, while it is reported by the organisation WRAP that almost half of all food waste comes from households and more than 60% of this is avoidable. Adapting and/or changing consumer behaviour is essential to reduce this waste.

Several retail companies have voluntarily undertaken commitments to raise consumer awareness about food waste. They do this because of the strategic position of the retail sector being in close proximity with consumers, and they have extensive experience in communicating and informing consumers about such issues.
Example:
On 9 October 2012, 21 major retail companies and 2 associations endorsed a “Retail Agreement on Waste”\(^\text{10}\), in which the companies commit to carry out awareness raising initiatives on food waste and how households can reduce it.

For food retailers, this involves carrying out at least two awareness raising initiatives on a global and/or national level by end of June 2014 on waste reduction. Progress will be measured on the basis of the number of initiatives and the number of people reached by these initiatives, and signatory companies will report on their initiatives by providing the relevant documentation.

Example:
The Courtauld Commitment\(^\text{11}\) is a voluntary agreement, managed by the UK Waste & Resources Action Programme (WRAP), aimed at improving resource efficiency and reducing the carbon and wider environmental impact of the UK grocery retail sector. The third phase (Courtauld 3), which runs from May 2013 until 2015, aims to reduce the weight and carbon impact of household food waste, grocery product and packaging waste, both in the home and the UK grocery sector, by 4% overall by 2015\(^\text{12}\).

Concerning household waste, Courtauld 3 encourages adhering firms to optimise product, packaging and label design to help consumers make the most of the food they buy. Firms are also encouraged to work to raise awareness of the benefits of reducing food waste amongst customers and staff.

45 leading retailers, brands and manufacturers have signed up to the Commitment. The impact is predicted to be a cumulative reduction of 1.1 million tonnes of waste, 2.9 million tonnes of carbon dioxide emissions, and a cost benefit of £1.6 billion to consumers, food and drink sector and local authorities.

\(^\text{10}\) Available online by clicking here: http://www.eurocommerce.be/policy-areas/environment/policy-updates/2012/20121009-retail-agreement-on-waste/retail-agreement-on-waste.aspx

\(^\text{11}\) Available online by clicking here: http://www.wrap.org.uk/content/courtauld-commitment-3

\(^\text{12}\) From a 2012 baseline.
IV. Policy recommendations

Despite the various actions being undertaken by companies illustrated in the preceding section, the size of the food waste/loss challenge and the lack of sufficient data call for greater action on a global scale. BIAC proposes the following policy guidance to help tackle food waste and loss:

- **Agree on a common international definition** of food waste and loss. Unless a universally acceptable definition of food waste and loss can be agreed upon, there cannot be proper coordination of policies and initiatives to appropriately address the problem.

- **Improve data collection and analysis, at local, national and global levels.** The impact of growing international trade of food loss still needs to be better understood. The OECD can play an important role in this aspect through its ongoing work on establishing an international database on food waste.

- **Ensure that any actions for addressing food waste or loss are directed towards the entire food chain** and not isolated parts, since there will inevitably be positive or negative repercussions for other parts of the chain. This necessitates building partnerships among many different actors in order to scale-up solutions. For example, the EU FUSIONS project established in 2012 involves over 80 groups from business, government and civil society to develop strategies to reduce food waste, while the US-based Food Waste Reduction Alliance (launched by the Grocery Manufacturers’ Association, Food Marketing Institute and National Restaurant Association) is focusing on solutions to food waste generated by manufacturers, retailers and restaurants.

- **Encourage innovation.** Value can be captured from food waste thanks to innovative technologies or solutions. This requires an enabling policy environment conducive to innovation, with international and cross-discipline collaborations in the area of R&D and opportunities for international cooperation in basic research, built upon improved human resources including specialist studies at higher education levels.

- **Ensure that any global initiatives for addressing food waste or loss are adapted to suit local circumstances.** For example, measures in developing countries may focus primarily on producers (such as by improved harvesting techniques, farmer education, storage facilities and cooling chains), while measures in developed countries need to primarily address consumer behaviour.

- **Improve consumer education about food waste and loss.** Altering consumer behaviour is essential for reducing total food waste. For instance, consumers can be educated in schools and government-driven campaigns regarding the proper storage and preparation of food, and the interpretation of "best before" and "use by" labels.
- **Maintain food safety.** Any policies aimed at reducing food waste or loss should take into account food safety. Policy makers should not lose sight of protection of consumers’ health.

- **Invest in improving infrastructure and storage facilities, particularly in developing countries.** Recognizing that public funds for such projects may be limited in many countries, governments should encourage private investment and public-private partnerships (PPPs). This requires building an overall enabling environment for investment.

- **Foster closer linkages between farmers and processors, particularly in developing countries.** Recognising that the food processing industry does not have the capacity to process and preserve fresh farm produce in many areas in order to meet demand, governments can create a better enabling environment for provide investment in the food industry and to work more closely with local farmers to address supply chain issues.

- **Review "appearance quality standards" where appropriate.** Rigorous quality standards concerning the weight, shape, size and appearance of certain food products results in large portions of crops never leaving farms. In combination with consumer education initiatives, consumer surveys should be employed to help determine the suitability of quality standards.

**Conclusions**

This paper has highlighted various examples of private sector-led efforts to address food waste and loss spanning the entire food chain. However, it has also indicated that in order to scale-up the global effort to reduce waste, it is important for policymakers to ensure greater coordination and to consider a range of different policy considerations along the food chain.

BIAC welcomes the OECD’s focus on the topic of food waste/loss, as we believe that coordinated action based on sound data and evidence is needed at international level to better define, understand and respond to the issue. BIAC looks forward to working with the OECD as this work continues.