



## Waste Minimisation

### INTRODUCTION

Over the past 100 years, people have consumed more goods and produced more waste than ever before. As a result, waste generation is growing exponentially. Currently, on average every citizen living in the EU throws away around half a tonne of household rubbish every year.<sup>1</sup> Today, our common goal is to use resources in closed loops, so that consumption does not generate waste as it did in former times.

Because of its economic, social and environmental impacts, waste is a fast growing issue for all industrialised and emerging economies.

Waste removal, in particular, is an important cost factor for businesses, public authorities and private households.

Decreasing waste generation in absolute terms is a long-term objective. In this vein, one of the main goals of improving waste management systems is to decouple economic and population growth from waste generation, as well as decrease the environmental impacts of the latter. Cleaner production, support for more environmentally friendlier products, development of sustainable services and promotion of sustainable consumption, should lead to economies which are more resource efficient, and thereby less dependent on the supply of expensive raw materials.

Indeed, recycling waste is one way to recover valuable resources, such as metal or plastic, while at the same time reducing the waste's environmental impact. Consequently, the retail sector is increasingly seeing waste as a valuable resource in its own right and is taking steps to reuse materials wherever possible so as to reduce reliance on raw-material inputs.

Retailers can play an important role in encouraging waste prevention. In collaboration with manufacturers, retailers offer a broad range of eco-designed and recyclable products. Together with producers, they participate in collective take-back systems e.g. for batteries, WEEE or other products as well as regularly informing consumers about the opportunities to recycle used products. Furthermore, retailers work to optimise of their own processes so that wasted material is kept to a minimum.

### SCOPE

The main focus of this issue paper is quantitative and qualitative waste prevention and specifically, waste streams in shops on which retailers have a direct impact.

Although, retailers have a limited influence when it comes to waste prevention, at consumer level and in the production processes, this will nevertheless be addressed in this paper.

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<sup>1</sup> Being wise with waste: the EU's approach to waste management:  
<http://ec.europa.eu/environment/waste/pdf/WASTE%20BROCHURE.pdf>



Furthermore, although this paper looks into all product categories, food waste prevention and the recycling of electrical and electronic products (waste of EEE) are the main topics that will be discussed.

The optimisation of packaging and the recycling of packaging waste were already discussed in the previous issue paper on packaging (issue paper n° 8)<sup>2</sup>.

## TRENDS IN WASTE GENERATION

In 2008, about 2.600 million tonnes of waste was generated in the EU 27 which represents 5.300 kg per inhabitant<sup>3</sup>. Construction, mining & quarrying, and manufacturing are, in order of importance by quantity, the major sources of waste in the European Union. . The services' sector on the other hand accounted for 6.7 % of the waste generated by businesses within the EU-27<sup>4</sup>.

The total non-mineral waste amounted in 2008 to 920 million tonnes, which corresponds to 1.800 kg per capita. Non-mineral waste reflects waste originating from all economic sectors and households, and therefore includes waste generated from both production and consumption<sup>5</sup>. Manufacturing was responsible for 26% of waste generated in the EU in 2008.

As explained by the European Commission's Eurostat service<sup>6</sup> "non-mineral waste is an interesting indicator for environmental policies since it covers most of the waste for which reduction is an important environmental objective".

The impact of food wastage is also noticeable. In 2006 more than 89 million tones of food waste was generated; representing an average of 177.6 kg per capita.<sup>7</sup> Although availability and quality of data is limited, it is estimated that 42.2% of the waste occurred in households and 38.9% in the manufacturing phase while retailers and wholesalers accounted for 5% of the total food waste.

## LEGAL FRAMEWORK

According to the **Waste Framework Directive** (2008/98/EC)<sup>8</sup> the first objective of any waste policy should be to minimise the negative effects of the generation and management of waste on human health and the environment. Waste policy should also aim at reducing the use of resources while favouring a practical application of the waste hierarchy. The waste hierarchy in turn provides a precise order of priority to minimise waste: i.e. (1) waste prevention; (2) re-use; (3) recycling; (4) energy recovery; (5) waste disposal. However, article 4.2 of the Waste

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<sup>2</sup> [http://ec.europa.eu/environment/industry/retail/pdf/packaging\\_%20issue\\_paper.pdf](http://ec.europa.eu/environment/industry/retail/pdf/packaging_%20issue_paper.pdf)

<sup>3</sup> [http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php?title=Waste\\_statistics&printable=yes](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php?title=Waste_statistics&printable=yes)

<sup>4</sup> <http://www.recyclingportal.eu/artikel/28186.shtml>

<sup>5</sup> <http://europa.eu/rapid/pressReleasesAction.do?reference=STAT/11/136&type=HTML>

<sup>6</sup> <http://europa.eu/rapid/pressReleasesAction.do?reference=STAT/11/136&type=HTML>

<sup>7</sup> [http://ec.europa.eu/environment/eussd/pdf/bio\\_foodwaste\\_report.pdf](http://ec.europa.eu/environment/eussd/pdf/bio_foodwaste_report.pdf)

<sup>8</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:en:PDF>



Framework Directive states that “when applying the waste hierarchy member states shall take measures to encourage the options that deliver the best overall environmental outcome. This may require specific waste streams departing from the hierarchy where this is justified by life-cycle thinking on the overall impacts of such waste”.

The **Thematic Strategy on the prevention and recycling of waste**<sup>9</sup> sets out long-term goals for the EU to become a recycling society by avoiding waste whenever possible and otherwise using waste as a resource.

A number of “product-specific” or “recycling” Directives regulate the management of certain waste streams which are considered to have a significant impact on the environment and human health. The **RoHS Directive (Restriction of Hazardous Substances)** (2002/95/EC<sup>10</sup> recently revised by 2011/65/EU<sup>11</sup>) restricts the use of six hazardous substances in the manufacture of various types of electronic and electrical equipment in order to prevent the creation of hazardous waste.

The **WEEE Directive - Waste Electrical and Electronic Equipment** (2002/96/EC)<sup>12</sup> has as a priority the prevention of waste from electrical and electronic equipment. In addition, it promotes the re-use, recycling and other forms of recovery of such waste so as to limit the discarding of waste. The Directive also seeks to improve the environmental performance of all operators involved in the life cycle of electrical and electronic equipment.

The **Directive on (waste) batteries and accumulators** (2006/66/EC)<sup>13</sup> aims at minimising the environmental impact of such products. It limits the amount of hazardous substances, especially mercury, cadmium and lead contained in batteries and accumulators and encourages treatment and re-use of the amounts that are used. The Directive provides rules for the collection and further processing of waste batteries and accumulators.

Finally, while not explicitly targeting waste, the **Directive establishing the framework for the setting of eco-design requirements for energy related products**<sup>14</sup> aims at reducing the environmental impact of products from a life cycle perspective by removing poor performers from the market. The Directive focuses mainly on energy-using products and in particular the energy consumption in the use phase. This Directive has now been extended to energy-related products that have an impact on energy consumption. The objective is for the least well performing products to be withdrawn from the market by establishing minimum performance criteria.

Also of relevance for waste prevention in Europe are the **SCP - Sustainable Consumption and Production - Action Plan**<sup>15</sup> and the **Roadmap to a Resource Efficient Europe**<sup>16</sup> which was

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<sup>9</sup> <http://ec.europa.eu/environment/waste/strategy.htm>

<sup>10</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:174:0088:0110:EN:PDF>

<sup>11</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:174:0088:0110:EN:PDF>

<sup>12</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:037:0024:0038:en:PDF>

<sup>13</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:266:0001:0014:en:PDF>

<sup>14</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:285:0010:0035:en:PDF>

<sup>15</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52008DC0397:EN:NOT>

<sup>16</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:DKEY=615217:EN:NOT>



called for by the **Europe 2020 – Flagship Initiative “A Resource Efficient Europe”<sup>17</sup>**. The **Roadmap to a resource efficient Europe sets ambitious milestones in order to turn waste into a resource and specifically addresses the issue of food waste by targeting a 50% reduction of edible food waste by 2020.**

## OPPORTUNITIES AND BARRIERS

### Opportunities

Waste prevention is subject to the same techniques as other means of improving resource efficiency, but with a clear focus on reducing the amount or hazardousness of the waste generated. It is defined in the Waste Framework Directive as “measures taken before a substance, material or product has become waste that reduce:

- (a) the quantity of waste, including the re-use of products or the extension of the life span of products;
- (b) the adverse impacts of the generated waste on the environment and human health or
- (c) the content of harmful substances in materials and products.

Proper waste prevention leads to a more sustainable approach by reducing dependency on natural resources. Not only does this result in a more competitive economy but it also has a number of other advantages including:

- reduced environmental and health impacts, including reduced greenhouse gas emissions, in the sectors where concrete measure are applied as well as over the whole life-cycle
- a more efficient use of materials and energy, a reduction in raw material and energy consumption
- innovation leading to more resource-efficient goods and manufacturing methods, reduced waste production, and consequently lower waste management costs
- higher profits

### Barriers

Aiming for minimum waste generation alone would only result in suboptimal solutions. The needs of the consumers and those of society as a whole would not be properly met. Therefore, a compromise needs to be found between lowering raw material and energy consumption, reducing waste generation and limiting the environmental impact on the one hand, and meeting society's needs on the other hand.

For companies, optimising systems and changing behaviours requires time, capacity building and occasionally, additional investments. Moreover, providing tailor-made consumer information aimed at encouraging changes in consumer behaviour may be resource intensive. Consumers are overwhelmed by the amount of information they are exposed to, yet this information lacks

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<sup>17</sup> [http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/flagship-initiatives/index\\_en.htm](http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/flagship-initiatives/index_en.htm)



proper impact. Special and innovative means to attract consumers' attention, engage their interest, and raise their awareness are necessary.

Furthermore, experience gained by one company or within one country may not necessarily be transferable to another company or another country. Their consumers' preferences, their personal requirements and restrictions may be different. The framework conditions may similarly be different. The waste prevention potential is determined, to a large extent, by the waste management costs (high costs favouring waste prevention), and by the infrastructure in place (ease and accessibility of collection systems). Another important feature is how much the waste producer feels responsible for the waste he produces, or the extent to which he is made responsible by legal requirements.

Retailers, producers and citizens very much depend on the local waste management infrastructure and the proper enforcement of legal requirements. In some member states the recycling infrastructure is weak and a huge share of waste goes to landfill.

While, there is a growing trend among larger retailers to take-back waste on a voluntary basis, this approach should be maintained and not be replaced by mandatory systems. There are limitations to take-back, primarily in terms of the limited available storage space and the need to ensure the safety of staff (in light of the dangers of handling EEE or batteries containing hazardous substances such as cadmium) as well as that of consumers and of the store premises. Also, to date experience shows that the collection rates can remain very low in some member states.

Finally, on a practical level, there are also trade-offs that must be taken into account. For example, legislation, in particular in the field of hygiene and safety, is very strict.

## CONCLUSIONS

Waste has huge negative impacts on the environment, causing pollution and greenhouse gas emissions that contribute to climate change, as well as significant losses of raw materials.

Furthermore, the amount of waste we are creating is continuously increasing and the nature of waste itself is changing, partly due to the dramatic rise in the use of hi-tech products. This means waste now contains an increasingly complex mix of materials, including plastics, precious metals and hazardous materials that are difficult to deal with safely.

## KEY CHALLENGES

As the world's population grows, the pressure on natural resources will continue to increase, resulting in higher prices for commodities as well as possible shortages of some vital resources.

## WEEE

With regard to EEE, the main challenge lies in striking a balance between reparability i.e. extension of the product life, and innovation. Innovation often lies in better recyclability of appliances and working in close loops.



## Food waste prevention

One area of growing concern is food waste, which is particularly challenging due to its perishable nature, its limited storage period and its particularly harmful impacts when dumped at landfills. However, it is also an area where significant improvements are possible. Retailers take over their share of responsibility despite the fact that 5% of all food waste is estimated to occur at the retail/wholesale level.

Reasons for food wastage are numerous:

At agricultural and industry level:

- flaws in the production process leading to discards

At retail level:

- food spoilage during transport
- the challenge of accurately estimating the precise level of consumer demand
- seasonal fluctuations in the supply of fresh food
- consumer expectations of being able to find their products on the shelves at all times, including before closure
- inappropriate portions considering the growing proportion of single-person households
- food safety reasons primarily due to disruptions of the cold chain
- product recall

At consumer level:

- lack of consumer knowledge and awareness on home food storage and waste reduction, including culinary skills for use of “left over” food
- poor comprehension of end-of-life- dates (“best before”, “use by”, and “display until”)
- over purchasing
- considering as waste, resources which could be included in other products (i.e. some animal parts which are thrown away that could be used as ingredients in other types of food)
- poor appreciation of the actual value of foodstuffs leading to unconsidered/thoughtless discards
- (too) high consumer expectations regarding perfect quality of fresh produce

As for other issues, there are trade-offs that must be taken into consideration. For instance, adequate packaging can help preserve food longer and hence reduce food waste, but will inevitably entail other environmental impacts.

## What can retailers do?

- optimise their business processes, including minimising product damages and repairing damaged products (to focus on minimum material and energy consumption)
- inform consumers when products found on the shelves have been damaged and repaired, and provide discounts on these
- identify waste prevention potentials with subsequent training of the staff



- In the area of food:
  - offer discounts for products and, where possible, donation of products approaching their “use by” and “best before” dates, while guaranteeing maximum safety
  - 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
  - help organise networks of food redistribution
  - use innovative marketing tools: shopping lists for consumers, information on prevention, etc.
  - optimise logistics, supply and consumer demands, order cycles and quantities
  - adapt packaging sizes, increase sale of loose foodstuffs

### What can policy makers do?

- reassess the current definition of waste so that it is considered a new material that should re-enter the production circuit and strengthen the links between the current waste stream legislations, resource efficiency, climate change and sustainable consumption & production
- provide incentives to consumers to purchase more environmentally friendly products
- finance research programmes for new sector/product-specific waste prevention methods, such as Time Temperature Indicators
- set up transfer networks and encourage the dissemination of best practices on more efficient production and use of food including logistical improvements, such as of packaging and of repair & re-use schemes for other products
- consumer awareness/information/motivation campaigns on waste, including food waste prevention, efficient use of appliances and repair/re-use options (such as a webpage on eco-efficient top-products)
- tools and training for more efficient consumption (residual food cook books, shopping lists etc...)
- for waste already generated, identify the best ways of treating it and/or using it (animal food, energy recovery, compost)
- facilitate improved waste management infrastructure and consumer access to responsible waste disposal routes, by for example easing planning requirements
- control proper enforcement of existing waste legislation at member state level

### What can others do?

Producers can:

- develop and produce resource-efficient products in a low-impact way
- optimise products by covering needs, while using a minimum of material and hazardous substances, increasing product lifetime, improve the ease of repair and recyclability at the end of life to make products, more long-lasting, easily repairable, low consuming and re-usable
- ensure that when there is a need for using compound materials, that goods can be easily separated by both consumers and recycling facilities at their end of life
- supply information on how to best use, maintain, recycle and dispose of the product
- support repair, re-use, waste collection and recovery schemes.



The action carried out by consumers at consumption and post-consumption level is also critical to the success of every waste-minimisation policy. An informed, committed and pro-active consumer is therefore a key element.

In this vein, consumer organisations can:

- raise awareness, support the consumers in getting the appropriate information and in making the right decisions.

### What can we all do together?

- participate in networks of supply-chain processes to improve product sustainability (e.i. trade associations, ECR Europe, The Consumer Goods Forum etc.)
- optimise processes (including packaging solutions) to reduce waste in the entire value chain, from primary to tertiary packaging
- work to better understand the needs and consumption habits of consumers, including product sizes
- develop products tailored to the needs of different consumer categories
- collaborate on information campaigns on resource efficiency
- collaborate, with all relevant stakeholders, to raise awareness on food waste as an issue
- look into the issue of waste collection (e.i. separate collection schemes for batteries, packaging waste, small electronics)