

Packaging Recovery Organisation Europe

**PRO EUROPE**

Effective packaging –  
effective prevention



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## PROTECTION

*Packaging reflects people's lifestyle*



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Single-person households are on the increase throughout Europe.

This demographic change also fosters significant changes in business activities and consumer behaviour. The quantity of packaging is bound to rise. Couldn't we just do away with it? No, say the experts. Packaging is indispensable solely on the grounds of its function as a product protector.

## INTEGRATION

*Packaging as part of an integrated system*

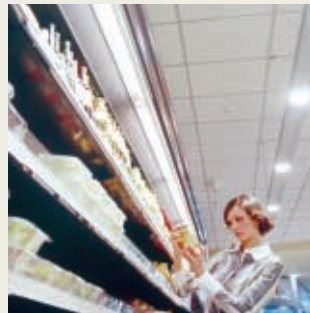


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Less packaging is not necessarily more environment-friendly. Correspondingly, the weight and volume of waste are not always indicators of environmental impact. An integrated approach is necessary, using flexible mechanisms that cover the entire processing chain of product and packaging.

## RESPONSIBILITY

*Integrating prevention into packaging development*



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European industry takes its responsibilities seriously and has developed a range of successful tools and activities in recent years to reduce packaging waste and the consumption of natural resources. The compliance schemes set up by industry in the form of self-help organisations play a key role here.

## EXPERIENCE

*More than the prevention of packaging waste*



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In all countries in which it is active, the Green Dot has supported the process of reducing and optimising packaging by industry. As a result, fewer materials and resources are being consumed. And this also helps to relieve the burden on the environment. A variety of different examples demonstrate the successful optimisation of packaging in both ecological and economic terms.



Bernard Hérodin  
*Co-Manager of PRO EUROPE*



Dr. Fritz Flanderka  
*Co-Manager of PRO EUROPE*

***“No more packaging should be used than is required to fulfil its functions, thus guaranteeing that packaged products satisfy consumers’ demands.”***

Investing in sustainable development means investing in a safer and better future for all. To this end, it is imperative to bring material prosperity and conservation of the eco-system into line with each other. The interlinking of ecological, economic and social aspects is doubtlessly a tremendous challenge for all social groups. But it can be achieved. Europe is on the right track here. With the establishment of producer responsibility and the introduction of the principle of corporate social responsibility, the foundation has been laid for a new era of sustainable economic development.

Accepting responsibility plays a key role in achieving sustainability. This is because environmental problems cannot be solved with laws and guidelines alone. Living today but not at the expense of tomorrow, and living here but not at the expense of elsewhere is the motto that must be anchored in all sectors of society. Thousands of companies have already taken voluntary steps to prevent and reduce packaging and packaging waste, thereby saving natural resources and lowering CO<sub>2</sub> emissions. It is essential to give our full support to initiatives like these. The founding of compliance schemes with the Green Dot trademark in more than 20 different countries in accordance with European Packaging Directive 2004/12/EC demonstrates industry’s commitment to the environment. Green Dot schemes have also helped to raise the consumers’ environmental awareness by motivating them to collect packaging waste separately.

Preventing packaging waste and minimising the environmental impact of packaging is a complex task consisting of various, inseparably linked fields of action. This is why we need integrative approaches that systematically support and complement each other.

A stylized, handwritten signature in black ink.

Bernard Hérodin

A stylized, handwritten signature in black ink.

Dr. Fritz Flanderka

# Packaging reflects people's lifestyle

*Single-person households are on the increase throughout Europe. People are living longer and having fewer children. Such demographic, social and cultural changes also foster significant changes in business activities and consumer behaviour. Today consumers are looking for smaller packs of food and more single-serve portions. The question is, will the resulting increase in packaging constitute an environmental nightmare? Not necessarily, say the experts.*



**Demographic change:**

*Single-person households need smaller packs of food.*



Population trends and the changes they entail place great demands on legislature and industry. Today more people – both young and old – are living alone. In France, for example, the number of single-person households is growing much faster than the population itself. While population growth only amounted to 20 percent between 1970 and 2000, the number of single-person households rose by 130 percent.<sup>1</sup> Forecasts for Great Britain expect single-person households to account for 40 percent of the total by 2010.<sup>2</sup>

The individualisation of society has filtered through to families. The number of working women continues to grow. Less time is available for families to share mealtimes. Individual family members now eat when it suits them. Families, singles and the older generation all place greater value on leisure activities than they did in the past. This new European lifestyle promotes a change in consumer behaviour and consequently has a significant impact on the packaging industry. The reason is quite simply that people are cooking less. Microwave ovens, frozen meals and eating on the go are now given preference over traditional forms of eating and cooking. **These far-reaching social and cultural changes call for flexible mechanisms in both policy-making and industry to bring about the necessary innovations, to pave the way for change and to handle the environmental consequences.** “Industry needs flexibility to be able to give consumers value for money along with environmentally responsible packaging”, says Jane Bickerstaffe, Director at the Industry Council for Packaging & the Environment (INCPEN), United Kingdom. Consumer trends are particularly visible in the food industry. The ‘new’ consumer needs

and is increasingly demanding smaller packaging units that are easy to handle and open – especially for older people. Added to this, people want convenient formats and out-of-home services for times when they are out and about or at work. Home shopping is also on the rise. At the same time, people are paying more attention to a healthy and balanced diet. In the age of functional food, fast food is undergoing a revolutionary change.<sup>3</sup> This places increasing demands on the functionality and use of packaging. It must, for example, be heat-resistant to permit microwave cooking. Snack food packaging must be easy to open without the aid of utensils, easy to handle and resealable. Additionally, the consumers’ growing demand for information on food safety, hygiene and traceability along with more stringent legal requirements make it necessary for packaging to carry labels with all the relevant information. In this way, packaging is playing an ever-greater role in promoting communication between producers and consumers.

#### Packaging protects products and the environment

Couldn’t we just do away with packaging? No, say the environmental and industrial experts. That would be an ecological and economic disaster. Packaging has important functions

#### Sources:

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- 1] INSEE, Institut National de la Statistique et des Etudes · [www.insee.fr](http://www.insee.fr)
  - 2] Economic & Social Research Council, Report “Britain towards 2010” · [www.esrc.ac.uk](http://www.esrc.ac.uk)
  - 3] Zukunftsinstitut GmbH, Study “Consumer Trends 2005” · [www.zukunftsinstitut.de](http://www.zukunftsinstitut.de)
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*The individualisation of society has filtered through to families...*



*...and thus has a significant impact on the packaging industry.*



*Families, singles and the older generation all place greater value on leisure activities than they did in the past.*

and is consequently an indispensable product-enhancer – especially with regard to food. First and foremost, it protects products from contamination (bacteria, changes in smell and taste, etc.) and from damage during transportation, handling and storage. “In developing countries, a lack of packaging or inadequate packaging causes between 30 and 50 percent of the foodstuffs to decay before they even reach the consumers. In industrialised countries, product loss is only about two or three percent”, points out Professor Dr. Dr. Günter Grundke from the German Packaging Institute. Packaging therefore protects and conserves products. Packaging is an information carrier and also an important marketing tool: It makes products recognisable for the consumer. And it provides consumers with important product information (mostly required by law) on ingredients, additives, ‘best before’ dates, producers, instructions for use, quality labels or recycling information. With the introduction of stricter requirements in respect of consumer protection and food safety, for instance, producers are increasingly being obliged to provide the necessary information and to ensure that their packaging has sufficient space to display it.

Packaging is an integral part of the product being offered to consumers. Packaging design must attract consumers in an increasingly competitive and quickly changing market while fulfilling the essential functions required for the extended supply chain. Added to this, it must be environmentally sound. According to Walter Gelens, Chairman of Lever Faberge and Unilever Belgium, “the Unilever packaging policy is to ensure packaging does its job with lower quantities wherever feasible and with packaging materials that are easy to recycle and recover. Producers of consumer goods must, however, respond to the growing number of single-person households, otherwise the environmental impact of product waste will be significantly higher”. For example:<sup>4</sup> A single-person household consumes less bread per day than a three-person household. If a package contains more bread than is needed for a certain period of time, there is a greater risk of the bread becoming mouldy and being thrown away. This is a waste of the primary energy that was used to produce, distribute and store the bread. This loss of energy means that the environmental impact is greater than if the same amount of bread had been packed in smaller portions (see pages 12-13 for a detailed presentation of this relationship

Sources:

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4] Packforsk, Report “Packaging – A Tool for the Prevention of Environmental Impact”, June 2000 · [www.packforsk.se](http://www.packforsk.se)

5] Further information on DANONE Group · [www.danone.com](http://www.danone.com)

6] Further information on Tetra Pak · [www.tetrapak.com](http://www.tetrapak.com)

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using the example of milk and packaging). This clearly shows that if packaging is tailored to the product and to consumer needs, it can significantly lower the environmental impact. Efficient product protection therefore calls for ecological efficiency. “An increase in the volume of packaging as a result of the growing number of smaller packages need not mean the uncontrolled use of resources”, says Hugo Eberhardt, Director Packaging and Ecology at Nestlé Germany. Belgium, France, Austria, Spain and Germany have already published data on a decoupling of economic growth from packaging consumption and waste production. Hugo Eberhardt: “It is now a matter of course for industry to use fewer packaging materials and to re-use, recover or recycle used packaging materials.” This development has been supported by funding made available under the Green Dot compliance schemes. Recovery and recycling costs for packaging waste have been internalised in product prices.

### Prevention of packaging is a process of continuous improvement

While society takes the functionality of packaging for granted, it gives no recognition to packaging ‘performance’. Once the pack has been emptied, a lot of consumers consider it to be useless. **This constitutes a packaging paradox: Packaging protects a product successfully and afterwards becomes waste that needs to be recycled or recovered.** People want to get rid of this annoying ‘product’. It becomes a problem. As packaging is unavoidable for social, economic and ecological reasons, waste prevention must be seen as a process of continuous improvement [see figure 1]. A key role in this process is played by the functions that packaging must perform and also by external factors such as demographic change, legislative regu-



*Tetra Pak's drinks cartons are supplied by the roll.*

lation and available technologies. **Reducing the environmental impact can only be successful if the entire packaging chain is taken into account, and this means from producer right through to consumer.** The packaging and the product must be seen as a single unit. The environmental impact of this single unit must be reduced by investigating and initiating waste prevention measures during development. A reduction of the environmental impact and economic efficiency often go hand in hand. Reducing packaging weight and using recycled materials conserves raw materials and reduces costs. The DANONE Group, for example, only uses cardboard sleeves made of recycled materials for all its fresh dairy products in Spain. And in France, all secondary and tertiary packaging is manufactured from recycled cardboard.<sup>5</sup> Another successful example comes from Tetra Pak in Sweden. They supply packaging material to their fillers by the roll. Drinks cartons are only formed into the final packaging product, separated and sealed during the filling process. This cuts transport volume and thus reduces CO<sub>2</sub> emissions.<sup>6</sup>



**Figure 1: Packaging in line with the environment**

To minimise the global impact of the unit product/packaging

#### Functions of packaging

- conservation and protection
- hygiene and food safety
- diversification and adapted portions
- storage and transport
- information and marketing
- prevention of theft

Collaboration between all parties involved



To take account of the entire chain from producer to consumer

#### External factors

- legal framework
- technology available
- demographic evolution
- lifestyle

Integration into the development of packaging

# Packaging as part of an integrated system

*Prevention needs a structured approach: From an ecological perspective, packaging, the product, the supply chain and the consumers' needs form an inseparable unit. Waste prevention should not be seen solely as a qualitative and quantitative reduction of packaging materials, but rather must take account of the entire process chain – from production, distribution and sales to use by the consumer and subsequent disposal. Underestimated packaging – i. e. too little packaging to provide adequate product protection – has a serious impact on the environment. In other words, less packaging is not necessarily more environment-friendly. Waste prevention means avoiding material and energy losses. A more effective way of preventing waste therefore includes actions aimed at protecting products, optimising packaging and returning raw materials and energy to the production process.*



**Waste prevention:**

*Solutions must take account of the entire system.*



Demographic and social changes in Europe highlight the fact that the volume of waste is governed by a variety of factors such as the size of a household. The findings of a study conducted by INCPEN on the Environmental Impact of Packaging in the UK Food Supply System<sup>7</sup> have shown that a single-person household produces more waste than a large family does per person: While a single person living alone produces eleven kg of household waste per week, a family of four produces only four kg per person [see figure 2].

Internationally renowned organisations and institutes such as INCPEN in Great Britain and Packforsk in Sweden therefore advise against setting legislative targets for waste prevention. “Consumer choice should not be restricted by unrealistic packaging reduction measures that will conflict with demographic trends”, warns Jane Bickerstaffe. This is confirmed by events in some European countries where waste prevention targets have been introduced. The instruments that are used to reduce the growth of municipal waste must be chosen with care. As the EU Thematic Strategy points out, inappropriate instruments do not help.<sup>8</sup>

Packaging Directive 2004/12/EC underlines the importance of prevention by introducing a number of essential requirements that have to be fulfilled. Industry is aware of its responsibility and voluntarily participates in activities to achieve significant material reductions and hence to halt this trend. Waste means a loss of materials and energy. To prevent this, European industry has significantly reduced packaging in recent years and has also developed its

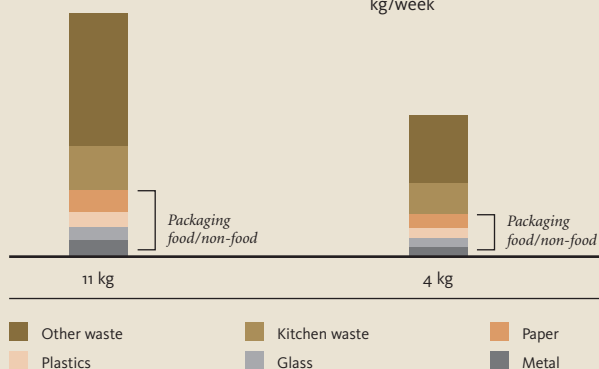
Figure 2:

The volume of waste per person in a single-person household

kg/week

The volume of waste per person in a family-of-four household

kg/week



A single person living alone produces more waste than a person living in a family-of-four household.

Source: INCPEN, Great Britain

recycling and recovery systems. For example, European detergent producers under the umbrella of the International Association for Soaps, Detergents and Maintenance Products (A.I.S.E.) cut packaging use by 6.7 percent between 1996 and 2001. In a Code of Good Environmental Practice for Household Laundry Detergents, formally adopted in 1998 by

Sources:

7] [www.incpen.org](http://www.incpen.org)

8] EU Commission Communication: Towards a Thematic Strategy on Waste Prevention and Recycling.



“Consumer choice should not be restricted...”



...by unrealistic packaging reduction measures.”



*A significant reduction in packaging material could oppose the aims of environmental protection.*

Sources:

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- 9] Further information on A.I.S.E. at · [www.aise-net.org](http://www.aise-net.org)
- 10] Packforsk, Report No. 194, June 2000 · [www.packforsk.se](http://www.packforsk.se)
- 11] Further information on overestimated and underestimated packaging in “Packaging in a Market Economy”, a study commissioned by INCPEN and conducted by the UK Centre for Economics and Environmental Development · [www.incpen.org](http://www.incpen.org)
- 12] Packforsk, Report: “Packaging – A Tool for the Prevention of Environmental Impact”, 2000 · [www.packforsk.se](http://www.packforsk.se)
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a European Commission Recommendation, more than 170 companies voluntarily agreed to reduce the environmental impact of doing laundry at home in Western Europe. The targets are not only to reduce packaging, but also to lower energy consumption, laundry detergent use as well as the use of ingredients with poor biodegradability. A communication

campaign, called Washright, was designed and funded to encourage consumers to use the products properly and make a greater contribution to reducing environmental impacts.<sup>9</sup>

### Less packaging is not always more environment-friendly

Waste prevention solutions must be intelligent and must take account of the entire system. This means that introducing lightweight packaging will not necessarily lead to a reduction of the environmental impact of packaging. In certain circumstances, a significant reduction in packaging materials can have serious consequences for the entire energy balance and can even be diametrically opposed to the aims of environmental protection.

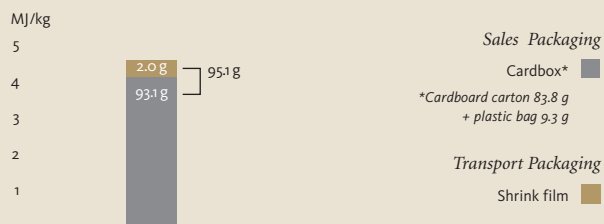
The weight and volume of waste are not always indicators of environmental impact. The relationship between the volume of waste and its environmental impact is much more complex. As Anders Sörås from Packforsk explains: “A structured approach is necessary, using flexible mechanisms that cover the entire processing chain of product and packaging.”

What society sees as waste and a burden on the environment is generally sales or primary packaging. There is a close relationship between the size and weight of primary packaging and the transport packaging. Transportation is the key factor in assessing the environmental impact of packed products. This was illustrated by a study entitled “Packaging – A Tool for the Prevention of Environmental Impact”<sup>10</sup> conducted by the Swedish institute Packforsk. The conditions that products are exposed to during distribution determine the size and weight of the packaging and consequently its environmental impact. Packaging must protect the product during transportation. If either the packaging or the product is damaged, this could lead to the whole pallet of goods having to be discarded as waste. The environmental impacts of overestimated packaging result only from the packaging itself. In the case of underestimated packaging, however, the environmental impact is significantly greater because the product also becomes waste.<sup>11</sup> **A small amount of additional packaging material only has a very low environmental impact, while underestimated packaging can cause considerable damage.**

### Biscuit packaging – Impact of change in terms of weight and energy expenditure

An example:<sup>12</sup> The biscuits were originally packed in a thin plastic bag and a cardboard box [see figure 3]. Total weight of the primary package per kg/biscuits was 93.1 g. The energy expenditure of packaging was 4.2 MegaJoule (MJ) per kg/biscuits. A shrink film with 2.0 g weight/kg and 0.2 MJ energy expenditure/kg was adequate as transport packaging.

Figure 3: Biscuit packaging – old version

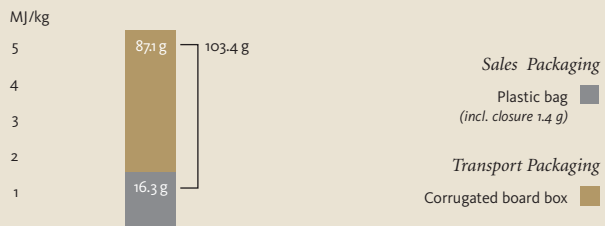


Sales Packaging	Transport Packaging	Solution 1
Cardbox	Shrink film	
93.1 g/kg biscuits	2.0 g/kg biscuits	95.1 g/kg biscuits
4.2 MJ/kg	0.2 MJ/kg	4.4 MJ/kg

To achieve reduction at source and produce a lighter package, the film and carton system was replaced by a stronger plastic bag. The total weight of the primary package was only 16.3 g/kg biscuits [see figure 4]. At 1.3 MJ/kg the energy expenditure was also much lower than for the original packaging. However, this packaging required stronger transport packaging – a corrugated board box instead of shrink film.

As a result, the total weight of the combination of consumer and transport packaging rose to 103.4 g/kg biscuits instead of the original 95.1 g. The total energy expenditure rose to a total of 5.4 MJ/kg. In addition, there was a much higher energy loss due to increased product wastage. The new primary package provided less product protection and many of the biscuits were damaged during the packaging process at the producer’s and during transport from the shop to the consumer. To sum up: If the transport packaging is included in the calculation of the environmental effects, the new packaging system for biscuits leads to a higher rather than a lower environmental impact. Anders Sörås from Packforsk: “This example shows how important it is to consider and optimise the entire packaging system.”

Figure 4: Biscuit packaging – new version



Sales Packaging	Transport Packaging	Solution 2
Plastic bag	Corrugated board box	
16.3 g/kg biscuits	87.1 g/kg biscuits	103.4 g/kg biscuits
1.3 MJ/kg	4.1 MJ/kg	5.4 MJ/kg

Source: Packforsk, Sweden



Weight and volume of waste are not always...

... indicators of environmental impact.



*If the pack is too big for a single person  
some of the milk will sour.*

Products need adequate packaging throughout the supply chain, as provided by the combined properties of primary, secondary and transport packaging. This applies not only to foods, but to all consumer goods. Norwegian furniture producer Sjåk Møbler A/S has, for example, increased the weight of its transport packaging for chairs because some 320 chairs (4 percent) were being damaged during delivery to the customer each year. The packaging material use was increased by 0.5 m<sup>2</sup> of corrugated cardboard. This dramatically reduced the number of damaged chairs and also the number of additional deliveries needed to supply customers with new chairs.

### **Increasing the use of materials to lower environmental impact**

An increase in packaging volume as a response to demographic change will in turn increase the environmental impact of packaging. This can, however, be offset by adjusting portions so as to cause less product wastage in households. “Industry must provide flexible solutions if it is to adequately respond to current needs”, says Andrew Hetherington, Chief Executive Officer of Repak Ltd, Ireland.

If, for example, a litre of milk is packed in both a 1 litre beverage carton as well as in 0.5 litre packs, the amount of packaging used will increase but the environmental impact will be reduced [see figure 5].<sup>13</sup> The exclusive use of 1 litre cartons leads to unnecessary waste in single-person households because the package is too big and some of the milk will sour and become unusable. This in turn constitutes a wastage of the energy used in the production, distribution and storage of the milk. “If we compare the waste packaging causes with the waste packaging prevents as a product protector, then the environmental benefit from packaging is ten times greater – provided the packaging is tailored to the product and the needs of the respective target group”, sums up Anders Sörås from Packforsk as a result of the report (see source 13).

The following table presents the impact of several influencing factors on a milk packaging solution.\* The comparison of three different packaging solutions for milk clearly demonstrates the need for appropriate (smaller) packaging solutions. An increase in the number of smaller

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#### Sources:

13] Packforsk, Report: “Packaging – A Tool for the Prevention of Environmental Impact”, 2000 · [www.packforsk.se](http://www.packforsk.se)

14] ARA Altstoff Recycling Austria AG · [www.ara.at](http://www.ara.at)

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\* Total energy consumption for the production of 1 kg milk is 8,5 MJ. Data on waste were gathered from studies in shops, interviews with milk manufacturers and consumers.

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Figure 5: Packaging material/energy consumption increases as more 0.5 litre cartons are used. The reduction of milk losses in the form of sour milk can be achieved by changing the packaging solution. The balance figures show best results for solutions 2 and 3.

	Packaging solution	Packaging weight per kg product	Investment in MJ/kg product (in the form of packaging)	Loss in MJ/kg product (in the form of sour milk)	Balance of the system
1	100 % in 1 litre packages	24.8 g	1.8 MJ	0.7 MJ	1.8 MJ + 0.7 MJ = 2.5 MJ
2	25 % in 0.5 litre 75 % in 1 litre	26.5 g	1.9 MJ	0.2 MJ	1.9 MJ + 0.2 MJ = 2.1 MJ
3	50 % in 0.5 litre 50 % in 1 litre	28.1 g	2.0 MJ	0.1 MJ	2.0 MJ + 0.1 MJ = 2.1 MJ

Source: Packforsk, Sweden

packages used for 1 kg milk leads to a corresponding increase in packaging weight and energy consumption. At the same time, an increase in the number of smaller packages used for 1 kg milk leads to a lower product and energy loss. This means that less milk sours and the energy used in producing, distributing and storing the milk is not lost.

#### Waste prevention means increased efficiency

To further reduce the environmental impact of packaging, a holistic approach is needed for waste prevention and resources management. “We need to promote improved performance in all components of the product/packaging system”, says Robert Liberton, General Manager of VALORLUX asbl, Luxembourg. In this way, packaging can be optimised in order to prevent both product and energy losses and to minimise

the use of energy and resources in the various components of the packaging system. The separation of secondary raw materials allows used packaging to be returned to the production cycle. Recovery and recycling supports waste prevention, conserves natural resources and saves energy. In 1998, Austria’s potential energy savings from the recycling of 2,400 tonnes of aluminium packaging amounted to 100 million kilowatt hours as compared to production of the same volume of aluminium from primary raw materials. By way of comparison: The energy consumption in an average Austrian household comes to about 15,300 kilowatt hours per year. Recycling of 184,000 tonnes of glass saved 203,000 tonnes of primary raw materials (quartz sand, lime, dolomite and soda), lowered the extraction volume by 470,000 m<sup>3</sup>, thus saving around 175 million kilowatt hours in energy consumption.<sup>14</sup>



A slight increase in packaging materials can lower the number of broken chairs and thus reduce both product loss and waste.



*Reducing the environmental impact of packaging also means reducing transport-related CO<sub>2</sub> emissions.*



*Product and packaging optimisation for Ariel resulted in an ecological improvement in distribution.*

Sources:

15] Conseil National de l'Emballage, "Catalogue de la prévention des déchets d'emballages", 1998 · [www.conseil-emballage.org](http://www.conseil-emballage.org)

16] DANONE Group · [www.danone.com](http://www.danone.com)

17] Prognos AG: Study "Nachhaltigkeitsbewertung und Perspektiven des Dualen Systems in Deutschland", 2001 · [www.prognos.de](http://www.prognos.de)

Procter & Gamble, for example, has developed its washing detergent concentrate to allow 2 kg Ariel Ultra to be replaced by 1.5 kg Ariel Future while retaining the same washing performance.<sup>15</sup> In addition, they changed the traditional cardboard box, doing away with the HDPE handle and the steel fastening rivets. The weight of the cardboard packaging dropped from 180.4 g to 109 g and now consists of a single material. The corresponding eco-refills have also undergone changes. Vacuum filling has reduced both the volume and the weight of the plastic bag from 17 g to 13 g. However, increasing the product density required stronger cardboard partitions and palletisation film.

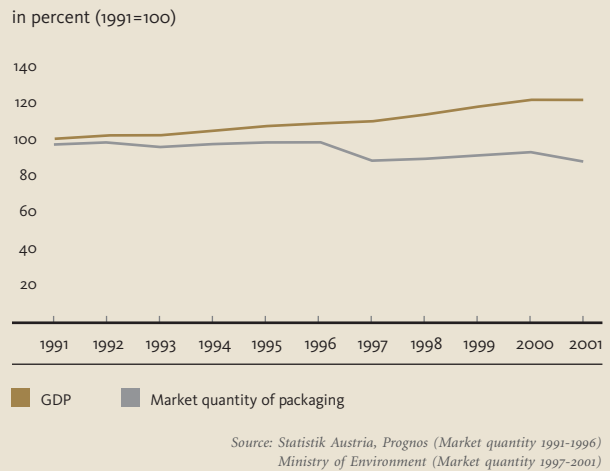
On the whole, product and packaging optimisation for Ariel Future resulted in an ecological improvement in distribution. Both types of packaging allow 50 percent more primary packaging to be placed on a pallet. Transport volume has been reduced by more than 30 percent. Similar reductions have been achieved in the number of delivery journeys. Some 55 truck journeys were saved with detergent packages made of cardboard, while 257 fewer journeys were needed for refill bags. And fewer journeys mean lower CO<sub>2</sub> emissions.

These examples show that the prevention and reduction of environmental impacts has become an integral component in product and packaging development. In the food industry in particular, producers and packaging manufacturers are cooperating more closely than ever to avoid waste, to use resources more efficiently and to reduce transport-related CO<sub>2</sub> emissions. Wall-to-wall factories where both product and packaging are produced on demand at the same location are becoming more popular. The DANONE Group, for example, has introduced this system for its Actimel product in Belgium, Spain and Poland. The packaging producer supplies the plastic packaging materials by the roll. The tubs are produced alongside the product. This reduces the number of journeys involved in the delivery of packaging materials. The load volume of a truck with rolls of plastic packaging material is equal to that of 3.75 trucks filled with pre-formed tubs.<sup>16</sup> The packaging waste produced during production is collected separately and consigned to the recycling and recovery system.

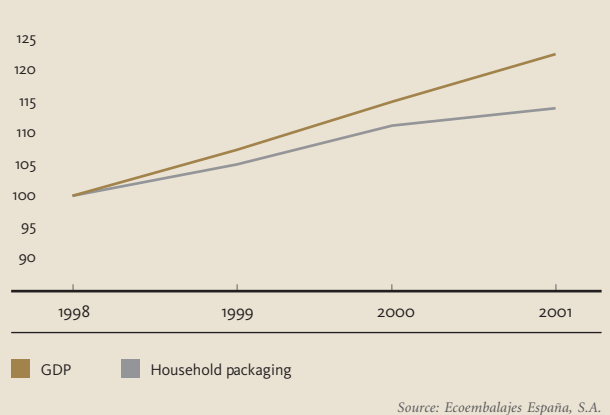
Successful recycling strategies rely on the development of functional markets for secondary raw materials. Supply and demand must be improved, in addition to promoting Research & Development. For example, the volume of disposable packaging placed on the market in Belgium and France is growing more slowly than the gross domestic product – despite the fact that trends in consumer behaviour and socio-demographic changes call for more packaged goods. While the gross domestic product (GDP) in Belgium increased by 66 billion euros to 268 billion euros from 1995 to 2003, the total amount of packaging rose only by 56 kilotonnes to 783 kilotonnes (Source: FOST Plus). A study by ESTEM in France points to the decoupling of GDP and household packaging: Compared to 1994 the GDP value rose from 100 to 114 in 2000, while the amount of packaging showed only a slight increase to 102.

Germany recorded a decoupling rate of some 21 percentage points for all packaging materials between 1991 and 1999.<sup>17</sup> In other words, although production levels are higher, fewer resources are being used for packaging. Christian Stiglitz, President and Chief Executive Officer of ARA Altstoff Recycling Austria AG: “This trend must be promoted through the use of intelligent instruments. Waste prevention means increased efficiency.” Another important and, as the European Green Dot systems show, successful instrument for waste prevention and reduction is producer responsibility. Europe’s compliance schemes, involving the internalisation of recovery and recycling costs in the product prices, have contributed to the decoupling of economic growth from packaging consumption in some countries [see also figures 6 and 7].

**Figure 6: Development of GDP and market quantity of packaging in Austria**



**Figure 7: Decoupling of GDP and tonnes of packaging in Spain**



The volume of disposable packaging...

...is growing more slowly than the gross domestic product.



# Integrating prevention into packaging development

*Compliance schemes and activities by industry: Packaging and, consequently, packaging waste are unavoidable. European industry takes its responsibilities seriously and has developed a range of successful tools and activities in recent years to reduce packaging waste and the consumption of natural resources. The compliance schemes set up by industry in the form of self-help organisations play a key role here. They promote more intense collaboration between the parties involved and therefore take account of the need for an integrated approach. The establishment of Green Dot systems has contributed successfully to the integration of waste prevention into packaging and product development as well as production technologies.*



## **Producer responsibility:**

*Companies along the entire packaging chain have joined forces to set up national collection and recovery systems.*



Producer responsibility has become an integral part of the European environment policy. To avoid packaging waste and conserve natural resources, companies along the entire packaging chain in 22 different countries have joined forces to set up national collection and recovery systems on a non-profit basis under the Green Dot logo. The Green Dot has meanwhile become an international financing model for ecological and economic efficiency in compliance with the European Packaging Directive. Under the umbrella of the Brussels-based Packaging Recovery Organisation s.p.r.l. (PRO EUROPE), Green Dot compliance schemes work closely with partners VALPAK (UK) and CSR (Canada) to achieve better cooperation at European and international level, to harmonise the services provided by the national systems and to develop waste prevention as well as the recovery and recycling of packaging to an even greater extent.

**Acceptance of producer responsibility and the establishment of Green Dot organisations have brought about significant changes in Europe's packaging and waste markets as well as in consumer behaviour.** Internalisation of waste disposal costs in product prices and the introduction of public waste separation systems for packaging waste have promoted a new awareness. In industry and society alike, greater attention is now being paid to the issue of waste.

#### Waste prevention and recovery is better than landfill

With licence fees based on the principle of producer responsibility and calculated according to packaging weight and materials, the Green Dot compliance schemes give com-

panies an incentive to reduce the volume of packaging and rethink packaging solutions. Waste prevention has been integrated into packaging and product development. Ongoing reductions have been achieved in the amount of material used along the entire packaging chain. Packaging has become lighter due to reductions made in weight and materials. For example, the materials used for 33 cl drinks cans have been reduced by 55 percent.<sup>18</sup> New lightweight glass technology produces glass bottles that are up to 60 percent lighter.<sup>19</sup> The composition of the materials used has been changed and components have been simplified or replaced by Monopack materials. Industry has also introduced more recyclable materials and used secondary raw materials to a greater extent. In addition, the establishment of the Green Dot systems has had a considerable influence on the material streams and has actively initiated the development of secondary raw material markets.

Reductions in packaging weight and materials have helped to limit the production of waste. And the recycling and recovery of packaging waste has increased substantially. In the European Union, municipal waste makes up around 14 percent of the total volume of waste produced. Some 50 percent by weight of packaging waste is collected and recycled or recovered. This means that compliance scheme activities have significantly relieved the burden on landfill capacities.

Sources:

18] Ball Packaging Europe · [www.schmalbach.de](http://www.schmalbach.de)

19] BSN Glasspack · [www.bsnglasspack.com](http://www.bsnglasspack.com)



*In 2003, Green Dot systems recycled and recovered more than 13 million tonnes of used packaging...*

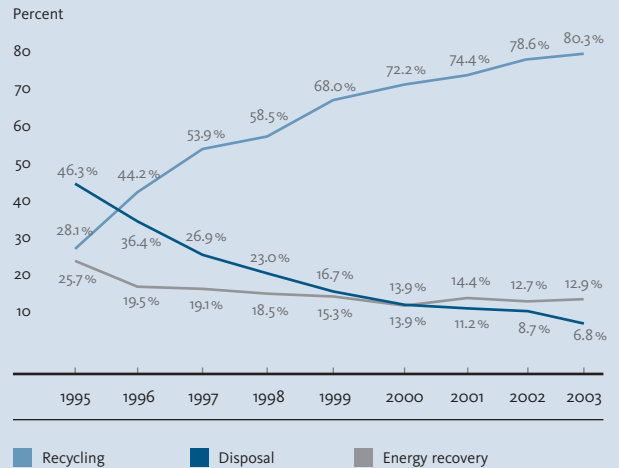


*...to secondary raw materials or new products.*



*Returning packaging to the production process as secondary raw materials is an efficient way of preventing waste.*

**Figure 8: Development of recycling, energy recovery and disposal of household packaging in Belgium**



Source: asbl FOST Plus vzw, Belgium

Between 1994 and 2001, Austria achieved a 78 percent reduction in packaging waste consigned to landfill.<sup>20</sup> The proportion of packaging waste consigned to landfill in Belgium dropped from 46.3 percent in 1995 to 6.8 percent in 2003, while the proportion of recycled packaging waste rose from 28.1 percent to 80.3 percent [see figure 8].<sup>21</sup> In Germany, some 81 percent of all packaging waste was recycled or recovered in 2000.<sup>22</sup> In Spain, less waste was consigned to landfill thanks to the recovery of 1.7 million tonnes of packaging in 2003, representing billions of packages<sup>23</sup>. “Collecting used packaging and returning it to the production loop as secondary raw materials makes for efficient prevention of environmental impact”, says Teresa Presas, Managing Director of the Confederation of European Paper Industries (CEPI). “The existence of a European standard defining the recovered paper and board grades – paper and board being the only materials having a European standard defining secondary raw materials’ – has helped paper and board packaging to become the most recycled packaging material in Europe with a recycling rate of 67 percent”.<sup>24</sup> In 2003, Green Dot systems recycled or recovered more than 12.4 million tonnes of used packaging. More than a million tonnes of plastic packaging were recycled. And this trend is continuing.

Sources:

- 20] ARA Altstoff Recycling Austria AG · [www.ara.at](http://www.ara.at)
- 21] asbl FOST Plus vzw · [www.fostplus.be](http://www.fostplus.be)
- 22] Federal Ministry for the Environment in Germany · [www.bmu.de](http://www.bmu.de)
- 23] Ecoembalajes España, S.A. · [www.ecoembes.com](http://www.ecoembes.com)  
ECOVIDRIO · [www.ecovidrio.es](http://www.ecovidrio.es)
- 24] Der Grüne Punkt – Duales System Deutschland AG · [www.gruener-punkt.de](http://www.gruener-punkt.de)
- 25] ARA Altstoff Recycling Austria AG · [www.ara.at](http://www.ara.at)
- 26] The Sixth Environment Action Programme of the European Community · <http://europa.eu.int/comm/environment/newprg/index.htm>

\* EN 643 European List of Standard Grades of Recovered Paper and Board  
 \*\* European Commission, packaging recovery and recycling data 2001.

Thanks to recycling and recovery, significant amounts of primary energy have been saved and substantial greenhouse gas emissions prevented. As a result, compliance schemes are a key contributory factor to sustainable development in Europe. In Germany, for example, the recycling of packaging waste by the Green Dot system saved primary energy totalling 64.1 billion MJ in 2003. In addition, packaging recycling prevented 1.32 million tonnes of climate-endangering greenhouse gases. These were the findings of an environmental impact assessment conducted by Duales System Deutschland AG.<sup>24</sup> In Austria, substance and thermal recovery of 83,800 tonnes of plastic packaging saved 74 million litres of oil and 50 percent of the energy that would otherwise have been required for the production of virgin plastics.<sup>25</sup>

#### Sensitising society to environment-friendly growth

Recycling and waste prevention rely on public participation. This applies both to industry and to the general public. Consequently the Green Dot organisations see a need for ongoing sensitisation, awareness-building and networking along the entire processing chain. **The greatest benefit to the environment can only be achieved if everyone pulls together.** With informational activities aimed at specific target groups, one-to-one client meetings, and participation at trade fairs and conferences, **Green Dot experts inform and advise companies, associations and municipalities about options for waste prevention and resources conservation as well as recycling and recovery technologies.** The various Green Dot systems (see references on page 31) have published a series of special brochures on waste prevention. These include

various examples illustrating the reduction of packaging and its ecological optimisation. The aim is to promote environment-friendly growth in Europe, as required by the Sixth EU Environment Action Programme.<sup>26</sup>

“The producers’ ecological concern now extends well beyond waste prevention at source. It includes activities aimed at reducing the overall environmental impact of packaging”, says Henri Meiresonne, Managing Director of FOST Plus, Belgium. Many companies have developed binding environmental guidelines for their staff to ensure that natural resources are handled with care and that responsible business decisions are taken. Members of staff are required to observe environmental protection rules in the workplace and to actively contribute suggestions for improvement. Preventing waste and promoting more efficient use of resources leads not only to packaging optimisation. In addition, product ideas are reworked (e.g. washing and cleaning concentrates) and packaging technologies and processes modified.

#### Environmental education

“**Environmental education is another important area of waste prevention**”, says Hans-Peter Repnik, President of PRO EUROPE. The visibility of a separate collection system has increased people’s awareness of waste. Separate collection is well accepted in all countries. Around the world, people believe that recycling and recovery is the best way to avoid waste. This was the result of a comparative international study conducted in five countries by the Institut für Demoskopie Allensbach (a public opinion research institute) in 2000. The study found



Consumers sort billions of packs...



...modern technologies ensure high quality sorting and recycling.



*Europe goes Green Dot: 22 countries have introduced the Green Dot. More than 230 million inhabitants have access to collections organised by the Green Dot systems.*

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**Hans-Peter Repnik**

Chief Executive Officer of Duales System Deutschland AG

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*“Through intensive communication and media-effective activities and campaigns, the compliance schemes have awakened environmental awareness in consumers and have instructed them in waste separation and avoidance as well as recycling and recovery.”*

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that 77 percent of the Germans, 71 percent of the Japanese, 73 percent of the Americans, 67 percent of the Brazilians and 61 percent of the Poles prefer recycling, recovery and re-use to alternative waste management methods such as waste disposal.<sup>27</sup> In Germany, nine out of ten households separate their waste<sup>28</sup>; in Sweden 81 percent<sup>29</sup> and in Spain 73 percent<sup>30</sup> of the population do so. In Norway, opinion polls say that some 60 percent of the people believe that separate collection and waste recovery is either important or very important for the environment.<sup>31</sup> **The act of sorting waste by the consumer is environmental training. This is the result of a study commissioned by Eco-Emballages<sup>32</sup> and conducted in 2000 by Cofremca-Sociovision in France. The French welcome the fact that their simple actions play a positive role in environmental protection. According to the study, the introduction of separate collection in a community is seen as a meaningful and positive contribution to the environment on the part of the local mayor.**

The Green Dot systems, first and foremost, are co-responsible for this trend. Hans-Peter Repnik: “Through intensive communication and media-effective activities and campaigns, the compliance schemes have awakened environmental awareness in European consumers and have instructed them in waste separation and avoidance as well as recycling and recovery.” Many activities are conducted as partnership programmes in conjunction with producers, local authorities, recoverers, recyclers and the trade. Green Dot compliance schemes hold open days each year at waste disposal and recovery plants and invite people to roadshows on the subject of waste avoidance, recycling and recovery. In France, Eco-Emballages<sup>33</sup> has set up programmes and seminars for the ‘Ambassadeurs du tri’. These are public-relations officers or “recycling ambassadors” who have direct contact with the public and inform them in a professional manner about waste separation and recycling. Eco-Emballages has also worked with various supermarket distribution operations in order to make children aware of the importance of sorting and recycling and, consequently, of the environment itself.

**Special programmes have also been developed for children. Taking a playful and educational approach, their aim is to make the abstract subject of sustainability and its role in a closed-cycle economy more transparent.** In the Czech Republic,



EKO-KOM<sup>34</sup> has, for example, developed teaching materials for use in schools. Their mascot – a figure named Tonda – explains how and why waste should be separated. In Latvia, Latvijas Zaļais Punkts<sup>35</sup> kicked off a nationwide schools project entitled Green Dot School in 2001 with 100 schools taking part. The first methodological handbook for children in primary schools on issues concerning the environment, waste and packaging waste in relation to school projects has been published in cooperation with experts from the Ministry of Education and Science. ÖKO-Pannon in Hungary has developed a nationwide educational programme with tailor-made tools for the different regions and different age groups, e.g. the educational cartoon for children “Any idea how to separate your packaging waste?”<sup>36</sup>. Some Green Dot organisations are also active in lobbying for environmental problems to be taken into account in educational and training programmes. Duales System Deutschland<sup>37</sup> has long been successful in the methodological and educational integration of Agenda 21 issues and the guiding principle of sustainability into teacher training as well as technical and vocational training.

#### PRO EUROPE: Where expertise meets best practice

The expertise and experience of system members in issues relating to waste prevention, packaging reduction and optimisation as well as effective consumer information come together at PRO EUROPE in Brussels. The umbrella organisation for national compliance schemes links best practice models and ensures an exchange of information within the European Economic Area – which also benefits industrial associations and policy-makers. Several Green Dot organi-

sations such as ARA in Austria, Ecoembes in Spain, FOST Plus in Belgium, Materialretur in Norway and Sociedade Ponto Verde in Portugal have published catalogues illustrating the improvements. The French Green Dot organisation Eco-Emballages is involved in the French Packaging Council<sup>38</sup> that has produced a catalogue of best practice models for the prevention of packaging waste. In all countries in which a Green Dot system is operative, the reduction and optimisation of packaging and packaging waste has been achieved in compliance with the Sixth EU Environment Action Programme. The system has therefore contributed to reducing the consumption of materials and resources and to lowering the environmental impact of the entire packaging chain. 🌱

#### Sources:

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- 27] Institut für Demoskopie Allensbach, “Umweltbewusstsein der Bevölkerung in Brasilien, Japan, Polen, den USA und Deutschland”, 2001, commissioned by Duales System Deutschland AG.
- 28] Duales System Deutschland AG · [www.gruener-punkt.de](http://www.gruener-punkt.de)
- 29] REPA – Reparegistret AB · [www.repa.se](http://www.repa.se)
- 30] According to the study “Habits and attitudes of Spanish population regarding packaging waste selective collection during the year 2003”, commissioned by Ecoembalajes España, S.A. and conducted by Omnibus. · [www.ecoembes.com](http://www.ecoembes.com)
- 31] Materialretur AS · [www.materialretur.no](http://www.materialretur.no)
- 32] Eco-Emballages published a summary of the study's findings in the brochure “Les Français aujourd’hui – Je trie, donc je suis” · [www.ecoemballages.fr](http://www.ecoemballages.fr)
- 33] [www.ecoemballages.fr](http://www.ecoemballages.fr)
- 34] [www.ekokom.cz](http://www.ekokom.cz)
- 35] [www.zalais.lv](http://www.zalais.lv)
- 36] [www.okopannon.hu](http://www.okopannon.hu)
- 37] [www.gruener-punkt.de](http://www.gruener-punkt.de) and [www.bug-agenda21.de](http://www.bug-agenda21.de)
- 38] Conseil National de l’Emballage · [www.conseil-emballage.org](http://www.conseil-emballage.org)
- 



Awareness-building: Through intensive communication and campaigns...



... young people are educated and made aware of the “packaging waste” issue.

# More than the prevention of packaging waste

*Examples of steps taken to minimise the environmental impact of packaging:  
In all countries in which it is active, the Green Dot has supported the process of reducing and optimising packaging by industry, thus leading to the consumption of fewer materials and resources and to lower environmental effects.*

For instance, by reducing weights, Portugal's Logoplaste Group<sup>39</sup>, an international manufacturer of plastic packaging, has saved around 12,000 tonnes of packaging materials over the past decade. This includes 900 tonnes from 2001 to 2002, corresponding to some 70 million 0.33 litre mineral water bottles.

The following detailed examples of the reduction and optimisation of packaging feature different kinds of packaging for different products in various countries.<sup>40</sup> However, they represent only a small proportion of the packaging that has been successfully optimised in both ecological and economic terms.

Sources:

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39] [www.logoplaste.pt](http://www.logoplaste.pt)

40] *The structure of these examples is inspired by the French Conseil National de l'Emballage (CNE) · [www.conseil-emballage.org](http://www.conseil-emballage.org)*

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before

after



before

after

## Frozen fish

**Improvement** · Reduction of weight. Logistic optimisation.

**Description of changes** · The original carton box contained four fish portions individually packed in PP film. The packaging was replaced by a lighter PE-coated carton box and the PP film was removed, without reducing the product quantity (400 g). The secondary packaging was also modified. The weight of the cardboard box was reduced, but it contains more product (20 instead of 12 primary packaging units). Due to these changes, one pallet can now carry 768 kg instead of 470 kg of product. In the production process, the use of plastic bags for interim storage was eliminated. The empty primary packaging is delivered in re-usable boxes.

### Environmental benefits

- Elimination of a packaging element
- Weight reduction
- Transport optimisation + 63 %
- Re-use

Source: All Freez, Belgium

### Balance of improvement

Packaging	Weight reduction	
Primary packaging		
PP film	- 4.40 g	- 100.00 %
Carton box	- 2.60 g	- 11.35 %
Secondary packaging		
Cardboard box	- 35.00 g	
(per sales unit:	- 9.40 g	- 49.13 %)

## Mineral water

**Improvement** · Better adaptation to group packaging and transport optimisation.

**Description of changes** · The crate for the 20 cl glass bottles was modified. Thanks to a new arrangement of the bottles, the crate can now hold 28 bottles instead of 24. This new arrangement and the new crate dimensions make it possible to transport 48 % more product per pallet. 8 layers (448 litres) can be stacked instead of 7 (302.4 litres). Before this, the glass bottle was replaced. The weight of the glass bottle was reduced by more than 20 %.

### Environmental benefits

- Weight reduction
- Transport optimisation + 48 %

Source: Spadel, Belgium

### Balance of improvement

Packaging	Weight reduction	
Primary packaging	- 55.00 g	-20.52 %



before

after

### Cheese

**Improvement** · Optimisation of packaging dimensions.

**Description of changes** · Originally the round carton consisted of a stamped body, a flange, a partition and a bottom part in corrugated fibreboard. By removing the false bottom and lightening the partition both the height and weight of the carton were reduced (from 26.4 to 21.6 g for the 12-portion carton). This also lightened the slotted box.

#### Environmental benefits

- Reduction of packaging material per annum: 1,118,5 tonnes

Source: Conseil National de l'Emballage (CNE); Fromageries Bel, France

### Soft drinks

**Improvement** · Reduction of packaging weight.

**Description of changes** · Thanks to technical optimisation, it was possible to reduce the quantity of material used to produce the body of the can. As a result, the 0.33 cl can is now about 7.5 grammes lighter than before.

#### Environmental benefits

- Reduction of 757.50 tonnes of tinplate per annum.

Source: Prevenção de resíduos de embalagens (EMBOPAR/Sociedade Ponto Verde)

#### Balance of improvement

Packaging	Weight reduction	
Primary packaging	- 4.80 g	- 15.30 %
Secondary packaging	- 0.271 g	- 4.10 %
<b>Total</b>	<b>- 5.07 g</b>	<b>- 13.30 %</b>

#### Balance of improvement

Packaging	Weight reduction	
Primary packaging (can)	- 7.50 g	- 23.00 %





before

after

## Dessert

**Improvement** · Reduction of the use of primary resources.

**Description of changes** · The thickness of the polystyrene sheet used for thermoforming prior to packaging was reduced from 0.85 to 0.80 mm. The weight of the tub was also reduced, from 5.74 to 5.4 g. This was made possible by improvements to the thermoforming process and the regularity and quality of the polystyrene sheets. The change applies to all sizes.

### Environmental benefits

- Packaging material saved per annum: 134.1 tonnes
- Reduction of the number of trucks: 6 %

Source: Conseil National de l'Emballage (CNE); Danone, France

### Balance of improvement

Packaging	Weight reduction	
Primary packaging	- 1.36 g	- 5.40 %

## Milk

**Improvement** · Reduction of the total weight of group packaging.

**Description of changes** · Corrugated board box of 450 g/m<sup>2</sup> with an external layer made of bleached paper was replaced with 395 g/m<sup>2</sup> paper with unbleached external layer. Packaging weight was also reduced by cutting down the length of the flaps.

### Environmental benefits

- Packaging material saved per annum: 1,600 tonnes of cardboard
- Substitution of bleached paper
- Optimisation of palletisation

Source: Leche Pascual, S.A., Spain

### Balance of improvement

Packaging	Before	After	Weight reduction
Reduction of paper weight	200.33 g	175.84 g	- 12.22 %
Reduction of flap length	175.84 g	160.42 g	- 8.77 %
<b>Total</b>	<b>200.33 g</b>	<b>160.42 g</b>	<b>- 19.92 %</b>



## Coffee

**Improvement** · Reduction of the weight of the differently sized Nescafé glass jars (200 g, 100 g and 50 g).

**Description of changes** · In 1999, the thickness of the glass jar was reduced due to an improvement in material technology. This modification significantly reduced the consumption of packaging materials.

### Environmental benefits

- Packaging material saved per annum: 1,250 tonnes

Source: Nestlé, S.A., Spain

## Margarine

**Improvement** · Reduction of weight.

**Description of changes** · The weight of the 500 g thermoformed PP (polypropylene) tub was reduced from 21.3 g to 18.8 g. The thickness of the film used to make the tubs was reduced. This reduction was possible thanks to an investment in new moulds. Similar weight reductions were achieved for other types of tubs.

### Environmental benefits

- Packaging material saved per annum: 137 tonnes

Source: Vandemoortele, Belgium

### Balance of improvement

Packaging	Before*	After*	Weight reduction
Glass bottle	2,485.71 g	2,285.71 g	- 8.05 %
Plastic lid	122.86 g	122.86 g	0.00 %
<b>Total</b>	<b>2,608.57 g</b>	<b>2,408.57 g</b>	<b>- 7.67 %</b>

\* per kg product contained

### Balance of improvement

Packaging	Weight reduction
Primary packaging	- 2.50 g - 12.00 %



before

after

### Dishwashing - powder

**Improvement** · Reduction of weight.

**Description of changes** · The weight of the bottle of SUN dishwashing-powder was reduced from 93 g to 79 g. This was basically possible as the result of a new cap design, the weight of which was reduced from 21 g to 10 g. The new design had to take account of the ease with which the product can be poured into the dishwasher. Moreover the cap can be screwed off to refill the bottle. The bottle has a dark blue colour, which makes it possible to use 25 % recycled material. Not only the cap, but also the shape of the bottle was changed. The bottle is now smaller and a little higher, taking into account the available shelf height. Due to this change, 12 bottles are packed in a cardboard box instead of 10.

#### Environmental benefits

- *Weight reduction*
- *Use of recycled material*

Source: *Lever Faberge* Belgium, Belgium

#### Balance of improvement

Packaging	Weight reduction	
Primary packaging	- 14.00 g	- 15.00 %
Secondary packaging	- 6.43 g	- 17.00 %



before



after

### Washing tabs

**Improvement** · Reduction of weight.

**Description of changes** · The weight of the cardboard packaging of DIXAN Tabs was reduced. 64 tabs are now packed in a box weighing 118 g instead of 144 g, a reduction of 18 %. Moreover, the octagonal shape improves the stability of the box.

The tabs were originally packed individually in a plastic bag weighing 0.77 g. Two of them are now packed in a bag weighing 0.60 g, a reduction of 61 %.

#### Environmental benefits

- *Weight reduction*

Source: *Henkel KGaA*, Belgium/Germany

#### Balance of improvement

Packaging	Weight reduction	
Primary packaging	- 56.00 g	- 29.00 %
Plastic bags	- 30.00 g	- 61.00 %
Cardboard box	- 26.00 g	- 18.00 %



before



after



before



after

### Bleaching agents

**Improvement** · Marketing wanted to modernise the shape of the bottle and make it more eye-catching.

**Description of changes** · The shape of the HDPE bottle was modified. Its weight (excluding cap and label) was reduced from 62 to 52 g. That of the slotted container box, which now holds 10 units instead of 12, was reduced from 500 to 400 g. Palletisation was improved; pallets can now carry 720 units instead of 576.

#### Environmental benefits

- Packaging material saved per annum: 114.5 tonnes
- Increase in the number of units per pallet: 25 %
- Reduction of transport volume: 20 %
- Number of trucks saved per annum: 100

Source: Conseil National de l'Emballage (CNE); Procter & Gamble, France

#### Balance of improvement

Packaging	Weight reduction	
Primary packaging	- 10.00 g	- 14.60 %
Secondary packaging	- 1.67 g	- 4.00 %
Tertiary packaging	- 0.39 g	- 20.00 %
<b>Total</b>	<b>- 12.06 g</b>	<b>- 10.70 %</b>

### Mobile phone

**Improvement** · Reduction of material costs. Implementation of Philips' "ECOvision" policy for the reduction of packaging weight (in this case -43 % cardboard and -630 % plastic). Better presentation of the product. Increase of stocks in the shops.

**Description of changes** · Making the product smaller permitted a further reduction of primary and secondary packaging: Replacement of the micro-corrugated cardboard (110 g) with mini-micro-corrugated cardboard (62 g) and of the 0.9 mm PS/PE base with an 0.7 mm base. The transport plastic bag was eliminated.

#### Environmental benefits

- Packaging material saved per annum: 266.2 tonnes
- Increase in the number of units per pallet: 4.2 %
- Reduction of transport volume: 4 %
- Increase of 175 % in the productivity of the packaging chain with one person per month. Improvement of working conditions.

Source: Conseil National de l'Emballage (CNE); Philips, France

#### Balance of improvement

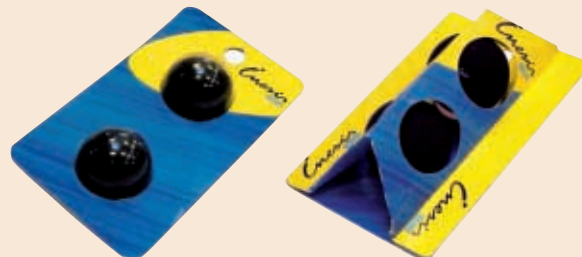
Packaging	Weight reduction	
Primary packaging	- 59.00 g	- 39.30 %
Secondary packaging	- 6.00 g	- 15.80 %
Tertiary packaging	- 1.50 g	- 25.30 %
<b>Total</b>	<b>- 66.50 g</b>	<b>- 34.30 %</b>





before

after



before

after

## Personal care / Cosmetics

**Improvement** · Elimination of packaging material, logistic optimisation

**Description of changes** · The cardboard display case was removed and the screw cap was replaced by a lighter distribution cap. Thanks to the reduction in volume it was possible to increase the number of items per secondary box from 24 to 42, also increasing proportionally the number of primary packages per pallet.

### Environmental benefits

- Increase in the number of items per secondary box from 24 to 42.
- Increase in the number of units per pallet from 960 to 1,680.
- Reduction of transport volume: 43 %

Source: L'Oréal, Spain

### Balance of improvement

Packaging	Weight reduction	
Cardboard case	- 18.00 g	- 40.00 %
Plastic screw cap	- 4.00 g	- 8.90 %
Secondary packaging	- 10.71 g	- 42.90 %
Tertiary packaging	- 0.06 g	- 42.90 %
<b>Total</b>	<b>- 32.77 g</b>	<b>- 46.70 %</b>

## Squash balls

**Improvement** · Economic improvement

**Description of changes** · The original sandwich of two PET bubbles and cardboard was replaced by a single flat cardboard pack.

### Environmental benefits

- Packaging material saved per annum: 0.27 tonnes
- Use of Monopack material


Source: Conseil National de l'Emballage (CNE); Decathlon, France


### Balance of improvement


Packaging	Weight reduction	
Primary packaging	- 3.00 g	- 25.00 %





## GREEN DOT COMPLIANCE SCHEMES IN EUROPE


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E-mail: [araag@ara.at](mailto:araag@ara.at)  
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