



The European Organization for Packaging and the Environment

GREEN PAPER
Packaging and Sustainability
.....
An open dialogue between stakeholders





October 2011

EUROPEN – **The Voice of Industry for Packaging and the Environment** – is an industry and trade organization with the twin goals of securing a fully accessible European market for packaged products and achieving a balanced view of the role and functions of packaging, EUROPEN promotes greater understanding and acceptance of the vital contribution of packaging to resource efficiency and sustainable development.

Green Paper - Packaging and Sustainability

Forward

EUROPEN, the European Organization for Packaging and the Environment, is dedicated to striking the appropriate balance between packaging's role in protecting goods and meeting market demands on the one hand, whilst minimising environmental impacts on the other. EUROPEN believes that packaging can only be assessed in relation to the product it contains and the function it serves. Such an assessment will show that in the context of sustainability, packaging should be considered as part of the solution and not part of the problem.

Our corporate members take seriously their sustainability responsibilities and believe that they can learn and benefit from the insights and knowledge of key stakeholders coming from a range of different fields. Therefore, EUROPEN invited representatives from the European Commission, Environmental Organisations, Trade and Consumer Associations, Academics, and Retailers to discuss the packaging value chain's contribution to sustainable consumption and production.

The development of this Green Paper was based on an open dialogue about packaging's role in society and the goals the packaging value chain should seek to achieve. The intention of this paper is to serve as the starting point for a continuing discussion of this quest.

Contributors and Participants

Environmental NGO representative
Auchan
Coca-Cola
CROWN Europe
DANONE
DG Enterprise and Industry
DG Environment
An EU Commission participant
EuroCommerce
European Environmental Bureau*
The European Retail Round Table
EUROPEN
Innventia
Procter & Gamble
PRO EUROPE
Tetra Pak
The World Business Council for Sustainable Development (WBCSD)

*While the EEB participated in the stakeholder consultation process, the organisation preferred to contribute their comments and recommendations as an annex to this document.

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Background and introduction

The world's population has more than doubled over the past 50 years – from just over three billion in 1960 to almost seven billion today. With this population growth, we have also seen a massive increase in the production of goods and services. The size of the global economy has grown from a mere 1.35 trillion dollars in 1960 to over 60 trillion¹ now. This growth has put a strain on our environment, with impacts ranging from increased emissions of CO₂ and harmful particulates to the depletion of natural resources.

As almost all goods require some kind of packaging, packaging is part of the environmental equation. Great strides have been made in optimizing packaging along the packaging value chain. EU data show that there has been a decoupling between GDP growth and packaging consumption. Despite a 40% growth in GDP in the 10 year period from 1998 to 2008, the amount of packaging placed on the EU market only increased by 10%, while packaging waste disposed of fell by 43%. The EU minimum target of 55% packaging recycling was surpassed or reached by 12 Member States well ahead of schedule, with the remainder including the newer Member States to reach the same target between 2011 & 2015. Challenges remain, however, in making the packaging value chain even more sustainable.

This paper recognises that packaging makes an essential contribution to the sustainable production and consumption process by helping to reduce product waste and to protect resources. It acknowledges however that packaging consumes resources and requires manufacturing and transportation. Even as technology and changing attitudes are continuously reducing packaging waste, one look at our dustbins demonstrates that packaging still remains a key constituent of what we consume every day.

The packaging value chain is increasingly complex. It consists of many actors, starting from the producers of the raw materials used in the packaging, through to the retailers selling the packaged product, to consumers, to the companies that manage end-of-life. Assuming that each actor shares some commitment to the goal of sustainability, they cannot simply look at the impact of their own actions to achieve the greatest sustainability gains, but must see in what way they can support other actors along the value chain.

In this context, this document sets out to re-examine the core questions about the place that packaging plays in the drive towards sustainable production and consumption. The contributors to this paper hope that it will provide a way of addressing and understanding the challenges that are involved in choosing how goods should be packaged.

In particular, this paper provides some answers to the varied questions that must be asked in order to attain the 'Optimum Packaging Design', with the lowest possible environmental impact. To support the decision-making process, **seven key considerations** around the areas of material selection, design, consumer choice, production, use, end-of-life and innovative business models were identified and discussed.

¹ <http://data.worldbank.org/sites/default/files/wdi/complete.pdf>

Conclusions

This paper presents and discusses a variety of challenges and variables that all packaging decision-makers face when determining what type, amount and design of packaging to use to protect, preserve and market their particular product. What is clear is that none of these factors can be considered in isolation. Choices in one part of the value chain will inevitably affect another. For example, packaging design may depend on certain materials, which may well impact supply or end-of-life decisions. Improving transportability may have implications on reusability, or impact consumer acceptability.

In other words, a myriad of interlocking questions have to be answered in each case. Attempting to identify the 'best' packaging for the job requires each of these questions to be addressed collectively. Two of the questions which go to the heart of this complexity are:

- How should the supply chain strike a balance between health and safety issues and environmental concerns, particularly with regards to food and drink products?
- Given the economic and environmental costs and benefits of different materials, different designs, different applications and different logistical operations, how can the value chain effectively manage these variables to make the most appropriate packaging decisions?

In an attempt to address these questions, respondents recalled existing tools (LCAs, CEN Packaging Standards, cost-benefit analyses) to help determine the best packaging for the job, given the various factors that packaging decision-makers must balance. It was also clearly emphasised that when environmental concerns come into conflict with health and safety concerns, the latter should always take precedence.

Participants agreed that use of a reliable design tool to help manage the complexity of decision-making is essential. Assuming that all stakeholders are seeking the most optimal packaging solutions (either because they believe it is the right thing to do, or because it drives cost reduction, or both) they need to be sure that they have achieved the right balance, and have found the right place as illustrated by the Innventia model described on page 5.

During the stakeholder meetings and throughout the contributions to this Green Paper, there was broad consensus on the role packaging plays in preventing food waste and product loss and, to the extent possible, ensuring health and safety of food; and the underlying assumptions of the Innventia curve.

In particular as regards food waste prevention, stakeholders recognised the need for the packaging value chain to adapt to demographic and lifestyle changes by developing strategies to help various segments of the market. For instance, respondents were supportive of smaller portion sizes if it decreased food waste, thus creating a more sustainable food value chain. Furthermore, many acknowledged the positive contribution packaging innovation can make by increasing shelf-life and many are willing to accept additional packaging material to achieve this if the overall benefit is significant enough. In other words, if increasing material use can prolong shelf-life long enough to notably reduce food waste, then the use of additional material is justified.

Consumer preference and lifestyles clearly affect packaging design decisions, which brand owners and retailers must accommodate, in addition to packaging decision-makers. Respondents felt that consumer education is an important factor in changing consumer attitudes and expectations.

In addition to the broader conclusions reached by the group, there were several noteworthy comments and contributions made by individual stakeholders. For instance, an environmental NGO representative, supported by several other stakeholders, said there should not be an established hierarchy regarding end-of-life options but rather these decisions should be based on the needs, systems and infrastructure that are available in a given country or region.

Additionally, most stakeholders made it clear that there is no panacea for addressing sustainability along the packaging value chain. Packaging decisions need to be made on a case by case basis with careful attention being paid to the overall sustainability of the packaging value chain, which includes distribution.

In an effort to drive sustainability throughout the packaging value chain, continuous industry innovation is vital. Policymakers were called upon to pay more attention to this necessity and provide more resources for this purpose.

The 'job' of packaging

This paper is predicated on the initial, common sense position that packaging is a necessary element in the functioning of our economy.

As goods and products need to be brought securely to consumers in one form or another, some form of packaging will always be needed. Therefore, any discussion about improving the sustainability of production and consumption must always address packaging as an essential part of the supply chain.

This document starts by seeking to define the role or job of packaging. No organisation or manufacturer buys packaging as an end in itself. Packaging is always a necessary cost for packaged goods producers. It is essential to understand what packaging is for, and to recognise its role in the supply chain, before considering wider sustainability issues. Just as the process of making cars 'greener' must still allow you to drive from 'A' to 'B', so any examination of the role of packaging must also understand how important this role is, and enable packaging to continue to perform this role, but in a more sustainable way. It is only by first fully understanding the purpose of packaging that we can then strive to improve the sustainability of the entire packaging value chain.

This paper defines the job of packaging as having the following components:

- **Protection and deliverability** - Packaging must protect the packaged product from breakage, spoilage, contamination, tampering, and theft. The material and type of packaging used must enable the delivery of the product to the point of sale.
- **Consumer requirements** – The packaging that we are all familiar with as consumers is often referred to as 'primary packaging.' Primary packaging must meet certain consumer needs and demands, including opening and closing features product storage, and portioning. Sometimes, especially for high-end consumer products, primary packaging must also meet consumer expectations for product display or 'experience'.
- **Communications** - On-pack communications also provide basic information that is often essential and may be legally required. This information can include the following:
 - Product identification
 - Product preparation and/or usage information
 - Nutritional information
 - Ingredient lists and origin information
 - Storage and safety warnings
 - Contact information
 - Supply chain information
 - Opening (and closing) instructions
 - End-of-life options or instructions

The type of packaging used and the design of this packaging can often play a major part in promotion and brand identification. Many branded products use iconic and easily identifiable packaging design. Additionally, on-pack communications can be used to highlight product features and benefits, promotional messaging, and branding, enhancing the product's saleability.

- **Handling** - Grouped packaging (or secondary packaging) is used as a convenient way to replenish shelves or to group sales units into a package for purchase. The most obvious example of this is the packaging used to hold together six drink containers. This kind of packaging can be removed without affecting the product's properties, and it generally defines the unit used by the retailer.

Additionally, transport packaging (or tertiary packaging) is used to rationalise distribution and limit product damage during handling and transport from the product producer to the retailer.

A product manufacturer will consider all of the above features in making their choice of packaging.

The evolving nature of packaging

The nature of the packaging value chain is constantly changing, responding to demographic changes and changes in lifestyle choices. For example, the recent growth and development of the organic food movement has required the introduction of new packaging technology, to prolong shelf life and make organic produce more price competitive with non-organic foods. Special plastic wrap packaging has been developed that has increased the shelf life of organic produce by up to four times.

In addition, the changing shape of households, with a growing number of smaller families and single person

households, has encouraged product manufacturers to provide a greater range of product sizes, ready-to-eat meals, requiring the use of more sophisticated packaging. Packaging innovation and creativity has helped product manufacturers respond to all of these changes.

Packaging innovation is not only market-driven. Policies and regulations at various levels of government also exert significant influence on packaging design, the amount and nature of on-pack communications, and end-of-life responsibilities and opportunities. For example, many regulators are requiring more on-pack nutritional information for many foods. This often results in changes to packaging design, to accommodate the increased amount of space needed to fulfil this requirement.

Finally, technological advances are continuously changing the variety of options available to packaging decision-makers when selecting materials and packaging designs. This is especially noticeable in the beverage industry, where healthy competition between material sectors has enabled the use of less packaging, while maintaining product protection. Elsewhere, the use of modified atmosphere packaging (MAP), which reduces the amount of oxygen in the packaging, prolongs the shelf life of produce, especially meat and fish, and hence reduces food waste.

As these and other factors continue to impact the packaging value chain, the value chain is successfully adapting to changing circumstances and responding to new requirements from businesses, consumers, and society in general.

Packaging and the Environment

Extensive research has underlined the importance of packaging in providing protection to goods and ensuring that these goods can be sold on delivery. In less developed countries, absent or inadequate packaging, combined with weaknesses in distribution infrastructure, cause 30% to 50% of all food to decay before it reaches the consumer. While food losses in Western Europe are roughly the same, more than 40% of food waste occurs at the retail and consumer levels.² The environmental consequences of this are far reaching, as the environmental impact of food production can be up to ten times higher than the environmental impact of the packaging used to bring food to market. Because packaging can prevent food loss on the way to market (in addition to food waste at the retailer/consumer levels), it can reduce the carbon intensity of the food value chain.

However, while packaging clearly contributes to sustainability by limiting product waste and over production, this paper recognises that packaging still requires the use of natural resources and has a direct impact on the environment.

Therefore, this document seeks to explore how packaging can carry out all the functions described in the previous section, in the most sustainable way possible. Participants in the packaging value chain have been striving to achieve this goal for some time now. The Innventia model, shown below, illustrates the elements that determine the environmental impact equation in packaging. It demonstrates that there is an optimum quantity of material usage in packaging that ensures the most sustainable medium between reducing product wastage and reducing packaging material. Most importantly, the model shows that underpackaging has a greater negative environmental impact than overpackaging, because this results in product loss and waste.

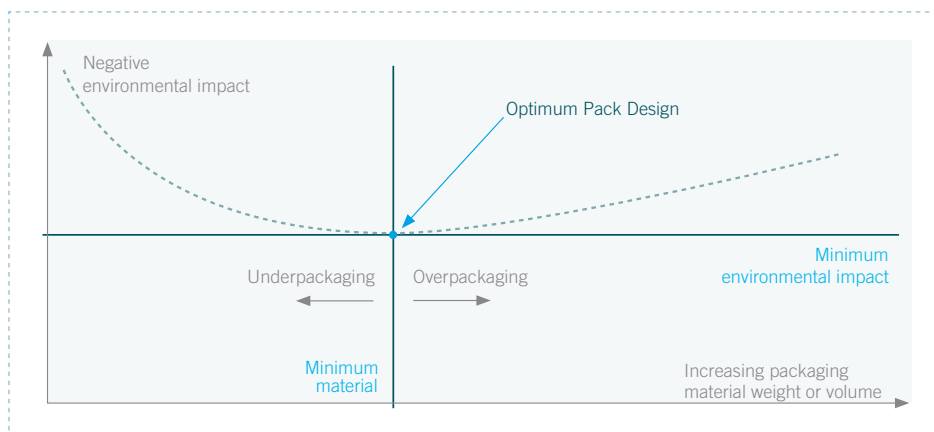


Diagram courtesy of Innventia AB

This paper will now address the questions that need to be asked in order to arrive at the 'Optimum Pack Design' point of the Innventia model, and will provide some answers to these questions.

² http://www.fao.org/fileadmin/user_upload/ags/publications/GFL_web.pdf

The best packaging for the job

Determining the best packaging for the job is a complicated decision, given the complexity of modern supply chains, diverse consumer and product needs, and the ever changing nature of European and global trade. Packaging decision-makers need to find the most cost-effective solutions for delivering their product to market in line with consumer needs and demands, and in compliance with various regulatory requirements.

Packaging can contribute to sustainability goals in many different product value chains. However, product manufacturers and packaging producers further up the value chain all have plenty of challenging choices to make when deciding how this job should be done. The onus on all players in the value chain, as they strive to arrive at the Optimum Pack Design, which will drive sustainability, and very often reduce costs, is to ensure that the packaging they use performs its function in the most sustainable way possible.

The choice of this optimal packaging needs to be based on a range of variables, requirements, and objectives. To support the decision-making process, this document identifies **seven key considerations** around the areas of material selection, design, consumer choice, production, use, end-of-life for packaging and innovative business models.

1. Material selection

Selecting what type of packaging material is to be used for a particular product is probably the most basic question to be considered.

When selecting materials to be used in packaging, goods manufacturers must first determine which materials are appropriate for their products. Sometimes this is simple. An obvious example is that sensitive electronic equipment cannot be successfully transported in a glass box. But often this is much more complex and a number of factors must be balanced. To continue the example, electronic equipment can be delivered in a range or combination of different materials, and there is no prescriptive or pre-determined test of what is 'right' or 'wrong'. Product owners must choose. Goods manufacturers and producers must weigh all the different implications of using various materials at different stages of the supply chain – such as the cost of the material, conversion, transportation and storage, and potential end-of-life use.

As a second example, the extraction of metal from the ground can not only be expensive but also has a significant environmental burden. However, when used in packaging the advantages of these metals is that they can be recycled and re-used over and over again. They are also able to withstand high and low temperatures, as well as enabling a greater shelf life for the product. Equally, while paper and cardboard-based packaging does require cutting down trees, paper is easily recyclable, and paper and cardboard producers are increasingly using sustainable forest management techniques that ensure virgin forests are left untouched and harvested forests are replanted. Of other materials, glass is very easily recycled and/or reused, whilst plastic is considerably lighter and offers increasingly complex design potential.

This shows that using just a single metric to develop sustainable production practices can lead to unintended consequences elsewhere, either in the production process or along the value chain. For example, using expanded polystyrene (EPS) packaging provides great product protection for electronic goods, less packaging weight and bulk, and hence more units per shipping container and lorry, and less transport costs and related emissions. However, the efficient recovery of EPS is challenging. An alternative, using special plastic bags to be placed around the product, may require more packaging, reduces the number of units in transport, and increases transportation costs and emissions; however, the plastic bags use less material and can potentially be recovered more efficiently.

We asked contributors to this paper:

- How can the properties of each potential material be effectively – and objectively - managed and measured?
- Given the economic and environmental costs and benefits of different materials, which factors should packaging decision-makers prioritise when choosing materials?

There was consensus that companies need to prioritize factors based on their specific product and company strategies. However, it was noted that various metrics have been developed to provide guidance to packaging decision-makers. Moreover, given the changing nature of the packaging value chain, companies need to be aware of the pros and cons of various materials to enable them to make an informed decision about “the best” packaging for the job.

During stakeholder discussions, Coca-Cola and DANONE mentioned challenges that arise when various materials are successful in striking the right balance between economic costs and environmental benefits. One example is polyethylene terephthalate (PET), which is often used for food and drink containers, as it is easy to handle, effectively protects the product and is also recyclable back into

food-grade packaging material. These intrinsic qualities have led to a high demand of post-consumer PET which competes with growing resource demand from China and reduced quality and quantity of suitable secondary material on the European market. Thus, whilst recycling PET back into packaging makes environmental sense, it might become prohibitive from an economic point of view. An EU Commission participant and the environmental NGO representative said that a matrix that examines the economic, environmental, and social impact, both in the short and long term, could serve as a useful tool to empower companies to make the most sustainable decision in their use of material(s). The environmental NGO representative in particular emphasised the need to first look at the principal environmental and social risks in using each packaging material—water usage and sourcing, protecting biodiversity, forest impacts, and green house gas emission—and then weigh these against the economic cost of the material to come to a balanced decision on what material to use.

2. Packaging design

Improving the sustainability of the consumption and production of packaging throughout its life cycle is a challenge. Packaging decision-makers must weigh the demands of product protection to reduce wastage against the need to limit packaging volume, while also ensuring that the packaging responds to consumer needs and product requirements. The need to design packaging that withstands distribution stresses, gives the consumer confidence that the product is not contaminated or unsafe, is also easy to open, and safe for children must be balanced against efforts to minimise material use. With regards to the packaging of food and drink, health and safety concerns and prolonging shelf-life add an extra dimension to the decision-making process. Attractive packaging can mean irregularly shaped containers that increase visual exposure on the shelf but reduce volume efficiency.

We asked contributors to this paper:

- How do we design packaging that is robust enough to protect the product, easy to open and attractive to the consumer, yet minimises material use?
- If packaging can be designed to ensure contents last longer, but require more material, are heavier, and/or less recyclable as a result, which factors should take precedence?
- Is enough incentive given to promote sustainability in packaging design?
- With the number of variables packaging decision-makers face, is there a way to design an objective decision tree or matrix that could be applied in each or most product sectors, which would form a guide to delivering the optimum packaging design?

Respondents felt that packaging design is a difficult issue to address in generic terms and thus the question needs to be evaluated using specific examples or on a case-by-case basis. An EU Commission participant, however, emphasised that safety should be given the highest priority.

There was clear consensus that packaging designs that increase shelf life but require more use of material are only justifiable if they prevent product waste. PRO EUROPE underscored the need to look at the total environmental impact of the packaged product, including the packaging, to determine the value add in this situation.

Few comments were made about the quality, scope or range of incentives given to promote sustainability in packaging design. Innventia argued that few, if any, incentives exist and the sole focus on the carbon footprint of a product distorts overall sustainability considerations. Tetra Pak sees the commitments of various global companies in the area of packaging and sustainability could be a strong incentive for packaging material suppliers, converters, and designers to find innovative solutions that increase the contribution of the packaging value chain to sustainability.

While understanding and accepting the rationale of the Innventia model, the environmental NGO representative would be interested to learn about any theories or ideas that challenge the model and could potentially lead to positive transformational changes and innovations.

There were a range of views about the possibility of creating a decision tree or matrix. An EU Commission participant supports the idea of trying to create one. Innventia and PRO EUROPE felt that the model would be too static. Innventia commented further that a decision tree or matrix could mathematically produce the “best” option but it might not be practically feasible to implement. PRO EUROPE noted that a new ISO standard could provide some useful guidelines. Tetra Pak was concerned that a decision tree or matrix might require the disclosure of too much sensitive competitive information, which could hinder the development of a truly effective tool.

3. Consumer choice

As mentioned previously, consumer preferences and lifestyles affect packaging design decisions. Brand owners and retailers, as well as packaging decision-makers, must accommodate these. Responses to these consumer preferences can range from providing practical opening and closing features, to using packaging as a means to add value to the shopping experience of luxury goods. Consumers also have a level of perceived acceptability, which they believe determines the suitability of the packaging for that particular product. For example, tests have shown that consumers do not feel comfortable buying certain products without protective packaging.

We asked contributors to this paper:

- How can branded goods manufacturers manage diverse consumer demands with sustainability, when in some cases these two appear to be in conflict?

Contributors recognised that consumers hold the key to the successful management of balancing consumer demands and sustainability. Thus respondents felt that consumer education is an important factor in changing consumer attitudes and expectations. Tetra Pak also recommended that investments in research and development and innovation along the packaging value chain could produce solutions to competing needs. The environmental NGO represented elaborated by commenting that primary packaging should not be reduced for marketing reasons if it means greater product loss and/or a higher overall carbon footprint along the entire product value chain.

- Are certain categories of products exempt from sustainability considerations, given the importance of design for the product experience?

Based on the response from the contributors, this question appeared almost unnecessary. There was recognition that very few, if any, packaged products fall under this category when looking at sustainability broadly and not just the environmental impact. For those products, if any, that do fall into this product category, respondents thought aesthetic appeal should not be prioritised over sustainability.

- With more and more single households, and portion sizes becoming smaller as a result, how should the value chain address these changing demographics in an effort to reduce food waste?

Respondents saw sustainability as the key to responding to this question. They were supportive of smaller portion size if it decreased food waste—thus creating a more sustainable food value chain. However, Innventia noted that higher unit pricing could be a deterrent for buying more size/portion appropriate packaged goods. The environmental NGO representative suggested potential greater usage of larger, resealable or sectioned packaging that avoids the whole portion being exposed to microbial contamination. Furthermore, PRO EUROPE emphasised the need for proper infrastructure to manage a potential increase in packaging volume at the end-of-life phase.

4. Transport

It is often difficult to find the right balance between such vital considerations as product protection, transportation cost and sustainability. It is crucial for manufacturers to design packaging that withstands the stresses of distribution. Yet the bulk and weight of such packaging may reduce the quantities of the product that can be transported, meaning greater costs in terms of fuel and CO₂ emissions. Additionally, packaging must be robust enough to protect the product, while making an effort to ensure that the materials and manufacturing processes used are as sustainable as possible.

Moreover, manufacturers must evaluate the use of re-usable secondary and tertiary packaging in the transportation stage of the product life cycle, which can both limit product damage and minimise long-term environmental damage. On top of this, where possible, trucks should carry their maximum volume capacity, normally achieved by modifying pack dimensions so that they closely fit the pallet, which sometimes requires greater material use.

We asked contributors to this paper:

- How can packaging decision-makers balance product protection, transportation cost and sustainability along the supply chain?
- What calculation or balancing of factors should be used when attempting to understand the sustainability implications of packaging which facilitates transport and reduces waste, but adds weight?
- What levels of secondary packaging are acceptable if they allow more complete filling of logistics pallets?
- Packaging of all types not only needs to be delivered, but also collected after use. How should transport emissions and costs be factored into such choices?

Overall, respondents felt that a Life Cycle Analysis (LCA) or another type of matrix could help companies determine the best solutions to answer these questions. Furthermore, Innventia underscored the need to prioritise product protection. The environmental NGO representative expressed concern that the focus on reducing material use for consumer packaging could require greater use of secondary and tertiary packaging, which could off-set any environmental gains made through reductions in consumer packaging. Therefore, the representative believes that packaging should not replace or overcompensate for suboptimal logistics and thus logistics experts should be consulted to strike the right balance. Thus a complete review of the packaging system is needed, to ensure that the best combination of these different types of packaging is used to minimise the environmental impact of the entire supply chain.

ERRT noted that “backhauling” could be a helpful practice to reduce the environmental impact of transport of both the packaged product and packaging collection. This would include loading what would normally be empty trucks post-delivery with unsold products, used or unused packaging, and/or picking up products from suppliers to deliver back to distribution or manufacturing centres.

5. End-of-life

Packaging decision-makers also need to consider end-of-life of the packaging selected and how it will influence their environmental impacts and cost structures. These considerations can range from transportation of used packaging for re-use, producer responsibility in regulatory frameworks, and the costs and benefits of using materials that are recyclable and reusable, versus materials that are disposed of in landfills. Given the major differences among EU Member State infrastructure systems for recovery and recycling of packaging, packaging decision-makers are faced with difficult choices as they seek to achieve production economies of scale in order to lower costs and minimise their environmental impact.

We asked contributors to this paper:

- Given the multiple users of packaging, how should the responsibility for recovering packaging be shared?

Respondents believed that end-of-life responsibilities must be shared across the entire value chain. This also includes the consumer, as consumers are typically the last users of packaging in the value chain. Thus this requires consumer communication and education from government and industry. PRO EUROPE noted that it is also important for governments to determine a clear division of responsibilities and enforce regulations after adoption and implementation. This view was echoed by EuroCommerce, who underlined the need to define responsibilities rather than shift responsibilities between various actors along the value chain. The environmental NGO representative, however, felt that the responsibility should be shared between the final seller of the product and the manufacturer, as the branded product cannot always be traced back to the retailer.

- Should there be a hierarchy in end-of-life policies, preferring recycling, re-use or energy recovery above another?

A certain hierarchy already exists in EU legislation and this is supported by the environmental NGO representative within the same material. In instances where a choice is being made between materials, the environmental NGO representative instead was more aligned with the comments of Tetra Pak that decisions should be made after an LCA and on a case-by-case basis. Furthermore, the environmental NGO representative emphasised the need for LCA's to be consequential, not attributional, and not just to cover single use cradle-to-grave analysis but should also cover re-use of the materials. Thus, biodegradable materials are not always desirable as once a feedstock has been produced it should be kept in use and the resources invested in its production not wasted through biodegradation. Innventia remarked that a too rigid hierarchy could deter innovation.

6. Communication along the value chain

To achieve sustainability gains, better communication between all of the partners in the value chain is necessary. However, this is more difficult than it sounds, as different actors have different priorities and needs, impact the environment in different ways, and each seeks to maximise revenue and minimise costs, even if issues such as sustainable production are important. Indeed, in order to achieve sustainability, companies have to make a profit.

We asked contributors to this paper:

- How can the packaging supply chain participants effectively communicate to minimise their environmental impact while respecting individual actors' priorities and needs?

- How should the different interests of each be effectively balanced when they come into potential conflict?

Respondents welcomed the concept of greater communication between actors along the packaging value chain. Tetra Pak underscored the importance of even bi-lateral conversations to help reduce the environmental impact of the packaging value chain, such as clear communication about proper usage of packaging. Coca-Cola and Auchan noted that in order for issues of sustainability to be practical, the issue of cost must be discussed and evaluated simultaneously. However Coca-Cola added that whatever changes are agreed upon, there needs to be a big push to adopt these changes and communicate about them across the wider industry and value chain.

The environmental NGO representative said that commonly agreed decision criteria with respect to the environmental impact of packaging should be created. Furthermore, the advisor noted that any negotiations or discussions about packaging solutions should be transparent and the rationale for any decisions taken should be properly communicated externally, particularly if the best environmental option was not selected.

7. Innovative business models

As the packaging value chain evolves, it is continuously developing and testing new business models for delivering goods to the point of sale and then selling them to the consumer. Referring back to the “green car” example, a car cannot be green if it cannot transport you effectively from point A to point B. However, there are possibilities to develop new forms of cars or modify existing forms of transportation to improve sustainability - and the same is true for packaging.

Therefore, the packaging value chain should continue to invest in innovation to develop cost effective solutions that enable packaging to do its job in a more sustainable way. Technology, and the demographic and lifestyle changes that we have already discussed, provide the value chain with opportunities to transform the way products are delivered to the consumer.



Annex I – Contribution of the European Environmental Bureau

The European Environmental Bureau (EEB) participated in the stakeholder consultation process that led to the creation of this Green Paper but decided to not participate directly in its review. Nevertheless, the EEB has been given the opportunity to provide some of its primary views regarding packaging and sustainability, which are stated below.

In general, the EEB prefers less packaging throughout the product value chain to reduce packaging waste and to place prevention as a key priority with regards to waste management. The EEB would also like to see growth in the use of more recyclable or more reusable packaging to increase the sustainability of the packaging value chain.

In that perspective, EEB defends the idea of revising the EU Packaging and Packaging Waste Directive to reformulate its essential requirements in a more enforceable way, as well as to update the recycling objectives, noticeably for plastic and wood packaging. This also requires a better and more consistent packaging collection scheme across Europe, and EEB advocates for the use of a deposit refund or voucher scheme to provide incentives to consumers to better sort and eventually bring back their packaging waste to appropriate collection points.

Furthermore, the EEB does not believe that the benefits of packaging can be simply valued by the role it plays in preventing food waste. While the EEB recognizes that this does have value, the EEB points out that this often leads to longer farm to market transport routes and, in some cases, special storage requirements, which increase the environmental footprint of the value chain.

Therefore, the EEB favours shorter distribution circuits and seasonal consumption. The EEB also claims that a direct link between food production and food waste has not been proven thus food waste reduction through the use of packaging will not necessarily lead to a reduction in food production.

Annex II - Regulatory & Policy context

1. Packaging and Packaging Waste Directive 94/62/EC

a. Recycling and Recovery Targets

The current EU targets for recovery and recycling of packaging waste were established in the 2004 revision of Directive 94/62 with a December 2008 date for their achievement. According to published EU Commission data these targets were largely reached or surpassed by most of the EU-15 in 2007. Countries which joined the EU in the '05 and '07 enlargement have extended timelines.

The Commission has not announced any plans to raise these targets and has stated its preference instead for maintaining the present levels and placing attention on the further optimisation of recovery and recycling while the newer member states catch up. This does not prevent any member state from unilaterally setting higher targets.

In parallel the Commission has said that any revision should be delayed pending member state submission of their respective overall waste management plans mandated for end 2010 by the Waste Framework Directive and agreement on targets for waste prevention due in 2013.

b. Essential Requirements

Packaging has to comply with environmental legal requirements which address the main impacts³:

- Packaging shall be so manufactured that the packaging volume and weight be limited to the minimum adequate amount to maintain the necessary level of safety, hygiene and acceptance for the packed product and for the consumer;
- Packaging shall be designed, produced and commercialised in such a way as to permit its reuse or recovery, including recycling, and to minimise its impact on the environment when packaging waste or residues from packaging waste management operations are disposed of; and
- Packaging shall be so manufactured that the presence of noxious and other hazardous substances and materials as constituents of the packaging material or of any of the packaging components is minimised with regard to their presence in emissions, ash or leachate when packaging or residues from management operations or packaging waste are incinerated or landfilled.

c. Heavy metals limit

Member States shall ensure that the sum of concentration levels of lead, cadmium, mercury and hexavalent chromium present in packaging or packaging components shall not exceed a certain amount, as laid down in article 11 of the Packaging Directive.

2. CEN Packaging Standards

The EU Commission mandated the European Committee for Standardization (CEN) to draw up a set of standards and reports which would be “useful for the application of the Directive”, and standards on packaging prevention, re-use, material recovery, energy recovery and organic recovery were adopted in 2000. Updated versions were adopted in 2004.

On 19 February 2005, the Commission published the references to the full set of standards in the Official Journals as recognition of their status as “harmonised standards”. This means that packaging which complies with the standards is deemed to be in conformity with the Essential Requirements. The use of the EU harmonised standards on packaging and environment also enable continuous environmental improvement.

3. ISO Packaging Standards

The development of ISO Standards on packaging and environment, in line with the CEN Standards, is currently ongoing. The work commenced in December 2009 and aims to be finalised mid 2012.⁴

4. Global Protocol on Packaging Sustainability (GPPS)

The Global Protocol on Packaging Sustainability (GPPS) for the Consumer Goods Forum, was launched on 6 September 2011. The GPPS includes participation of a wide range of retailers and consumer goods manufacturers and is supported by packaging manufacturers, industry and trade associations from Europe and North America and a number of academic institutions. In an ongoing effort to drive global change in packaging, leaders from many of the world's largest consumer goods companies and major retailers have approved a suggested set of common definitions and principles for packaging in the framework of sustainability. This common language will support a global discourse on packaging in the context of environmental, economic and social impacts. The GPPS will help companies identify and assess packaging ‘hotspots’. More information on <http://globalpackaging.mycgforum.com/>

³ Directive 94/62/EC – Annex II (1): Essential requirements on the composition and the reusable and recoverable, including recyclable, nature of packaging.

⁴ For more information, please visit the following webpage: http://www.iso.org/iso/iso_technical_committee.html?commid=52082



EUROPEN – **The Voice of Industry for Packaging and the Environment** – is an industry and trade organization with the twin goals of securing a fully accessible European market for packaged products and achieving a balanced view of the role and functions of packaging, EUROPEN promotes greater understanding and acceptance of the vital contribution of packaging to resource efficiency and sustainable development.



EUROPEN

The European Organization for Packaging and the Environment

EUROPEN aisbl
Le Royal Tervuren
Av de l'Armée 6
Legerlaan 6

1040 Brussels
Belgium

T +32 2 736 36 00
F +32 2 736 35 21

packaging@europen.be
www.europen.be