



FOOD AND BEVERAGE PACKAGING Main Issues

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INTRODUCTION

These guidelines provide general instructions on the fundamental features that characterise packaging supply chains, with a specific focus on the aspects which distinguish Food and Beverage Packaging (FBP) from the rest of the sector.

These guidelines, therefore, are intended to be a useful reference for any and all professionals who desire to interact with local companies in the FBP supply chain in activities to raise awareness on themes of business sustainability.

DEFINITIONS

Packaging represents an essential part of our daily life.

As we shall see in greater detail in the following pages, packaging must contain, protect and preserve products; it must make transport and delivery as simple and economical as possible; and it must provide product information while at the same time influencing the sale, consumption, use and disposal of that product.

Packaging is commonly understood to be the material that surrounds a product that is sold to the customer. In fact, there are three different types of packaging:





1. Primary packaging

Primary packaging is the package that directly covers the product intended for sale to the final customer.

This is the packaging that is most visible and therefore contains the most information linked to branding, the use and content of the product, and its disposal.

Because primary packaging also comes into direct contact with the product it must satisfy protection and preservation requirements.

In the case of customer goods, primary packaging represents the sales unit intended for the final customer. Examples of primary packaging include bottles, beverage cans and tinned foods.

2. Secondary packaging

Secondary packaging is used to group a certain number of primary sales units together at a point of sale. It can be sold to the final user as a single unit or used to facilitate the movement of the product within the point of sale or to remove it without altering its characteristics.

In the case of customer goods, secondary packaging can constitute both the sales unit intended for the final customer as well as the one intended for the reseller.

Examples of secondary packaging are packages with multiple bottles, cans, tins and cartons of cigarettes.

3. Tertiary packaging

Tertiary packaging is the entirety of primary and secondary units that are specifically prepared for movement and transport.

In the case of customer goods, tertiary packaging is reserved for internal use in distribution chains and, except for special cases, does not arrive at the final customer.

An example of tertiary packaging is palletised unit loads.

FUNCTIONALITY

Packaging mainly serves two macro-functions: marketing and logistics.

From a marketing perspective, packaging adds value to a product through a series of performance features. These can be substantially immaterial, such as the use of shapes or colours, or can be actual, material performance, such as the addition of information to the customer, improved product preservability, etc. Packaging thus represents a real promotional vehicle for the product.

Instead, from a strictly logistical perspective, the basic function of packaging is to organise and protect the merchandise and to make it identifiable in order to facilitate its movement, storage, transport, distribution, sale, use and final consumption.

In greater detail, the functions carried out by packaging are:

CONTAINMENT

Its function of containment is historically the oldest and most original. The type of packaging necessary to contain a product depends on its form and the nature of the product itself.

For some types of products, such as liquids and granular/powder products (free-flowing products), the need for containment is absolutely indispensable.

PROTECTION AND PRESERVATION

All forms of packaging act as the interface between the product and the surrounding environment, and therefore represent a protective barrier for the original quality of the product.

Packaging's protective function allows for the preservation of the product's integrity from mechanical stress, such as impacts, vibrations and compression.

The preservation function allows instead for the blocking or inhibiting of chemical or biological variations in the product. In the food and beverage sector packaging is an essential tool for preserving the quality of foodstuff, thus minimizing waste and reducing the use of preservatives. At the same time, packaging contributes to protecting foodstuff from contamination from micro-organisms, parasites and other agents.

Furthermore, packaging contributes to preserving the appearance, shape and structure of foodstuff by preventing the loss of tastes and smells. Also, it often prolongs the shelf life of the product beyond its natural expiration date and helps maintain a sterile environment.



LOGISTICS

This function includes all the aspects linked to the product's transport and movement, from its physical packaging until its final use and disposal. These factors have a significant influence on the price of the product. The volume and weight of the packaging obviously have a decisive impact on logistical costs, and, as we shall see, they also have significant repercussions for the packaging's impact on the environment.

INFORMATION

The information that is conveyed by the packaging can communicate many different values.

Packaging appearance - shape, colour, and graphics - can all significantly contribute to the commercial success of a product; nowadays, in fact, packaging design is always carried out in tandem with marketing and communications experts.

But the information communicated does not only serve commercial purposes, it has other values as well: in the food and beverage sector (though not only), packaging facilitates product identification (through barcodes or holograms, for example), underlines the product's conformity to technical norms, and provides useful information to the customer concerning nutrition, suggested use, and methods of recycling and disposal.

CONVENIENCE

This role of packaging is surely one of the most recent, though it is gaining importance, especially in the food sector, for its ability to satisfy the needs of new generations of customers.

Some examples of solutions that condition and influence the use of products are easy-open packaging, reclosable packaging, packaging suitable for microwave use, etc.



To sum up, on the basis of the features listed above concerning the features that product packaging must satisfy, the primary functions that food and beverage packaging must fulfil are to¹:

- Adequately contain the foodstuff;
- Protect the foodstuff from mechanical damage;
- Act as an adequate barrier to gas and vapours;
- Prevent or delay biological degradation;
- Prevent or delay physical degradation;
- Facilitate movement and storage;
- Present the product in an attractive manner;
- Communicate information regarding the foodstuff's organoleptic properties and manner of consumption;
- Allow for the accurate identification of the product.

PACKAGING AND ENVIRONMENTAL SUSTAINABILITY

As we have seen, one of the main functions of packaging is to protect and preserve the product; in this way, the amount of product that is damaged or spoilt is reduced and, consequently, there is a reduction in the overproduction which occurs in replacing the number of non-usable products. This contributes substantially to more ecologically sustainable development. This is particularly significant for the food and beverage sector. Thanks to new technologies applied to packaging, it is possible to improve the protection of foodstuff and to prolong its shelf life, thus limiting waste both in transport as well as at the point of sale.

However, the need to protect and preserve the product comes up against the need to progressively limit the volume of the packaging used: packaging requires resources to produce and transport, and so the benefit that is gained from reducing its weight and quantity is evident.

Sooner or later, packaging becomes a waste product and therefore enters into its related disposal cycle. The environmental difficulties linked with the disposal, recycling, and reuse of packaging have become increasingly urgent and often influence the criteria for the planning and design of packaging and technological innovation in the sector.

¹ Piergiovanni Luciano, Limbo Sara (2010), "Food Packaging. Materiali, tecnologie e qualità degli alimenti", Sringler-Verlag Italia



How do we reconcile the need to guarantee health and safety, which are so important for the FBP sector, with the need for business sustainability, and thus allow the supply chain stakeholders to make the most appropriate decisions?

In other words, how can we ensure that packaging can carry out its functions listed above in the most sustainable ways possible?

These are complex questions that call for an integrated approach which takes into consideration a broad range of variables, requirements and objectives: the complexity of the packaging supply chain, the needs of customers, the continual evolution of the European and international market, and so on. The packaging supply chain is extremely complex and constantly evolving: it is made up of producers of raw materials used in packaging, retailers of the products that are packaged, and the final customer and the companies that manage the product's end-of-life.

In regards to these questions and with the goal of supporting decision-makers within the supply chain in choosing the best packaging, EUROPEN, The European Organisation for Packaging and the Environment, produced a "Green Paper" in 2011 entitled "Packaging and Sustainability". It identifies 7 key considerations²:

1. Material Selection

Selecting the most suitable type of material is surely the first aspect to consider. In selection, manufacturers must first determine what materials are most appropriate for their product. In this process, therefore, manufacturers must evaluate the various implications linked to the use of different materials at all stages of the supply chain, such as the cost of materials, the manufacturing, transportation, deposit, and potential uses at end-of-life.

In some cases, such as for electronic products, this evaluation does not bring particular difficulties; in other cases, such as for FBP, it is a complex process which, besides the features listed above, must also take into account whether the materials used in packaging can safely come into contact with foodstuff.

To this end, depending on the relevant market, materials must respect requirements established by international norms. Examples of these norms are the European Regulation 2023/2006 on good manufacturing practice for materials and articles intended to come into contact with food, and ISO EN 15593 on hygiene management in the manufacture of packaging for foodstuff.



² EUROPEN (2011), Green Paper - Packaging and Sustainability, p. 8

2. Packaging Design

Improving the sustainability of packaging throughout the life cycle of a product is a challenge that entails a number of difficult choices. As previously mentioned, packaging designers must weigh the need to limit waste with the need to carry out the primary functions described above, while also limiting the volume of packaging that is used.

In the Food and Beverage Packaging sector the safety and security of the customer and the prolonging of the product's shelf life are other elements that make the design process increasingly complex.

3. Consumer Choice

Customer preferences and changes in lifestyle have a decisive impact on the design of packaging.

Customer demand for foodstuff has changed significantly in the last 30 years, effected by higher pro-capita income and demographic and lifestyle changes, such as the increase in nuclear families made up of only one person, gender equality, etc...

4. Transport

Weight and volume significantly influence the amount of goods that can be transported, with subsequent increases in fuel costs and CO₂ emissions.

Here we return to the issue of balance between the need to protect the product from stress incurred during movement with the need for sustainability. To appropriately face the issues linked with transport, one advisable solution is an integrated approach, which calls for the involvement of experts in logistics and the use of tools such as the Life Cycle Analysis (LCA).



5. End-of-life

The end-of-life of packaging and its impact on the environment and management costs is another issue which continues to be actively debated by experts.

These issues range from transport of used packaging intended for reuse to the costs and benefits of using materials that are reusable and recyclable in place of those that are disposed of in landfills. Moreover, there is also a question of where the responsibility lies for the recovery of used packaging.

Many hold that it must be distributed throughout the supply chain, including the customers, who in most cases are the final users of the packaging. According to this vision, business and government policies of education and sensitization take on particular importance.

6. Communication along the Value Chain

All those involved in the value chain have different needs and priorities which diversely impact the environmental, and each actor strives to maximise revenue and minimise costs. It follows that, in order to improve the environmental sustainability of packaging, it is necessary to improve communication among those involved in the value chain.

7. Innovative Business Model

As the packaging value chain evolves, new business models are developed and tested for delivering goods to points of sale and then selling them to the customer; it is therefore necessary that the packaging value chain continues to invest in innovation to examine solutions that allow packaging to carry out its functions in the most sustainable manner possible.







