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Understanding packaging

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This summary is based on a report published by the UK Centre for Economics & Environmental Development (UK CEED), a charitable research institute, following independent research into packaging. It was commissioned by INCPEN (the Industry Council for Packaging & the Environment), the body set up in 1974 to research the environmental and social impacts of packaging.

UK CEED's starting premise for its research was the following theory:

It would defy economic logic for a company to pack a product *purposely* in excessive packaging.

The theory was tested on the following case studies:

- Fish
- Computer monitor
- Liquid laundry product
- Cosmetics (skin care and fragrance)

and led to the observations and conclusions summarised in this report.

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The full version of the UK CEED report, entitled ***Packaging in a Market Economy***, may be obtained from:
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Understanding packaging

Why do we need packaging to deliver products?

Is any packaging too much packaging?

What is over-packaging?

Does packaging increase the cost of goods?

These are just some of the questions examined in the research.

The packaging of the five case study products was assessed in detail, examining all the factors which influence the choice of packaging made by manufacturers.

This booklet summarises the findings.

Packaging: Protection, information, convenience

Packaging is not itself a product, but is a means of delivering a product to a customer in good condition.

We seldom go out to buy a cardboard box or a plastic bag; we go to buy a hi-fi system or a packet of frozen peas, and the box or bag are what we use to get that item safely home. But that's only a small part of the story. The packaging has also been used by the manufacturer, wholesaler and retailer to protect the goods while they are being transported, stacked, stored and displayed.

The packaging was chosen to be appropriate for the goods according to how fragile or perishable they are. The packaging is required to fulfil a number of roles: it may need to protect the goods, maximise transport efficiencies, make them fit on the shelf, provide information about storage and use, and meet legal requirements for labelling. In the case of food, it may also enable us to freeze and then cook the item in the same pack. In the case of medicines, or cleaning materials which may be hazardous in the hands of children, the packaging may incorporate specially designed opening devices as protection.

The packaging which we use to carry the goods home has already fulfilled many roles before we even see the items in the shop.

Further, not only will we not buy the *goods* if they are damaged, we may even refuse to buy them if the *packaging* looks scuffed or marked. This despite the fact that as soon as we get the goods home, we are likely to discard the packaging.

Ask yourself, have you ever rejected the item on the top of the pile because it looks less than 'new'?

Most of us have, if we are honest.

Public perception: Packaging is wasteful

The generally negative image of packaging stems from a perception that, because packaging is thrown away after use, it is wasteful and unnecessary.

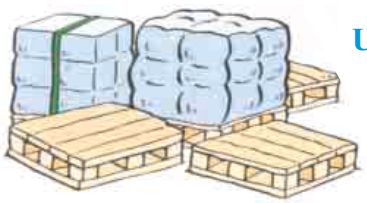
Finding: Packaging performs many roles and reduces waste

Packaging contains and protects goods from the time they leave the producer to the time they reach the consumer. Packaging is a very visible part of household waste although it is less than one third of the total weight. In fact, packaging waste from households accounts for just 3% by weight of all waste disposed of in the UK and other Northern European countries.

However, arbitrarily reducing the amount of *packaging* with the sole objective of reducing the amount of packaging waste we discard risks increasing the amount of *goods* which are thrown away because they have become damaged or spoiled by heat or damp, or contaminated by other materials.

In countries with less well-developed packaging and distribution systems, such as parts of Eastern Europe, as much as 50% of food is wasted and does not reach the consumer. In Western Europe, thanks to packaging and the distribution system, only 2–3% of food is wasted.

Manufacturers must make difficult choices when selecting packaging, to balance the various demands of the package at different stages in order to avoid waste and minimise cost.



Using insufficient packaging for goods, so that they are not properly protected, is very wasteful.

Packaging: Change and innovation

Packaging methods and materials have changed a great deal in the past fifty years, and because of continual research and development on the part of the packaging industry, packaging is likely to go on changing and adapting to different needs.

Lifestyles have changed, with many women going out to work full time. Shopping habits have changed, and so have the shops we use. Holidays abroad have given us a taste for exotic foods, but lack of time makes us want convenience. We no longer shop daily for perishable foods, but use refrigerators and deep freezers to store goods. We want to take food from the freezer, via the microwave, to the table in minutes.

Packaging innovation has helped us to achieve all these things.

Competition encourages innovation and helps keep packaging, and costs, down. Constant innovation in packaging design and material has already dramatically reduced the amount of packaging we use: steel cans and glass bottles now weigh only half what they did thirty years ago.

Many criticisms of packaging are actually criticisms of current life-styles, a huge social question which the packaging industry reflects but does not control.

What can safely be asserted is that, without packaging, we would not be able to enjoy the lifestyle we currently do, with the range of choices open to us.

Public perception: We have too much packaging

Many people feel that we have far too much packaging. Another common criticism is that there are too many different layers of packaging on some products.

Finding: Packaging helps minimise costs

Packaging costs money. To reduce costs, and increase profits, companies want to spend as little as possible on packaging. Often a manufacturer chooses a number of layers of packaging in different materials deliberately to reduce the *total* packaging required, with each layer serving a different need. For example, a wine box has a cardboard outer box for rigidity, and an inner bag made from layers of polyethylene and an aluminium-coated plastic to provide a barrier against damage from air.

Shoppers can buy some items without any packaging, such as loose fruit and vegetables from market stalls. Supermarkets also sell loose fruit and vegetables and unwrapped goods from the delicatessen counter, even though many customers prefer to buy ones which have been pre-packed. It would be a mistake to assume that 'loose' goods do not need any packaging; you could not get melons or oranges, lettuces or runner beans, to shops and markets without packaging. The difference is that we do not see the crates and trays used to deliver these because they are removed before the goods are displayed. Taking into account the fact that goods that are not pre-packed are more likely to be damaged or bruised, there may be as much or more waste from 'loose' goods as from packaged ones.

Packaging helps protect against product loss, and saves costs.

Packaging and the environment

Environmental awareness is generally high today, a positive factor which helps the drive to encourage more responsible behaviour on the part of industry and the general public.

One of the important current trends is to use the science of Life Cycle Assessment (LCA) to evaluate the environmental impacts of the whole 'life' of products, from the raw materials stage, through their use, to disposal at the end of their life.

Taking such an overall view of the impacts, both positive and negative, of packaging is also important. Packaging is a very visible part of our household waste and, because of that, packaging is often considered to have *only* a negative environmental impact. When a manufacturer chooses the packaging for a particular product, there are a wide range of factors which influence that decision, only some of which are environmental considerations.

There needs to be a balance struck between other issues, such as safety – for example using more packaging to make sure the product cannot be tampered with – and environmental concerns which would indicate using the least amount of packaging. On the other hand, changing a product's packaging from a cylindrical bottle to a square or rectangular pack can reduce the environmental impacts of its transport by allowing more packs to fit in a single vehicle, with less wasted air space around them.

Public perception: All packaging should be recycled

Many people believe that, in order to reduce waste, packaging should be designed to be recyclable.

Finding: Choice of packaging material must reflect all aspects of its use and disposal

Because packaging fills a wide range of different functions, basing the decision of which packaging material to be used for a product on the *single* criterion of making the packaging suitable for re-use or recycling is likely to be environmentally unsound.

For example, the use of factory-refillable bottles may be advocated, but to be strong enough for refilling they need to be made thicker and, being therefore heavier, they consume more transport fuel. Most packaging can be recycled, some materials more easily than others. However recyclability *alone* should not influence the choice of packaging, not least because the process of collecting, cleaning and reusing or recycling *may* use more energy and other resources than starting from scratch with new materials.

Hygiene requirements often restrict the use of recycled paper or plastic materials in direct contact with food. (Recycled glass and metal can be used because the recycling process heats them to a high enough temperature to ensure that no contamination is carried forward into the 'new' material.)

Recycled packaging materials must be able to meet performance standards in the same way that virgin materials must, or the packaging may fail.

Packaging: Choice of materials by manufacturers

Selecting the type and amount of packaging needed to meet the many and varied demands involves manufacturers and designers in some difficult choices.

Manufacturers must balance the sometimes conflicting needs of different stages in the process, as well as taking into account any legislation.

In the case of liquid laundry detergents, a lengthy investigation to identify the right packaging showed that the package which gave the best ratio of liquid volume to surface area – and therefore used the minimum amount of packaging – would be a spherical container!

Such a pack would be completely impractical at all stages: it could not be handled on automated filling lines in the factory, it would need more transport packaging, and would be impossible to stack, distribute and display, as well as being difficult for the consumer to use. Minimising the packaging – and using a sphere-shaped pack – would have been the wrong decision in this case.

Marketing considerations can impact upon packaging choice, both for new products and for established products which are given a new image. Generally, the more expensive the product, the more important marketing factors will be in packaging design decisions.

Packaging choice must reflect the item it contains as well as meeting the practical demands of product protection and the various stages of manufacture, distribution and sale, consumer needs and legislative requirements.

Public perception: Many goods are over-packaged

A common criticism is that certain goods are 'over-packaged', deceiving the public and wasting materials.

Finding: Some goods *are* packaged in more material than is needed for protection alone

There are some instances when the minimum of packaging has not been used. For some goods, such as luxury items like boxes of chocolates and bottles of perfume, the package is an integral part of the 'treat'. Luxury goods are not intended to be the same as every-day items, and the choice of packaging reflects that.

However, there are other examples of over-packaging, for instance on small multi-packs, sold together for a special promotion. If the package on the individual items was designed to meet all the product's demands, an additional layer of packaging around the outside, linking the individual packs, is strictly unnecessary for protection.

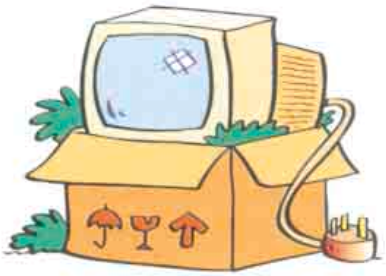
Sometimes manufacturers are simply unable to keep up with packaging developments. However, since packaging machines cost millions of pounds, and they are expected to last at least 15–20 years, changes, and further investment, are not made lightly.

Few everyday items have more than the minimum packaging necessary to fulfil all the demands which will be placed on it. In general, a perception that goods are over-packaged is due to a lack of understanding of the comprehensive role of the pack.

Some of the functions that packaging must perform

Five case studies were undertaken during UK CEED's work, with a number of common consumer products chosen for detailed examination of the roles which their packaging must fulfil.

Computer monitors



The packaging for these high-value electronic items must above all protect against physical damage. There is also a risk of climatic damage which the packaging must be designed to prevent. The packaging must be suitable for use in standardised production lines. It must also withstand mechanical and bulk handling, as well as being suitable to contain small or awkwardly shaped items such as cables and plugs.

Laundry liquids

An important function of the packaging for this product is to prevent the contents from leaking, but it must also protect the product from outside damage from chemical, biological or climatic causes. Like the computer monitor, laundry liquids are handled on production lines so the package must meet those needs as well as those of standardised distribution systems. The pack must be durable as the product may be stored for a long time by the retailer or the consumer, and it must be easy to hold and to open as well as clearly conveying product information and instructions on appropriate use.

Chilled and frozen fish products

These need a pack which protects the contents from escape, preventing the contamination of other goods. The pack must also protect the contents against harm, as well as being manageable on a production line, able to be stored at low temperatures for long periods and resistant to extreme temperature changes. Strict legislative controls on packaging for food products limit the choices of materials used, prohibiting recycled materials from direct contact. The requirement to convey nutritional information, and storage and cooking instructions, is also of high priority.

Cosmetics 1: Skin care products

These goods need to be contained to avoid leakage. They must also be protected against physical, chemical or biological damage. The package must be designed to deter pilfering. Marketing demands require the pack to be clearly labelled with brand information, while legislation required detailed information about contents to be displayed. The package must be easily handled and opened.

Cosmetics 2: Fragrances

These items must be carefully contained to prevent product loss, but also have a high risk of damage from physical, chemical, biological or climatic factors which the pack must guard against. The package must ensure that small or awkwardly shaped items are protected throughout the distribution system. The package is an essential part of the goods in this case, and will continue to be used until the product is finished, so not only must the pack be easy to use but it must also be attractive and meet the consumer's expectations of a high quality product.

CONCLUSION

INCPEN is grateful to UK CEED for its work in identifying the following areas where the industry can make improvements:

- **Industry does not properly communicate the value of packaging to society.**
- **The information flow between different sectors of the industry – from the packaging manufacturer through to the retailer – is inadequate.**

INCPEN is encouraging its members to respond to the criticisms and to take action, particularly in these highlighted areas.

However, INCPEN was also pleased to have confirmation through this report that there is a lot right about packaging.

Packaging serves many functions:

- ✓ it protects fragile goods
- ✓ it shields against damage
- ✓ it prevents leaks
- ✓ it dispenses goods
- ✓ it provides safety and hygiene
- ✓ it reduces wastage
- ✓ it conveys information
- ✓ it meets legislation
- ✓ it reduces costs
- ✓ it enables consumers to have a choice
- ✓ it reduces pilfering

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