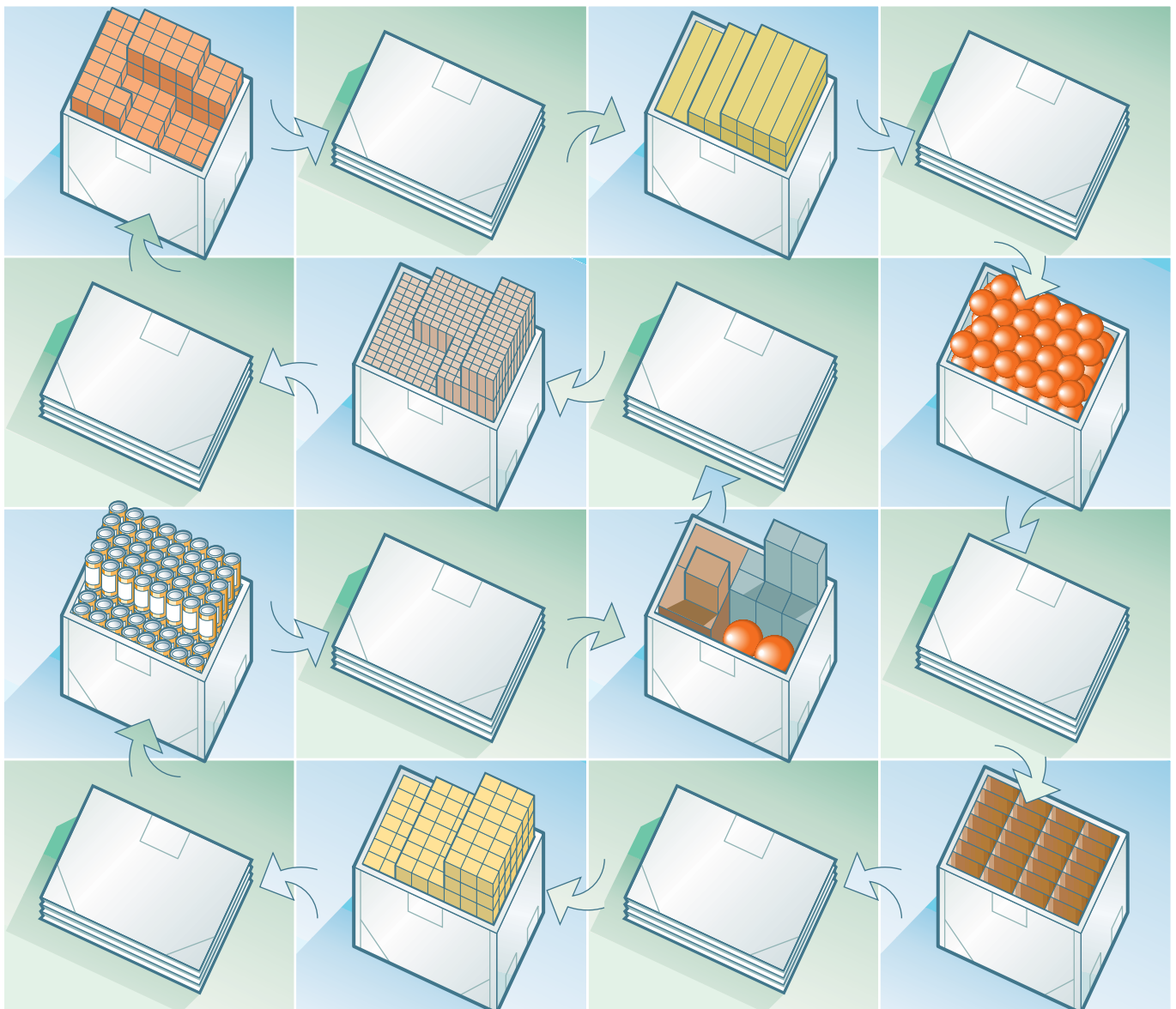




ENVIRONMENTAL  
TECHNOLOGY  
BEST PRACTICE  
PROGRAMME

# CHOOSING AND MANAGING RE-USABLE TRANSIT PACKAGING



**GOOD PRACTICE:** Proven technology and techniques for profitable environmental improvement

# CHOOSING AND MANAGING RE-USABLE TRANSIT PACKAGING

This Good Practice Guide was produced by the  
Environmental Technology Best Practice Programme

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# SUMMARY

Packaging re-use is an important aspect of packaging management. It can apply either to the re-use of what are nominally one-trip disposable containers or to packaging that has been specifically designed for several journeys between particular suppliers and consumers. This Guide focuses on the latter.

Re-usable packaging comes in various forms. It includes pallets, drums, separators and layer pads, slip sheets and push-pull units, plastic boxes, and metal crates and stillages. The use of these stronger and more durable forms of packaging can offer certain benefits, notably cost savings, easier compliance with the new packaging waste regulations and a reduced environmental impact.

However, the details of your choice of re-usable packaging will depend on many factors, but if opting for re-usable packaging, you will want to consider:

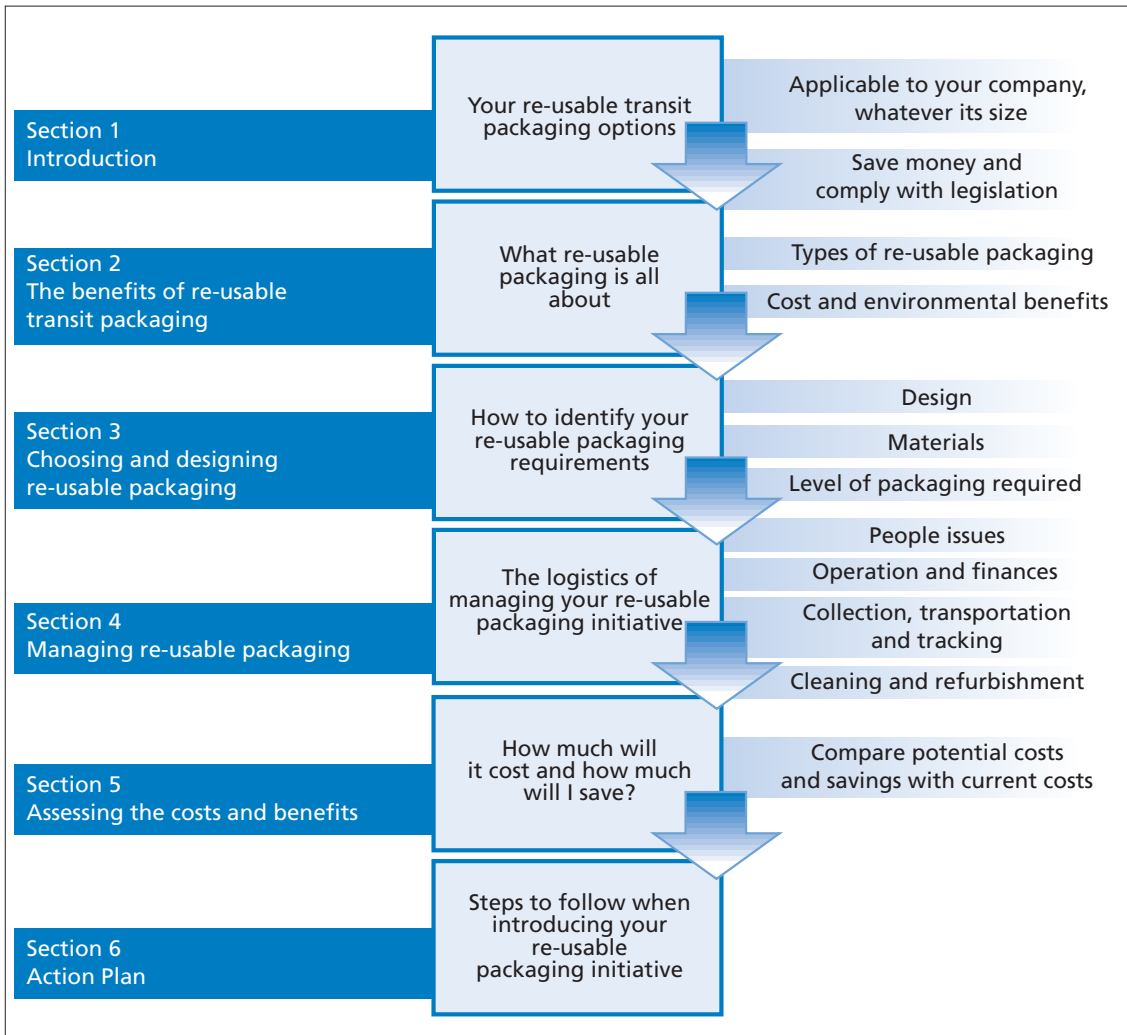
- the purpose of your packaging and the level of packaging required;
- the materials that are appropriate to the task;
- the importance of design.

Just as important are the logistics of managing a re-usable packaging scheme. You will need to decide whether to manage the scheme yourself, encourage a supplier or customer to initiate action in this field, or make use of the services of a specialist third-party company to manage the scheme on your behalf. You will also need to involve your staff, suppliers and customers at an early stage in the development process, and you will have to give proper consideration to issues such as the collection and return of containers, their cleaning and refurbishment, and container tracking systems.

If you are to make a balanced judgement on all of these issues, you will need to assess the costs and benefits of the various options being considered and compare these with your current costs.

The Guide encourages you to adopt a step-by-step approach (Fig 1), examining your re-usable packaging options, making the right choices, managing a scheme effectively and assessing the costs and benefits. It also sets out an Action Plan in Section 6.

Further information can be obtained through the Environmental Helpline on freephone 0800 585794.



*Fig 1 Guide structure and key issues addressed*

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## 1.1 BACKGROUND

Millions of tonnes of transit packaging are disposed of every year, and there are many opportunities for companies to reduce their costs, comply with increasingly stringent regulations and help the environment by practising better packaging management.

Good Practice Guide (GG140) *Cutting Costs and Waste by Reducing Packaging Use*, examines the economic and regulatory reasons why all companies that use transit packaging should minimise their packaging use. It also outlines the various options available, including packaging re-use, and sets out a step-by-step plan that companies can follow or adapt to their own requirements.

**You should read GG140 before you read this Guide. It is available free of charge through the Environmental Helpline on freephone 0800 585794.**

One important aspect of packaging management is packaging re-use. While this can apply to what are nominally one-trip disposable containers, it is mainly concerned with packaging that has been specifically designed for several journeys between particular suppliers and consumers. Re-usable containers are more robust than one-trip disposable units and, because they are constructed of more durable materials such as wood, metal or thick plastic, they cost more to purchase. However, **re-usable packaging can be more cost-effective than one-trip packaging when you calculate the total cost per journey.**

## 1.2 PURPOSE AND CONTENT OF THIS GUIDE

The purpose of this Guide is to provide your company with information that will help you to design or select the re-usable packaging that is appropriate to your needs and, having selected it, to manage it effectively. The focus throughout is on transit packaging that is used to move raw materials, components and manufactured products along the supply chain between initial producer and final consumer.

The Guide:

- outlines the main types of re-usable transit packaging available;
- assesses the benefits of its application;
- examines the factors influencing the choice and/or design of re-usable packaging, including current packaging constraints, the levels of packaging required, appropriate types of material, and the design features that are important;
- discusses the management of re-usable packaging, including 'people' issues, overall operation and finances, transportation and collection, cleaning and refurbishment, and tracking;
- explores how companies can assess the costs and benefits of re-usable packaging;
- outlines an appropriate Action Plan.

The Industry Examples at the end of the Guide in Section 7 show how different types of company have gained real cost benefits from adopting re-usable packaging.

If you have already read GG140 and have decided, perhaps after a period focusing on waste minimisation, that the way forward for your company is to switch to re-usable transit packaging, then this Guide is for you. It is relevant to **any** company, irrespective of its size and level in the supply chain. Remember that many large manufacturing and retailing organisations now take a keen interest in the environmental performance of their suppliers. Switching to re-usable packaging could help your company to become a preferred source, even if it is at the lower end of the supplier scale in terms of size.

A blue square graphic with the word "section" in white lowercase letters above the number "1" in a white serif font. The graphic is set against a background of a cloudy sky.

section

1

## 2.1 THE BENEFITS OF RE-USABLE PACKAGING

Your company can benefit in several ways from switching to re-usable packaging.

### 2.1.1 Cost savings

Using too much packaging represents an unnecessary cost to your business and has an adverse effect on profits. By switching to re-usable packaging you may be able to achieve cost savings by reducing:

- raw material costs;
- the costs of compliance with regulations;
- waste disposal costs.

The Industry Examples at the end of this Guide show how individual companies of different types have made substantial savings from packaging re-use. They also show how relatively straightforward the introduction of re-usable packaging has been.

Don't forget that most savings are repeated every year. They are not 'one-offs'.

### 2.1.2 Compliance with the law

Good Practice Guide (GG140) *Cutting Costs and Waste by Reducing Packaging Use*, provides some basic details about the new Producer Responsibility Obligations (Packaging Waste) Regulations. These apply essentially only to one-trip and first-trip packaging: packaging that is re-used is exempt from the regulations after its first use. Re-using your existing one-trip packaging, or switching to re-usable packaging, will reduce your obligation under the regulations and therefore the cost of compliance.

For further free advice and information on environmental legislation, or a copy of GG140, please contact the Environmental Helpline on freephone 0800 585794.

### 2.1.3 Other benefits

Re-using packaging can offer other benefits:

- improved environmental performance;
- improved company image;
- can help a more comprehensive waste reduction programme.

This Guide can help your company to make better packaging choices, thereby saving money, complying with legislation, and improving its environmental performance and image.

## 2.2 TYPES OF RE-USABLE PACKAGING

The most common forms of re-usable transit packaging currently in use are summarised below.

### 2.2.1 Pallets and pallet systems

Pallets are one of the oldest types of re-usable packaging. They are made, traditionally, from wood and, when constructed to the correct specification, can be used 200 times or more. Units are also manufactured from rugged plastic or corrugated board. Today, standardisation means that pallets can be used wherever they end their journey. Pallet rental and communal pallet pools operated by specialist packaging management companies help to reduce costs and avoid pallet 'rustling'.

A pallet system is more complex than a simple pallet. It consists, effectively, of a large box that can be moved by fork-lift truck and is generally collapsible. Systems of this type offer both stability and protection, and are produced by most of the UK's main packaging manufacturers. They range from light (around 30 kg) corrugated board/plastic units that consist of a robust plastic base and lid, both locking to a deep, heavy-duty corrugated board 'collar', to heavy-duty plastic and wooden pallet boxes that weigh around 60 kg.

### 2.2.2 Drums and IBCs

Drums and intermediate bulk containers (IBCs) are also a traditional form of re-usable packaging. Now made of steel and plastic, they are available in a range of sizes.

### 2.2.3 Separators, layer pads and collars

Various types of separator and layer pad are currently available. They can be of corrugated board or plastic, and either flat (eg layer pads) or moulded to accommodate specific shapes such as bottles. Interlocking collars, sometimes made from wood and hinged at the corners, are also available. As well as separating goods, these items improve stability. They can all be either rented or purchased outright.

### 2.2.4 Slip sheets and push-pull units

Slip sheets are plastic or corrugated sheets that can be placed under loads as an alternative to a pallet. They are handled using a special type of fork-lift attachment called a push-pull unit.

### 2.2.5 Plastic boxes

Almost every conceivable type, shape and size of plastic tray and crate, including fixed, folding and wheeled (dolly) types, are available from the main UK plastic packaging manufacturers.

### 2.2.6 Metal crates and stillages

Metal crates and, more particularly, collapsible wheeled cages/stillages are still widely used in the UK.

Further details of all these systems can be obtained from manufacturers.

Certain types of primary packaging, eg textile yarn cones, can also be re-used within a closed-loop system.

You can obtain re-usable packaging in one of two ways:

- you can select those off-the-shelf designs that most closely meet the requirements of your products;
- you can have bespoke units designed and tailored to your particular operation.

Don't be put off by the initial cost of switching from one-trip to re-usable packaging. This cost is usually more than outweighed in the longer term by the benefits of packaging re-use.

When making the change to re-usable packaging, don't simply replace your existing types of packaging with equivalent designs in more durable materials. Take advantage of the opportunity to re-evaluate fully your use of containers. This will mean monitoring your current packaging use<sup>1</sup> and deciding whether it can be completely overhauled. Answering the following questions should help you.

### What are your current packaging constraints?

Packaging is required for five main reasons:<sup>1</sup>

- to protect the product, eg against physical damage, temperature change, moisture ingress;
- to contain the product, eg chemicals or hazardous materials;
- to facilitate product handling, eg by ensuring that units are compatible with the handling equipment and transportation facilities that are likely to be used;
- to facilitate product storage, eg by ensuring that units have the correct dimensions and strength for safe storage;
- to facilitate product identification, eg minimum labelling required for hazardous materials.

Determine the importance of each of the above in your particular situation, and identify those requirements that are an essential component of your packaging design. You should end up with a series of specifications that you can use in the container design process.

### How many levels of packaging do you need?

To determine the number of levels of packaging that are necessary, you need to pay particular attention to:

- the minimum unit of delivery;
- the potential for using standardised containers.

Once you have monitored your current packaging use, you should be able to determine a **minimum unit of delivery** for each product. For example, if almost every consignment of a particular product is a multiple of 100, then you could make your minimum transit batch 100. Your choice of packaging will then depend on the size of the product and the nature of your deliveries:

- If there is no regular pattern to your deliveries, then re-usable packaging is less likely to be an option. Provided the product is small, your packaging might then consist of a moulded paper tray, specially designed to support, say, ten items, with trays being packed ten deep in a cardboard box.

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<sup>1</sup> For more details see Good Practice Guide (GG140) *Cutting Costs and Waste by Reducing Packaging Use*, available free of charge through the Environmental Helpline on freephone 0800 585794.

- If there is a regular pattern to most of your deliveries, you might consider replacing the cardboard box with a plastic box that can be routinely returned.
- If the minimum unit of delivery is too large or too heavy for easy handling, you might consider an additional packaging level to overcome this, eg a roll cage. For instance, if your minimum unit of delivery was 1 000 items, you might use a roll cage with ten shelves, each containing a plastic box with 100 product items packed in protective paper pulp trays.



*A typical roll cage*

Where your product range permits, you may be able to use a small range of **standardised** re-usable external containers and incorporate liners that are customised for individual products. Unless there are good reasons for custom-designing the entire packaging system, you will find it much cheaper to choose external containers from a supplier's standard range and use customised liners. However, there may be circumstances where standardisation is inappropriate. For instance, if you produce a wide range of products and the minimum unit of delivery for the smallest is one, then using a standardised box - say, one designed to take one unit of a product ten times the size of yours - would involve a considerable waste of both space and materials.

Another standardisation option may be to use your chosen transport containers in place of the internal containers currently used on the production line.

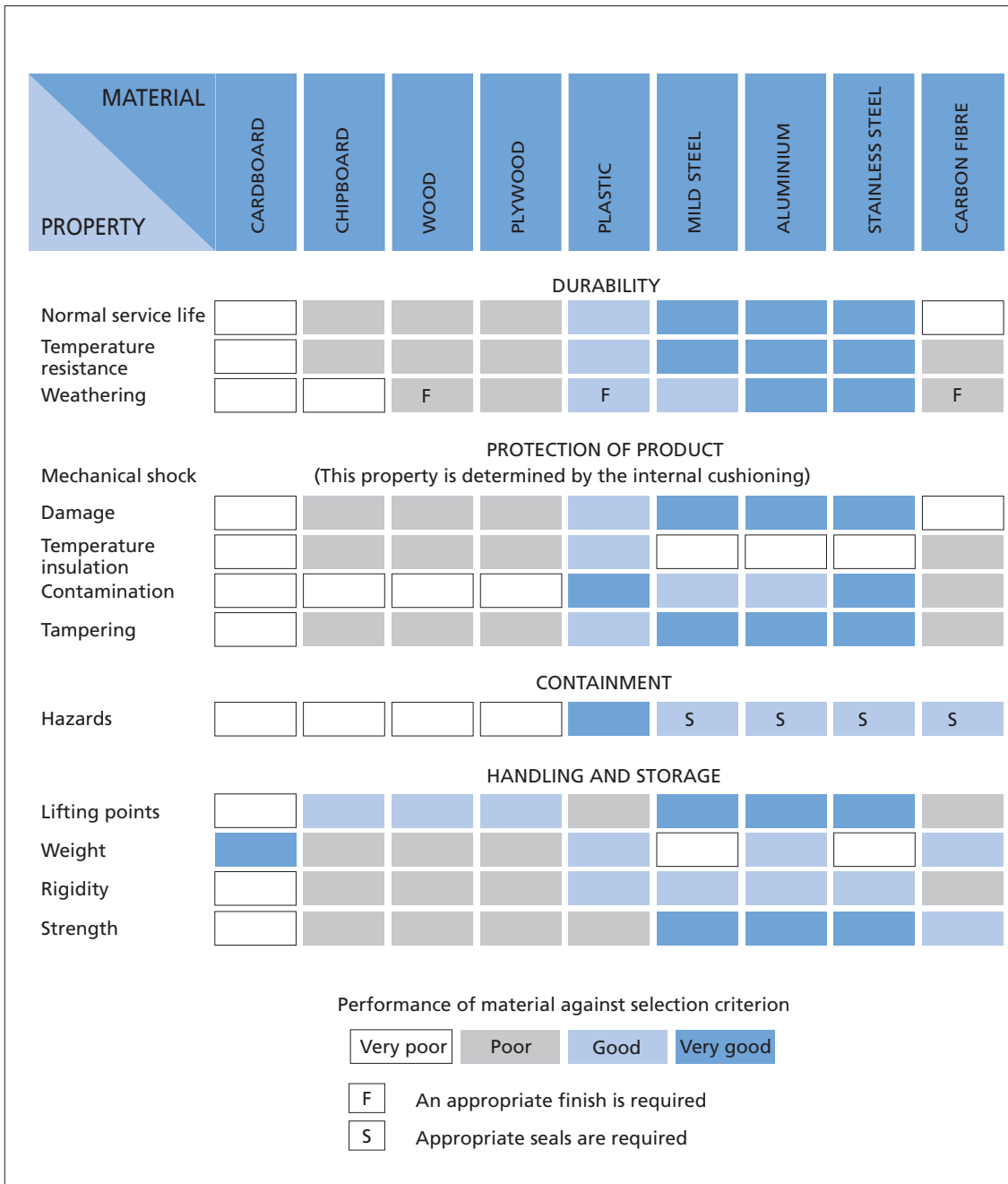
### **What types and grades of material should you use?**

Materials that are strong and durable, such as metal and plastic, are also more expensive packaging options. To minimise your initial outlay on re-usable packaging you will need to compromise. Whether you are selecting existing packaging or designing new units, choose the cheapest materials and the minimum thickness that will:

- satisfy your specifications;
- give you an acceptable service lifetime.

It is important to choose materials that are appropriate to your particular application. Once you have sufficient information about your requirements, initiate discussions with your packaging suppliers and explore the options open to you. In some cases, you may find it cost-effective to use combinations of materials, eg mild steel with a plastic liner where both strength and containment are important.

Fig 2 summarises the key properties of certain common materials against the key packaging requirements. Materials costs generally increase from left to right.



**Fig 2 A guide to materials selection**

**Which design features are important?**

It is not the purpose of this Guide to give specific design guidelines for re-usable containers. As with materials, you should choose designs that are appropriate to **your** particular application. Again, once you have sufficient information about your requirements, initiate discussions with your packaging suppliers and explore the options open to you.

The Environmental Helpline (freephone 0800 585794)  
can help you to identify packaging suppliers and designers, specialist packaging management companies and other valuable sources of information.

## Key design points for consideration

**Keep the outer container simple and standardised if possible. Design separate customised liners to fit different products.** The liner can incorporate much of the functionality required, eg cushioning for shock resistance and product insulation against external temperature variations. An innovation that might be appropriate is inflatable packaging: air is excellent for insulating and cushioning and is very lightweight.

**Look for opportunities to use your transit packaging within your production process.** You may be able to design customised liners for components and intermediate products that fit the same outer container that is subsequently used for off-site transportation of the finished product. This will tend to simplify handling steps, reducing effort and improving the availability of transport. It will also give you flexibility in your stocks of containers.

**If durability and weathering are important issues, pay attention to the external finish.** Although buying a galvanised instead of a mild steel drum will cost you more initially, it could save you money in the long term by significantly extending the drum's effective life. Skimping to save costs in the short term can cost money in the longer term, so look ahead.

**Continue to consult with other interested staff within your company.** You will then be more likely to identify possible problems before you finalise the design. For instance, if you opt for roll cages check there is a straightforward path for these from production to the loading bay.

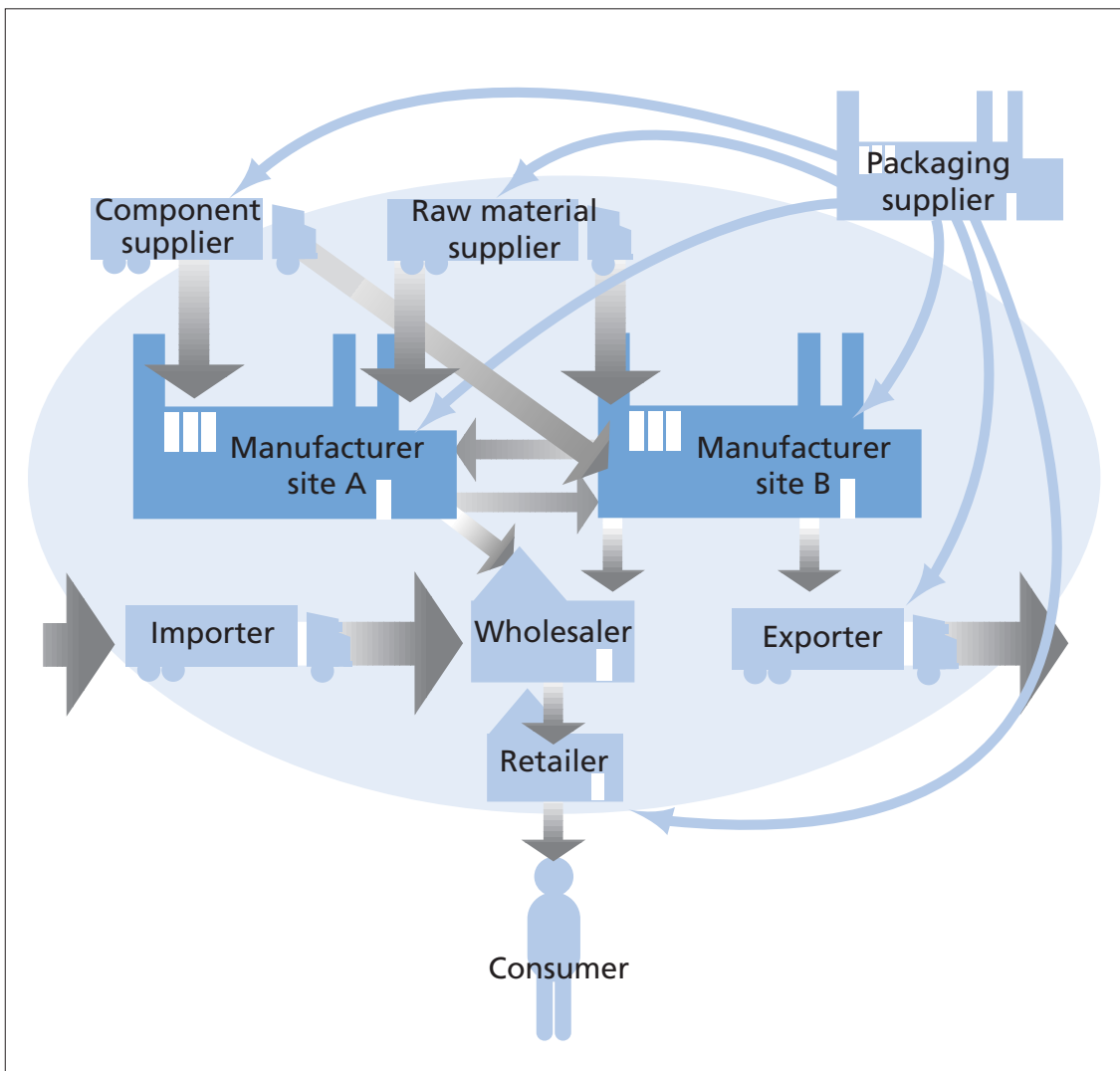
**Design your containers to stack or 'collapse' wherever possible.** This means that they will take up less space when empty. It also facilitates operations at the collection point and increases transport flexibility for the return journey. Such an approach need not compromise strength or rigidity.

**Design your containers for effective cleaning and maintenance.** Make the design as simple and accessible as possible, avoiding 'dead' space and unnecessary crannies that will be difficult to clean. Make sure that it is easy to fit and remove seals. Consider a modular construction that can be dismantled easily for cleaning or maintenance, eg a container made from moulded plastic components that slot together. Modular construction offers the additional advantage of component replacement to repair damage or provide a 'face-lift'. However, such containers are likely to be more costly and possibly less robust than containers moulded in one piece. Assess the pros and cons of each option carefully.

**Consider your labelling options.** If re-usable packaging incorporates a frame or slot that can take a standard label plate, every company using that packaging can add the appropriate identification in terms of company logo, and product and journey details. Although more expensive than adhesive labels, this type of labelling is both more robust and better looking.

Switching to re-usable packaging will save you money only if that packaging is **actually re-used**. It is therefore important to manage the logistics so that your packaging is returned to the right place within an appropriate timescale. This is not necessarily a simple exercise.

Fig 3 represents the supply chain logistics for a fictitious manufacturing company with two manufacturing sites. Each supply journey that involves packaging is represented by a solid arrow. Each such journey that both starts and finishes within the oval boundary on the diagram should, ideally, have an arrow in the opposite direction to indicate the rapid return of packaging to the supplier for re-use.



*Fig 3 Supply chain logistics for a fictitious company with two sites*

From the start you will need to assess the costs and plan the logistics of your entire cycle of packaging re-use. This will involve identifying who is responsible for returning the packaging and how this responsibility is to be enforced.

If yours is a small company, you will need to evaluate fully the advantages and disadvantages of a re-usable packaging scheme before adopting this particular option. If you decide to initiate and manage such a scheme yourself, you will need to be sure that you are comfortable with the

principles and practice involved. If you are reluctant to take on the additional management burden, you may be able to work with your larger suppliers or customers and encourage them to undertake the necessary organisation and management. Another option is to introduce a third party to run the scheme on your behalf.

Whichever approach you use, it is essential to involve as many of your colleagues as possible in the decision-making process. Consultation should:

- ensure that they and their departments are aware of the benefits of the project and support it fully;
- encourage them to contribute their views and ideas, which may prove valuable in setting up a workable scheme.

### **Specialist packaging management company**

A supermarket chain has recently initiated a packaging re-use scheme in association with its fresh produce suppliers. This has involved the introduction of a 'pool' of standard re-usable plastic containers which are transported between the different suppliers and customer sites. The scheme is managed by a specialist packaging management company.

The following Sections examine some of the practical issues involved in managing re-usable packaging to obtain maximum benefit.

## **4.1 'PEOPLE' ISSUES**

It is people, ultimately, who make (or fail to make) a success of packaging re-use schemes, as it is they who are responsible for ensuring the timely return of containers for re-use. The key 'stakeholders' in such a scheme are:

- the operational, transport and warehousing staff directly involved in the process;
- the production staff, if packaging is delivered direct to the production line;
- the purchasing and finance staff concerned with its cost-effectiveness;
- the marketing staff who turn the scheme into a commercial advantage by communicating its existence to shareholders and to others outside the scheme;
- the environmental or health and safety staff who ensure that you meet regulatory requirements;
- management personnel who have overall responsibility for the process and its success or failure;
- customers directly involved in the process;
- your packaging suppliers, who may be involved in managing as well as supplying the containers;
- any third-party packaging contractors involved in managing the process;
- the packaging regulatory authorities who need to be shown that you are meeting your obligations.

Several factors can contribute to a scheme's success:

- The integration of a scheme into the normal operation of the business so that it is not perceived simply as an 'extra'.
- The commitment of the staff involved to the scheme's success, so that they feel they 'own' their part of the process (one weak link can cause you to lose the benefits of re-usable packaging).

- Financial incentives, which might include:
  - for individual staff, bonus schemes where personal and company performance targets are met;
  - for the company, improved profitability and an increased market share as a result of positive 'green' credentials;
  - for your customers, lower product costs and reduced disposal problems and costs.
- Non-financial incentives, which might include:
  - recognition for individuals - a 'pat on the back' from management or formal recognition for 'Champions' in company newsletters;
  - recognition for the company in trade journals and by trade associations;
  - the 'feel-good' factor - when staff know that they are contributing to environmental improvement; helping the company to become more profitable; meeting their personal performance targets; or adding an extra dimension to a routine job, thereby making it more interesting.
- Staff contributions to relevant suggestion schemes, implementation of appropriate suggestions, and appropriate recognition for the staff concerned.
- Regular communication with staff so that they are aware of the progress that is being made and how the company and individuals are benefiting. You can achieve this by making judicious use of notice-boards and newsletters, and by making sure that the information is presented simply and graphically.
- The involvement of staff in the decisions that affect them.

You will need to make a particular effort where your customers are actually other sites within your company. There are two points in your favour: you should have more control over the transportation and collection of containers; and you should have the commitment of the corporate centre to the scheme. On the other hand, there is a risk that other sites will view the scheme as an imposition from above and implement it half-heartedly. It is important for you to show the various sites what is in it for them and to involve them at an early stage in the scheme's development.

## 4.2 OVERALL OPERATION AND FINANCES

You do not need to operate a re-usable packaging scheme yourself. It may make more sense for such a scheme to be managed by:

- a large customer - where your company is one of several suppliers;
- the supplier of the containers - where this organisation is supplying the same container to several companies;
- a specialist third party whose business is to manage such schemes under contract.

Whether you choose to run a scheme yourself will depend on:

- the scope of the scheme and where your company stands in the supply chain;
- the amount of effort required;
- the up-front investment and operating costs;
- the feasibility of finding another operator.



## 4.2.1 The scope of the scheme and where your company stands in the supply chain

If yours is a small company supplying one or more large retailers, the basic problems you might encounter in operating your own packaging re-use scheme include:

- limited influence with your customers in ensuring the timely return of containers;
- limited control over transportation - where this is subcontracted - because of the relatively low volumes of packaging involved;
- high-mileage journey legs because of customer location;
- complicated return-journey and container-stock requirements because any one customer site will have a limited number of containers per journey or irregular consignments.

Small-scale schemes can work well in some sectors of industry where firms are concentrated in particular regions. For example, some textile spinners with local customers successfully operate yarn cone deposit and return schemes.

Large-scale packaging re-use schemes are generally more efficient than smaller ones. They typically involve a few large retailers or manufacturers and a large number of small suppliers scattered across the country. They offer several advantages:

- The greater number of site locations, journeys and containers involved makes it easier and cheaper to smooth out local variations and maintain packaging stocks at levels that will match each supplier's demand.
- Managers tend to have more influence over the standardisation and prompt return of containers. They can also negotiate better prices per unit container for larger orders.
- It is possible to satisfy an urgent demand for empty containers from stocks at local depots, while balancing overall stocks by transferring containers between depots. This limits the cost of urgent deliveries by localising them, while allowing the long-distance transfers between depots to be made less urgently and in bulk (at a much lower cost).

Fig 4 illustrates in simplified form how such a scheme might work.

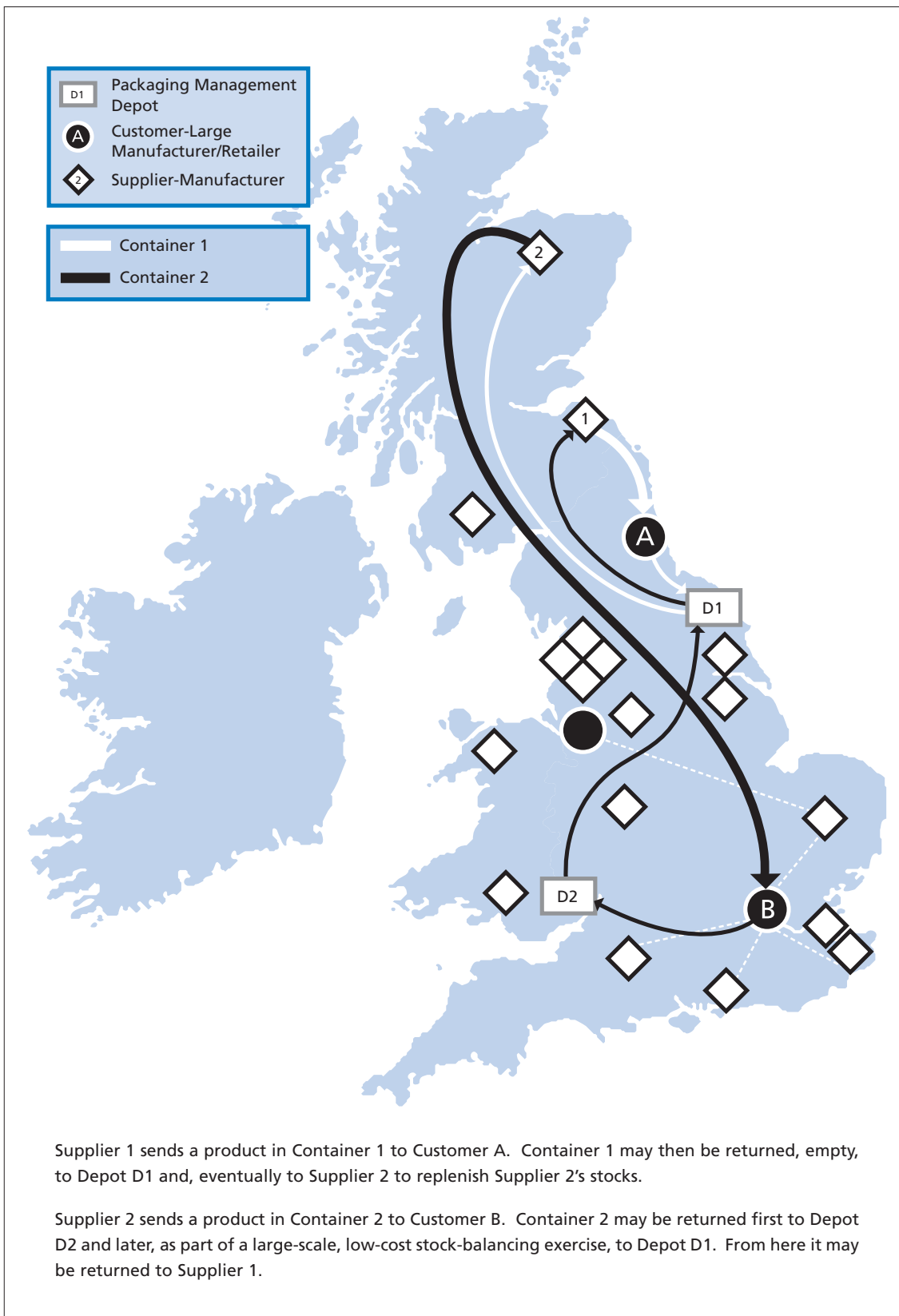
If the principles of Fig 4 appear daunting, you might prefer to ask a third party to manage the scheme. Industry Example 2 illustrates how Ford saved money by using a specialist packaging management company to manage a scheme involving Ford's suppliers.

### Effective third-party management

IBC Recovery Services Ltd offers a different type of third-party management. It was started in 1989 to provide a cleaning and inspection service to users of flexible IBCs (FIBCs). It collects used and empty FIBCs (essentially very large polypropylene bags) from its customers. These are cleaned, checked for damage, and returned to the customer. IBC Recovery Services Ltd carefully records all faults and defects found during checking and provides a regular report to customers, thereby helping them to identify problem areas and improve procedures. One of IBC Recovery Services Ltd's major customers, Warwick International, is a company that uses more than 40 000 bags each year for packaging its speciality chemicals. Warwick International estimates that it can save about £25/bag by re-using it five times. Furthermore, its recycling levels are increasing, with average savings of £25 000/year.

## 4.2.2 The amount of effort required

Although you will maintain greater control by operating your own packaging re-use scheme, you will need to assess carefully whether you have the necessary supervisory resources in-house. You will need to ensure that people with the appropriate skills can give sufficient 'quality' time to the container management process - handling, transportation, cleaning and refurbishment, and tracking.



**Fig 4 Simplified illustration of a large-scale packaging re-use scheme**

For maximum environmental and cost benefit, scheduling of these journeys will make use of transport already committed to routine deliveries or return legs.

The availability of appropriate transportation staff can be particularly important. Normal delivery drivers may have to be prepared to put in extra effort collecting and loading the empty containers at the customer's premises, either routinely, or on an occasional basis when this cannot be undertaken by the customer.

A scheme is unlikely to work smoothly if you simply add the associated responsibilities to those of already overloaded staff. Any scheme that is worth doing is worth doing properly. In the case of a large scheme, it may even be cost-effective to have a dedicated scheme manager with no other duties.

If you think staffing could be a problem, consider asking a third party to manage the scheme.

### 4.2.3 Initial investment and operating costs

A scheme is viable only if the projected operating costs are less than your current costs, and if the cost savings and other benefits afford a reasonable payback on the initial investment. Before you make a detailed assessment (see Section 5), it is worth examining the likely one-off 'up-front' costs of operating your own scheme to ensure that they are within your reach. These costs include:

- the cost of the initial purchase of re-usable containers;
- the cost of modifying handling (including cleaning and refurbishment) and transport facilities;
- set-up costs for the tracking system - computers, software packages, electronic 'tags', detectors, labelling machines, etc;
- set-up costs for staff to manage the scheme.

You may be able to reduce the initial purchase cost by renting the containers rather than buying them or by using a slightly less sturdy design. Polaroid<sup>2</sup>, for instance, was put off, initially, by the high purchase cost of rigid plastic crates. After examining alternative designs, the Company found that flexible corrugated plastic boxes would meet its requirements. These cost on average only £1.50/unit and were sufficiently durable to be used more than 200 times.

However, it is important to remember that you will need to have more re-usable containers in circulation than the number actually required at any one time for the transportation of goods. The total purchased or rented will depend on how quickly containers are returned: the greater the delay, the greater the total number you will need to maintain the flow of goods. A factor of three is not unusual to provide adequate allowance for containers in the course of being returned and those awaiting return at the customer's site. You will need to allow for this in your costing (see Section 5). The calculation principles involved are summarised in Table 1 below.

**Table 1 Sample values for calculating the number of containers required**

Container location	No. of containers
Loaded on the lorry as it leaves the product supplier's premises	200
In use at the product customer's site (internal transportation, storage)	30 <sup>1</sup>
At the product customer's site, empty and awaiting collection	200
Being inspected/cleaned at the product supplier's site	30 <sup>1</sup>
Being refurbished or awaiting refurbishment at the product supplier's site	10 <sup>2</sup>
Being loaded/stored at the end of the production line for the following week's batch	30 <sup>1</sup>
At the product supplier's site awaiting disposal	2 <sup>3</sup>
<b>Total</b>	<b>502</b>

<sup>1</sup> Assuming that these actions take a full seven-day working week to complete for 200 containers.

<sup>2</sup> Assuming that 5% of containers returned each week are damaged but can be refurbished.

<sup>3</sup> Assuming that 1% of containers returned each week are damaged and cannot be refurbished.

<sup>2</sup> Details can be found in Good Practice Case Study (GC131) *Profit from Packaging Changes*, available free of charge through the Environmental Helpline on freephone 0800 585794.

To the total in Table 1 you should add:

- a reserve stock for contingencies: this might be a full week's requirement to allow for the non-return of empty containers one week;
- a safety margin of 5% for unexpected occurrences.

The final total is then  $502 + 200 + 35 = 737$ , more than three and a half times the number of full container journeys per week.

#### 4.2.4 The feasibility of finding another operator

There are many advantages of using a third party to manage a scheme, provided you can identify one. Begin by talking to your major customers or packaging suppliers: find out whether they are already operating such a scheme or whether they could be persuaded to start one. The Environmental Technology Best Practice Programme's free Environmental Helpline service (freephone 0800 585794) can provide you with contacts who will help you to identify packaging suppliers and specialist packaging management companies for further discussions.

### 4.3 TRANSPORTATION AND COLLECTION

The timely collection and return of containers is the key to success in a packaging re-use scheme. It is unlikely to be environmentally sustainable for routine extra journeys purely for the delivery/collection of empty containers, to be part of the system

Make it policy to collect empty containers at the same time as delivering the full containers (back haulage). If your company has its own in-house transport fleet that will return empty to your site (or to a depot) after delivery, this can be relatively simple to arrange. Nevertheless, there are potential difficulties. For instance, if a lorry is delivering to several sites during one trip, putting empty containers into the back of the lorry at each site means that these may have to be off-loaded before the second and subsequent consignments can be delivered. The problem can be avoided if side loading/unloading is possible, or if the returned packaging is collapsible.

Make the customer responsible for collecting together the empty containers for return. One option is to draw up a formal contract spelling out each party's responsibilities, emphasising the associated benefits and outlining the penalties for not complying. If you feel that this approach could sour your relationship with your customer, opt for a more informal 'gentlemen's agreement' - but remember that such agreements are very hard to enforce and could lead to arguments that will damage your relationship anyway.

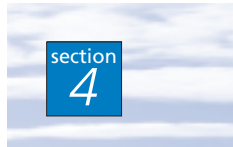
Maintain a high profile for your scheme by getting your driver to issue a receipt for empty containers returned at the same time as the customer signs for product delivery.

### 4.4 CLEANING AND REFURBISHMENT

Make sure that re-usable packaging is cleaned and checked for damage before each re-use. The direct consequences of a container failing during service could include:

- contaminated or damaged product;
- missed deadlines;
- damage to handling facilities or injury to staff.

One indirect consequence is that failure can undermine the credibility of a re-use scheme if people (rightly or wrongly) attribute that failure to the fact that the container has been re-used.



You will need to monitor or review the results of cleaning to maintain acceptable standards. You will also need to ensure that the checks carried out cover all of the key aspects of the packaging, from seals and surfaces to lifting and handling points. As indicated in the example in Section 4.2.1, full records of damage to containers can help to highlight and eliminate bad handling practices.

## 4.5 TRACKING RE-USABLE PACKAGING

A range of technologies is available for tracking individual containers and their contents. These include standard and two-dimensional bar codes, magnetic memory chips and tags, and distance-readable tags that use radio frequencies or microwaves. Any of these can be used to tag containers. They can be fitted either to every item of packaging (usually where the value of the contents is high), or to a random sample to allow statistical tracking and control of packaging location.

A consortium of industrial companies is currently collaborating to explore the use of tags both for packaging and in the manufacturing process. For further details, contact the Environmental Technology Best Practice Programme's Cleaner Technology Projects Manager via the Environmental Helpline (freephone 0800 585794).

Having considered the issues raised in Sections 3 and 4 of this Guide, you should now be able to assign costs to all aspects of the design, choice and management of re-usable packaging. These costs will consist of both one-off costs, and costs that recur each year.

You should also be able to assess what your current packaging requirements are costing your company each year.

A packaging re-use scheme is viable only if:

- its annual operating costs are below the annual costs of your current packaging system;
- the annual cost savings give an acceptable payback on the one-off costs of setting up and implementing the scheme.

To be realistic, any comparison of annual operating costs will need to take into account:

- the additional benefits of packaging re-use in terms of reduced handling, storage, etc;
- the lifetime of any possible re-use scheme so that it allows for the expected increases in one-trip packaging disposal costs, etc.

The payback issue varies in importance depending on whether you are purchasing or renting the packaging, and on the level of payback that is acceptable. If you are renting the packaging and paying an annual fee to a third party to manage the scheme, the one-off costs will be low and payback will be less important than if you are investing capital in a substantial number of containers for a scheme that you are intending to manage yourself. In the latter case, the acceptable level of payback will depend on your business. You should, however, take into account the lifetime of the re-usable packaging. For example, if the containers will last for an average of ten years, then a four-year payback period might be attractive.

To determine the costs and benefits to your company of a re-usable packaging scheme, follow the procedure outlined below.

Make photocopies of the form *Costs and Benefits of a Re-usable Packaging Scheme* (overleaf).

1. Estimate your current annual total transit packaging costs: this will include the costs of purchase of new packaging, any disposal costs and associated management time, and compliance costs. These are your base-line costs.
2. Complete one copy for each of the proposed re-usable packaging schemes being considered.
3. Assess the cost benefits and payback of each re-usable packaging scheme as follows:
  - Annual scheme savings = Annual scheme costs – Annual baseline costs
  - Scheme payback = Ongoing scheme costs/Annual scheme savings

## Costs and Benefits of a Re-usable Packaging Scheme

EXPENDITURE	Staff days	Day rate	Staff costs	Other costs	COMMENTS
<b>ONE-OFF COSTS</b>					
Container design					
Container selection					
In-house consultation					
External consultation					
Container purchase					
Warehouse modifications					
Transport modifications					
Process modifications					
Scheme set-up (staff)					
Tracking system set-up					
<b>TOTAL ONE-OFF COSTS</b>					
<b>ANNUAL COSTS</b>					
Container rental					
In-house management					
External management					
Container inspection					
Container cleaning					
Container refurbishment					
Container replacement					
Container disposal					
Compliance costs					
Damaged returns					
Additional transport costs					
<b>ANNUAL BENEFITS</b> <i>(enter savings as a negative cost, eg - £2 500)</i>					
Reduced handling effort					
Reduced warehousing					
Reduced product damage					
Improved transport usage					
Improved market share					
<b>TOTAL ANNUAL COSTS</b>					

**If you are seriously considering investing in re-usable packaging:**

- ✔ Make sure that you understand fully how packaging is used in your company. Identify any areas where you are using more packaging than you need. Consider whether you can standardise any packaging. Use Good Practice Guide GG140 to help you.
- ✔ Identify any clear opportunities for the replacement of one-trip packaging with a re-usable alternative. Assess the likely costs and benefits of the various options, and identify where maximum savings are to be made.
- ✔ Examine the various types of re-usable packaging currently available. Identify those most suited to your company's needs. You might need to consider a new design that achieves 'more with less' and/or improves handling and transportation. Alternatively, you may decide to upgrade your existing packaging by specifying a more durable material.
- ✔ Be quite clear how any re-usable packaging scheme will be managed, and who will be responsible for that management - yourself, a supplier or customer, or a third-party organisation specialising in this type of activity. Establish clear guidelines and agreements with the suppliers and customers involved.
- ✔ Give careful consideration to the issue of packaging return. Link collections with deliveries. Make sure that re-usable packaging is traceable.
- ✔ Make sure that you draw on all possible sources of help and advice when setting up your re-usable packaging scheme. Draw on the experience and ideas of employees, packaging manufacturers, customers and suppliers. Obtain advice from advisory bodies such as Trade Associations.

**If necessary, obtain help. The Environmental Helpline (0800 585794) can:**

- Send you copies of relevant Environmental Technology Best Practice Programme publications.
- Suggest other sources of information.
- Provide free, up-to-date information on a wide range of environmental issues, legislation, technology and equipment suppliers.
- Arrange for a specialist to visit your company if you employ fewer than 250 people, at the discretion of the Helpline Manager.

## Re-usable stillages and pallets for transporting polypropylene film

**A company manufacturing polypropylene film to individual customers' specifications has reduced the packaging costs at its Swindon site by 50% by introducing re-usable metal stillages and other re-usable packaging components. Its customers have benefited from the associated reduction in packaging disposal costs.**

### Introducing Packaging Re-use

The polypropylene film, which varies in thickness and length according to orders received, is rolled on to reels of varying size. Originally, the reels were put onto one-trip poly cradles and pallet systems for storage and transportation. Each cradle cost £50 - £60.

Hoechst Trespaphan is now replacing most one-trip poly cradles with re-usable 'stillages' - simple metal frames that carry the reels in a similar way to the traditional cradles. The cradles needed to be sufficiently adaptable to accommodate the typical variation in product batches within a relatively small range of packaging types and sizes. The Company therefore worked closely with a supplier during the design stage and has now introduced stillages in four different widths to cater for a range of customer requirements.

About 2 000 stillages are now in use for distributing product to regular customers. Empty stillages are collected for re-use when new product is delivered.

Initially, the stillages had a painted finish. However, because they are usually stored outside, this has now been replaced with a galvanised finish for durability and rust resistance. New stillage dimensions are trialled when a need is established.

The Company supplies film to some customers on re-usable pallets and end plates. The dimensions of these vary, depending on the product size. The Company works with a third-party company, which collects and refurbishes the pallets and plates for re-use and then sells them back to Hoechst Trespaphan at around one third of new cost. Pallet and end-plate recovery rates have recently reached almost 50%, and there are typically 2 500 pallets on site at any one time.

Between one-third and one-half of Company packaging is currently being re-used and the aim is to improve on this in the future.



*Reels of polypropylene film in a 'stillage'*

## Cost Savings and Environmental Benefits

Packaging re-use and related initiatives have allowed Hoechst Trespaphan to cut the costs of packaging for each tonne of product by around 50% since 1990. The Company has achieved estimated total annual savings of £100 000 in packaging material costs. The purchase cost of each stillage is repaid after six uses. The Company's customers are also saving money because they no longer have to dispose of one-trip packaging.

## Other benefits have also been achieved:

- better stacking allows the trucks used for transportation to be filled closer to capacity;
- improved packaging design, with parts of the packaging being eliminated through the use of new, stronger materials.

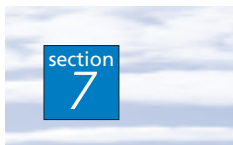
## What Next?

Hoechst Trespaphan has been operating this scheme from its Swindon site, and plans to extend it both to other customers in the UK and to exports to France. The Company's other sites across Europe, having seen the savings being achieved at Swindon, are also considering this new approach to packaging management.

## Company Comment

David Chatfield of Hoechst Trespaphan says:

*“These two initiatives have given us the flexibility to introduce re-usable packaging across a range of products, and have helped us to achieve considerable cost savings.”*



# INDUSTRY EXAMPLE 2

## Re-usable packaging as a supply chain initiative

**An automobile manufacturer purchasing components and parts from more than 100 small companies has achieved significant cost savings by providing its suppliers with rented, re-usable plastic containers instead of one-trip disposable packaging.**

### Introducing Packaging Re-use

Formerly, Ford's suppliers transported the components and parts required in one-trip, disposable cardboard packaging. Ford disposed of this packaging, but now works with a specialist third-party packaging management company (CHEP) to provide suppliers with rented re-usable containers. These are used to transport a wide variety of parts and components, and are adaptable enough not to need alteration when new items are introduced.

The Company developed this supply chain initiative in consultation with its suppliers. Groups of 40 - 50 suppliers were invited to question-and-answer sessions, and pilot trials were undertaken with key firms. The standard plastic boxes developed as a result of the consultations have a total volume of 0.77 m<sup>3</sup> and are designed so that, when stacked correctly, they can fill a truck closer to capacity. They are also collapsible, enabling them to be stored and transported more easily when empty.

Suppliers rent containers from CHEP as they need them, incurring both an issue fee and a daily rental charge. The containers are filled and transported to Ford, which then reimburses the supplier for both the issue fee and the rental charge - but only up to a maximum of five days. Suppliers have to meet the rental charges themselves if they keep containers for longer than five days. This five-day limit encourages efficient container use. It also prevents waste and/or stockpiling.

CHEP identifies the supplier to which the empty containers will be delivered. Ford Transport moves the empty containers from the Ford site to the next supplier. Containers are owned by CHEP and may be used by any CHEP customer, whether for deliveries to Ford or other automotive companies.

The new scheme proved easy to introduce and manage because it built on established working methods. It was implemented initially at seven car trim and assembly sites across Europe producing a range of models.

### Cost Savings and Environmental Benefits

The scheme is estimated to have reduced the amount of one-trip packaging purchased by the supply chain - and disposed of by Ford - by about 23 000 tonnes/year. The cost savings associated with the avoided cost of compliance with new packaging laws and the reduced disposal costs for one-trip packaging are well into six figures.



*Re-usable containers at Ford*

Other benefits of the new re-usable containers include:

- better product protection during handling and transportation, thereby reducing accidental damage;
- better stacking, allowing trucks to be filled closer to capacity;
- reduced storage and transportation requirements because of the collapsible nature of the containers;
- improved working conditions for staff because of better access and handling.

The overall benefits have provided an acceptable return on set-up and operating costs. Ford was able to minimise its initial investment by renting rather than buying the containers, while the emphasis on efficient use and the minimisation of surplus stocks has helped to keep down operating costs.

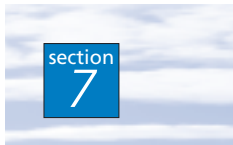
### **What Next?**

Ford currently rents around 200 000 standard containers and plans to increase this in the near future. It is also considering extending the range of re-usable packaging available (including metal containers). This would provide a greater choice of design and meet a range of different needs.

### **Supply Company Comment**

Chris Wallett of Gill's Cables, one of Ford's supply companies, says:

*“As well as saving money, we have been able to improve our health, safety and material handling.”*



# INDUSTRY EXAMPLE 3

## Packaging re-use as part of an international packaging standard

**A company manufacturing and distributing a wide range of document processing equipment throughout the world has achieved significant cost savings by designing and developing a packaging standard that incorporates packaging re-use.**

### Introducing Packaging Re-use

Xerox has more than 500 component suppliers in various parts of the world. Historically, these suppliers have used one-trip disposable packaging. This has involved more than 25 different styles of pallet and 8 000 different styles of box. New parts were delivered in disposable corrugated cardboard packaging with up to 50 component parts.

During the past ten years, the Company has carried out a major review of packaging and has designed and developed a worldwide 'packaging standard'. This consists of two standard pallets and eight types of re-usable container.

The new system was set up over a three-year period. It involved teams of 20 people in the UK, with another 20 participating in discussion workshops throughout the world. It has been designed to accommodate existing manufacturing processes and has required minimal change to production facilities.

The new standard packaging is used across the supply base for delivering parts to every manufacturing plant in four continents. The range of container sizes can meet most suppliers' needs, and little additional packaging is required.

Suppliers purchase the standard packaging from Xerox at a fraction of the cost of the previously used disposable packaging. After use, both containers and pallets are passed to one of the national re-use centres for inspection, refurbishment (where necessary) and resale to the suppliers. The Company purchases new containers and pallets to replace those that are beyond repair and have to be disposed of.

Xerox currently has 25 000 standard containers in the UK. These are re-used between three and eight times. Pallets are typically re-used around 20 times.

The Company has also introduced about 20 000 re-usable steel 'totes' (crates) for trade with its European customers. Standard totes can be adapted using bolt-on extensions: this allows the conveyance of a range of products, including add-on options such as sorters. To minimise the need for additional packaging, each tote incorporates a clamping mechanism that secures the product base.

The totes are also used for the collection of redundant equipment. Like many suppliers of photocopying equipment, Xerox will take back its products from customers at end-of-life, thereby allowing components to be inspected and either recycled, where possible, or disposed of appropriately.



*Extending a standard steel 'tote'*

## Cost Savings and Environmental Benefits

The new, re-usable containers have provided estimated direct cost savings to Xerox and its supply chain of more than \$1.5 million/year. This has derived mainly from the considerable reduction in the purchase and disposal of one-trip packaging.

Other benefits that have accrued include:

- a reduced labour requirement for packing, unpacking, loading, storage and handling as a result of improved packaging design and the elimination of straps and bolts;
- a large reduction in the number of types of packaging;
- better stacking, allowing trucks to be filled closer to capacity;
- improved product tracking, achieved by using the new packaging to return product from customers at end-of-life.

The introduction of re-usable totes is eventually expected to reduce annual delivery costs by about \$1 million (around £600 000/year).

Although total costs are difficult to quantify, Xerox is satisfied that the scheme has provided a good return on the effort and investment involved. Furthermore, the Company gained external recognition when it was awarded the 1997 Packaging Industry Award for Environmental Responsiveness.

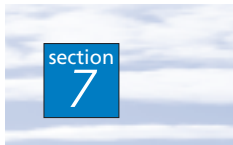
## What Next?

Xerox is continuing to investigate other opportunities for reducing costs through packaging re-use, and has plans to extend the use of totes to other parts of its business. The Company is also conducting a pilot scheme with suppliers based on the use of plastic containers. This initiative is expected to allow an increase in re-use rates and a reduction in the costs associated with waste disposal and container replacement.

## Company Comment

Bill Starkey of Xerox says:

*“We have found that creating a fail-safe closed-loop logistic pattern to enable packaging re-use can be great fun, very satisfying and hugely beneficial financially.”*



# INDUSTRY EXAMPLE 4

## Re-usable crates for the delivery of pharmaceutical products to wholesalers and intermediaries

**A pharmaceutical company has replaced its conventional cardboard box packaging with re-usable plastic containers for customer deliveries. It has thereby significantly reduced its own packaging costs and ensured that its customers benefit from the associated reduction in waste disposal.**

### Introducing Packaging Re-use

Prior to 1992, mixed loads of product were packed in cardboard boxes for regular delivery by truck to pharmaceutical wholesalers and intermediaries in the UK. The boxes, once emptied by customers, were thrown away, as were those received from other suppliers.

SmithKline Beecham has now introduced re-usable plastic crates for its customer deliveries. It selected standard off-the-shelf containers for this application and, in 1992, purchased 4 500 units from a specialist packaging supplier. Of these, about 75% are in use at any one time, and no additional purchases have been necessary. The containers are designed to be collapsed when they are empty. They are then stored by the customer for collection during subsequent deliveries.

The introduction of re-usable packaging has proved very straightforward. The Company made initial visits to its 70 customers to discuss the scheme and obtain their support, and then carried out introductory trials prior to implementation of the full scheme. Customers are delighted with the new system.

### Cost Savings and Environmental Benefits

SmithKline Beecham has significantly reduced its packaging purchase costs by switching to re-usable containers. Its initial investment in crates was £142 000, compared with £117 000 for one-trip packaging over three years. Over time, annual savings of around £39 000 have been accrued. The reduction in disposal and recycling costs is estimated at about £1 000/year.

The Company's customers have also benefited from the reduction in their waste disposal costs and the greater ease with which they can meet their legal obligations.

The switch to re-usable packaging also has other benefits:

- Even though the packaging has been designed to be collapsible after use, it is still more robust than the cardboard packaging and provides better product protection. Container breakages have been minimal.
- The modular design of the crates means that it is possible to replace broken parts rather than scrap the whole container.



*Packing product into re-usable plastic crates*

- The collapsible nature of the empty containers means that they take up less room in transport and storage.
- The containers fit onto standard pallets.
- Improved handling means there is less risk of injury to staff.
- Bar code labelling and tagging improve security and traceability, help to identify tampering, and make it easier for customers to find products.
- The collection of empty containers at the same time as the delivery of new product ensures efficient transport operations.

### **What Next?**

The Company's competitors are showing considerable interest in the scheme's success. This could lead to the development of an industry standard involving larger numbers of suppliers and customers.

### **Company Comment**

Peter Gormley of SmithKline Beecham says:

*“As well as saving money, our customers have welcomed this as a great initiative.”*

# INDUSTRY EXAMPLE 5

## Packaging re-use, minimisation and recycling in a pharmaceutical and toiletry manufacturing company

**A UK company that manufactures and distributes a wide range of pharmaceutical products, toiletries and cosmetics has substantially reduced its use of one-trip packaging by introducing re-usable systems and down-gauging certain materials. Boots has thereby achieved savings of around £140 000/year, with a further £75 000/year from initiatives in the recovery and sale of plastic waste.**

### Introducing Packaging Re-use

Boots Contract Manufacturing (BCM) manufactures cosmetics - lipsticks, nail polishes, etc - at Airdrie in Scotland. Items were packed traditionally in small board cartons holding three components and then into one-trip corrugated outers for shipment to the Nottingham warehouse. The corrugated outers were disposed of at the warehouse, and the inner cartons were transferred to plastic tote boxes ready for order picking and delivery to Boots The Chemists (the internal client). The inner packaging was disposed of at each retail outlet.

A project team representing both organisations concluded that large amounts of waste were being generated at both warehouse and retail locations, and developed an appropriate re-usable system.

The inner cartons have now been replaced by plastic 'clampack' folding blisters. These come in various sizes and are designed to have a life of at least five trips. They are returned by stores to the warehouse, where they are sorted before being returned to Scotland via existing transport.

The outer cases have been replaced by rigid plastic tote boxes or, in some cases, by corrugated plastic outers. The latter have been carefully designed to ensure efficient re-use. They use interlocking tabs rather than tape for closure, and a label pouch eliminates the need for sticky labels. They are also collapsible: 11 flattened outers can be slotted vertically into one made-up outer, thereby creating a stable 'brick' for efficient transportation. The system has only been fully in place for a few months but is working well.

The Company has also introduced various waste minimisation and recycling measures:

- A review of collation shrink-film packaging and associated trials of different grades of material have resulted in a reduction in film thickness of about 22% with no adverse effect on either product protection or pack handling properties.
- Another project has eliminated many of the corrugated board trays used for the collation packing of filled plastic bottles and jars.
- All shrink-film and cardboard waste arising from the Company's manufacturing operations is segregated and baled, while hard plastic wastes from the bottle blowing facility are granulated for reprocessing. Drums are also sent for reconditioning.

## Cost Savings and Environmental Benefits

Opting for re-usable clampack blisters instead of one-trip board cartons has reduced material consumption by approximately 22 tonnes/year and generated a net cost saving of around £22 000/year. This figure takes into account reduced blister purchases, collection, administration and transportation costs.

The use of corrugated plastic outers and plastic tote boxes has the potential to reduce corrugated board use by around 32 tonnes/year, giving additional annual savings of around £15 000. Although calculations suggest that the new outers pay for themselves after about ten trips, experience in other companies suggests that, on average, they should have a life of at least 30 trips.



*Clampack folding blisters in corrugated plastic boxes*

The use of a more lightweight shrink-film has reduced consumption by approximately 24 tonnes/year, with an associated cost saving of around £27 000/year.

The elimination of corrugated board trays for certain products has reduced consumption by around 18 tonnes/year, with savings estimated at more than £75 000/year.

The recycling/reprocessing initiatives are diverting around 50 tonnes of shrink-film from landfill each year, while the sale of granulated plastic is generating an income of about £75 000/year.

## What Next?

Other re-usable systems are under development. One of the main suppliers of printed cartons delivers its products in corrugated board trays within returnable wooden pallet boxes. A trial is under way to recover these trays for re-use, which could reduce the number of one-trip trays used by around 450 000/year. The trial will establish the likely cost savings.

## Company Comment

Andrew Jenkins of Boots Contract Manufacturing says:

*“BCM’s environmental policy is to seek to continually reduce waste and to reduce the environmental impact of the products we develop. In many cases good environmental practice is also good housekeeping, thereby providing the potential to drive down costs.”*

# INDUSTRY EXAMPLE 6



## Re-usable trays for packing chair bases

**An American company that produces up-market office furniture has introduced re-usable plastic packaging trays for transporting chair bases, thereby saving money on conventional packaging and reducing the amount of waste disposed of to landfill.**

### Introducing Packaging Re-use

Originally, the bases for one type of Herman Miller chair were wrapped in plastic bags and then sandwiched between layers of corrugated card and packed into cardboard boxes. The way the bases fitted into the boxes meant that the overall volume available within each box was very inefficiently used. Furthermore, although the packaging materials were recycled, they could be used only once.

In 1992, the Company introduced re-usable plastic trays for transporting the chair bases. These are vacuum formed from 100% recycled polyethylene. Each tray has cavities for four chair bases, and a hand-sized opening so that each base can be removed easily.



*Re-usable packaging trays for transporting chair bases*

The trays are extremely lightweight and compact compared with the previous packaging, and the design makes it easier both to pack and to remove the chair bases. This, combined with the fact that the trays stack 11 high on a pallet, with no wasted space between them, has improved handling during transport and storage, and increased productivity by 40% in this area.

The trays are consistently re-used and are proving extremely durable. Few of them have worn out in the period since their introduction, and new ones have only been required to meet an expansion in Company business.

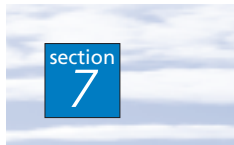
### Cost Savings and Environmental Benefits

The re-usable trays are just one component of Herman Miller's overall commitment to environmental stewardship, which involves incorporating eco-design into its products and replacing one-trip packaging with re-usable alternatives (made from recyclable materials) at the rate of 10% per year. This commitment has reduced packaging material purchases by 70% over the past ten years, reduced disposal to landfill by 62.5% over the same period, and yielded benefits worth more than \$1 million/year. The Company aims to eliminate waste going to landfill during 1998.

The chair base trays introduced in 1992 have since saved the Company \$200 000, and reduced packaging waste by 60 000lbs. They reduce energy use, storage space and transport costs.

### **What Next?**

Herman Miller has already replaced similar carton and plastic packaging for another chair design with 'sleeve packs' that can be re-used 50 - 100 times, thereby reducing materials by 70%. The Company's commitment to reducing the use of one-trip packaging ensures that it is always looking for opportunities to introduce similar schemes. The market for the chair trays is internal, but the packaging principle could be adopted more widely for awkwardly-shaped parts.



The Environmental Technology Best Practice Programme is a joint Department of Trade and Industry and Department of the Environment, Transport and the Regions programme. It is managed by AEA Technology plc through ETSU and the National Environmental Technology Centre.

The Programme offers free advice and information for UK businesses and promotes environmental practices that:

- **increase profits for UK industry and commerce;**
- **reduce waste and pollution at source.**

To find out more about the Programme please call the Environmental Helpline on freephone 0800 585794. As well as giving information about the Programme, the Helpline has access to a wide range of environmental information. It offers free advice to UK businesses on technical matters, environmental legislation, conferences and promotional seminars. For smaller companies, a free counselling service may be offered at the discretion of the Helpline Manager.

FOR FURTHER INFORMATION, PLEASE CONTACT THE ENVIRONMENTAL HELPLINE

**0800 585794**

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world wide web: <http://www.etsu.com/etbpp/>

