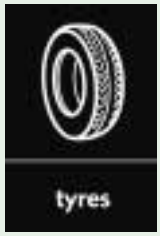

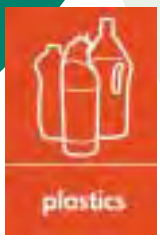

A Better Way to Recycle:

co-operative and community approaches to recycling

a study by
the National Centre for Business & Sustainability

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A STUDY BY

THE NATIONAL CENTRE FOR BUSINESS & SUSTAINABILITY

PUBLISHED BY

Co-operative Action

The author of *A Better Way to Recycle* is Erik Bichard assisted by his colleagues Liz Martin and Lee Allman, and Nick Dodd of URBED. Erik is Chief Executive of the National Centre for Business & Sustainability, a not-for-profit sustainable solutions organisation set up as a partnership between the Co-operative Bank and the Universities of Greater Manchester. Erik has had a varied academic and professional career encompassing sustainable management systems, behavioural change, social accounting and environmental impact appraisal. He lives in Liverpool with his wife and three daughters.

This publication arose from work led by the Sustainability Working Group of the New Ventures Panel, of which Erik Bichard, the author, is a member.

The New Ventures Panel is a committee of individuals drawn from across the wider co-operative movement charged with the task of thinking about innovation in existing co-operative businesses, new opportunities for co-operative colonisation and ways in which the co-operative advantage can make a difference to business performance and the delivery of services. Its aim is *to identify new opportunities in appropriate areas of the economy that have the potential to be successful co-operative ventures*. For further information contact helen.seymour@cooperatives-uk.coop

The Innovation and Development Fund, supported by co-operative societies and managed by Co-operatives[UK], contributed to the development of this publication. These societies are Lincolnshire Co-operative Ltd, Midcounties Co-operative Ltd and the Channel Islands Co-operative Ltd. Many thanks go to them.

Co-operatives[UK]
THE UNION OF CO-OPERATIVE ENTERPRISES

This is the second publication from Co-operative Action, the foundation for the promotion and development of co-operative solutions to community challenges.

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Contents

Contents

Figures

Boxes

Foreword

We are currently faced with a number of environmental threats to our society, and it is easy to succumb to the thought that there is very little that we can do about our plight. However, some problems can be turned to our advantage with a little innovation and a determination to invest in the future. The problem of waste is one of those issues that can have a silver lining, and we are very grateful to those who have devoted time and resources to allow us to show how this can be achieved by co-operatives and other social enterprises.

We are particularly grateful to the Co-operative Action Fund for providing the money for the main element of the research. Additional funds for this publication were provided by Co-operatives[UK] through the Innovation and Development Fund and this was very much appreciated. I would also like to thank Charlie Baker and the rest of the Sustainability Working Group for their backing and input, and the New Ventures Panel under David Dickman who offered advice in the later stages of the work. Finally, thanks go out to my colleagues Lee Allman and Dr. Mary Parkinson from the NCBS, Baker Brown Associates for their excellent editing skills and last and best to Helen Seymour of Co-operatives[UK] who kept the faith throughout.

Erik Bichard

April 2006

1. Introduction

1. Introduction

Waste management is fast becoming a key political issue. The debate about waste spans the entire sustainability agenda. If we get it right, we protect the environment, provide jobs and maintain social harmony within all our communities. If we get it wrong, we face higher tax bills, create inequality and contribute to degraded environmental conditions.

For centuries the UK has dropped its waste into large holes in the ground, called landfill sites. Landfill was convenient and relatively cheap. But now that option is fast disappearing. European laws are requiring more waste to be disposed of in a different manner and we are at last waking up to the hidden costs associated with landfill.

Some European countries burn their waste instead of burying it, using large-scale incinerators capable of generating energy from waste. While this solution is also practised in the UK, it accounts for a very small proportion of waste disposal. There is widespread opposition to incinerator plants by local communities. Furthermore, incineration is not judged to be the Best Practicable Environmental Option (BPEO), defined as *'the option that provides the most benefit and the least damage to the environment as a whole, at acceptable cost, in the long term as well as in the short term'*[1].

Another option is to export waste materials. This practice has emerged in response to rapidly growing economies that are hungry for raw materials and have relatively cheap labour costs. In 2004 over half of Britain's waste paper, and much of its waste cans and plastic, were sold to developing countries such as China, which use these materials in products that are often exported back to the source countries. But there are problems here too. Recycling should take place close to where the waste arises in order to limit transport distances and related carbon emissions. There are also questions about how sustainable these export markets really are, especially where their viability relies on poorer standards of environmental health and safety.

So, if we can't bury our waste, burn it or export it, then what are we to do with it? It is a dilemma that will not wait for an answer but will simply pile up outside our back doors until we figure it out.

But while some think of waste as an intractable problem, others see it as a golden opportunity. The key to this optimism lies in the way we look at waste. If waste is treated as a raw material, the issue is not how to get rid of it, but how to bring it back into useful production. Economic conditions currently favour the use of first generation or virgin raw materials over the recycling and re-use of secondary materials. But current conditions are changing fast. The cost of oil, metals and minerals will increase over the coming decades, and the cost of waste disposal will spiral upwards. This, in tandem with tougher laws on disposal, will produce large volumes of waste materials that need to be managed in some other way. These waste materials have the potential to support a new and lucrative recycling, re-use and recovery industry. Those that capitalise on the opportunities at an early stage in the development of this sector are likely to prosper in the future.

The key question that needs to be addressed at this crucial point in the history of waste management is: What organisational forms are most likely to succeed in the rapidly expanding recycling market?

The public sector is mindful of its duty to ensure best value in the provision of public services, including waste collection and disposal; and increasingly looks to outsource such activities. Furthermore, it is difficult for the public sector to engage in activities beyond waste collection and disposal, and it is in the processing of these waste materials where some of the best opportunities lie.

The private sector currently dominates the waste industry. Most of the business relates to contractual agreements to collect and transport waste to a lawful place of disposal. There are also a number of mainly small-scale businesses

in peripheral low-cost locations that convert elements of the waste stream into niche products. While the private sector has shown some interest in Private Finance Initiative schemes to build plants which extract recyclable materials from a mixed waste stream, it has not made significant investments in medium or large-scale waste-to-product plants. However, it is only a matter of time before the cost of other waste disposal methods begins to make recycling more profitable. But is the profit motive always fully consistent with the Best Practicable Environmental Option?

An alternative to the private sector is the community waste sector, primarily composed of community groups, charities and voluntary groups. Many of these organisations entered the recycling market at a comparatively early stage, more than ten or fifteen years ago, but are now losing out to the private sector. They are struggling to compete in markets which are increasingly dominated by those able to offer economies of scale. This in turn requires access to large amounts of investment capital and resources, which are not typically available to community-based organisations.

However, some organisations in the community waste sector are beginning to change. They are adopting business models capable of meeting these challenges based on co-operative and social enterprise principles. They are developing businesses that trade for a social purpose. Profitability is important for sustainability, but it is not the sole aim of their stakeholders. Instead, these businesses pursue a triple bottom line, aligning their economic, social and environmental objectives to the interests of the communities they serve.

So how should existing and new social businesses be developed to succeed in this dynamic market sector? The Co-operative Action Fund asked the National Centre for Business and Sustainability (NCBS) to investigate this question. This report is intended to raise awareness about the business opportunities in the recycling sector and, through the New Ventures Panel (and its Sustainable Working Group), to determine the feasibility of developing co-operatives in this sector.

The report has been written for a range of audiences, including people working in the public sector, co-operatives, co-operative support organisations and community groups, social entrepreneurs, and organisations that are already part of the community waste sector. For readers with little prior knowledge of or experience in waste management and recycling, Section Two provides an introduction to the scale of the waste problem in the UK, the sources of waste, and what happens to waste at the moment. Section Three explores the recycling opportunity: turning waste materials into raw materials for recovery, re-use and recycling. It examines how government policies on waste management are shaping and developing market opportunities, and the growing need to achieve economies of scale as the markets expand.

Section Four suggests a way forward for the community waste sector, exploring the competitive advantage of co-operative structures in what is becoming an increasingly competitive field. It describes how the membership and business model of co-operatives could enable community-based recycling organisations to flourish and grow. Finally, Section Five examines how and why consumer co-operative societies should be engaged in recycling. It describes current waste management practices and introduces the concept of closed-loop recycling, which has huge potential for consumer co-operative societies. It concludes by proposing the next steps, focusing on establishing closer links between co-operatives and the community waste sector.

2. The waste problem

2.1 The scale of the problem

The total amount of waste material produced in the UK is estimated to be 434 million tonnes per year[2]. More than half of this, 250 million tonnes, is defined as controlled waste, which means that its disposal is regulated under the Environmental Protection Act 1990 (see Box 1). There are three main categories of controlled waste: municipal or household waste, commercial and industrial waste, and construction and demolition waste. Uncontrolled waste, which is not subject to the same regulations, is generated by agriculture, mining and sewage treatment.

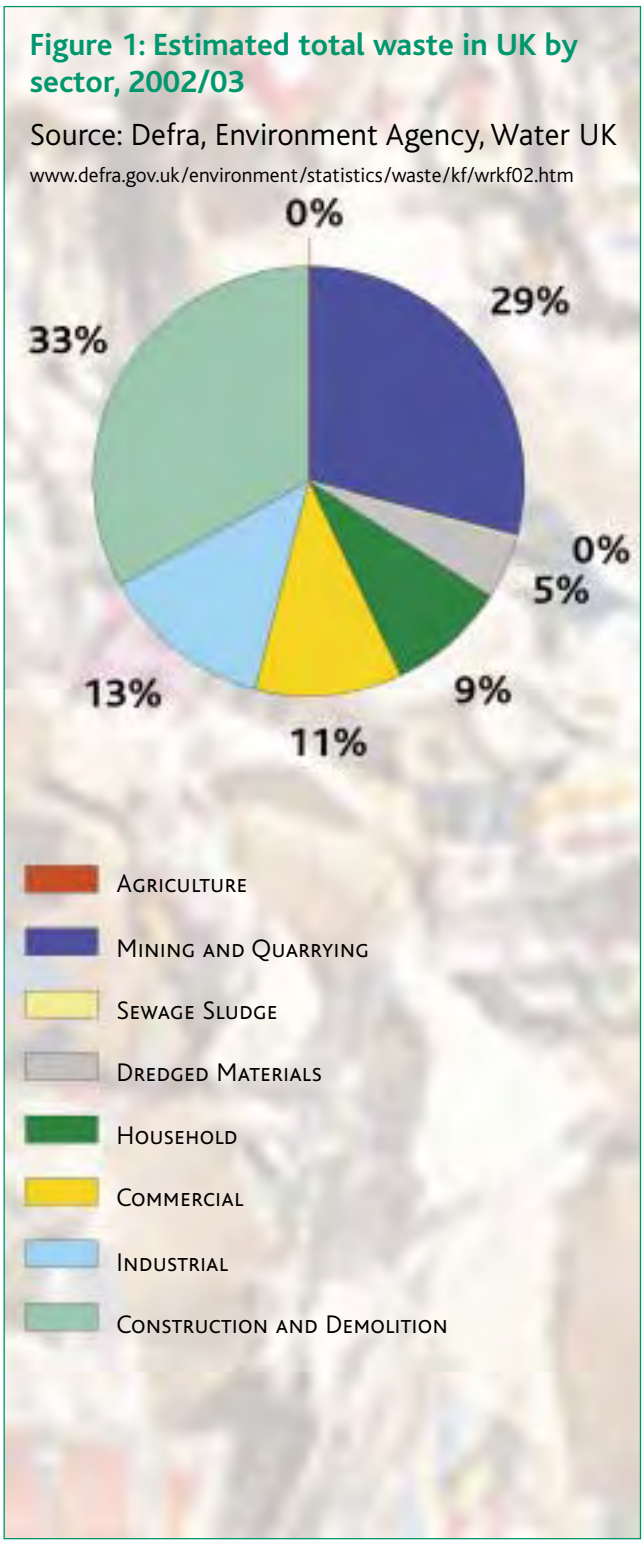
Most waste currently ends up in landfill sites. In 2002/03 three-quarters (75%) of controlled waste was disposed of through landfill, only marginally less than the 77% of waste that ended up in landfill in 2001/02[3]. With landfill prices and taxes set to increase over the next decade, and with landfill space diminishing, the cost of waste disposal is set to become a major financial burden on businesses and the taxpayer.

While landfill is still the main form of waste disposal in the UK, recycling rates are beginning to increase, although they still lag far behind most of our European neighbours. Recent figures for the UK suggest that 35% of industrial and commercial waste and 17% of municipal and household waste is recycled or composted. While this is a positive development, it is undermined by the fact that the total volume of waste continues to increase. The Municipal Waste Management Survey[4] estimated that in 2003/04, the average amount of waste produced per person per year was 510 kg, in 1983/84 the figure was only 397 kg per person per year. There has been a definite trend of increasing waste levels although 2003/04 did see a slight decline from 2002/03 figures of 520 kg per person. It is estimated that waste volumes are still increasing by 3% annually.

To turn the problem of waste disposal into a business opportunity for social enterprises requires a good understanding of the nature of the waste problem, the types of waste materials that are being produced, and the potential to recycle and re-use these waste materials as the raw materials for new and innovative products and processes. The remainder of this section

Figure 1: Estimated total waste in UK by sector, 2002/03

Source: Defra, Environment Agency, Water UK
www.defra.gov.uk/environment/statistics/waste/kf/wrkf02.htm



examines the scale of the waste problem in the three main controlled waste categories: municipal waste, commercial and industrial waste, and construction and demolition waste.

2.2 Municipal waste

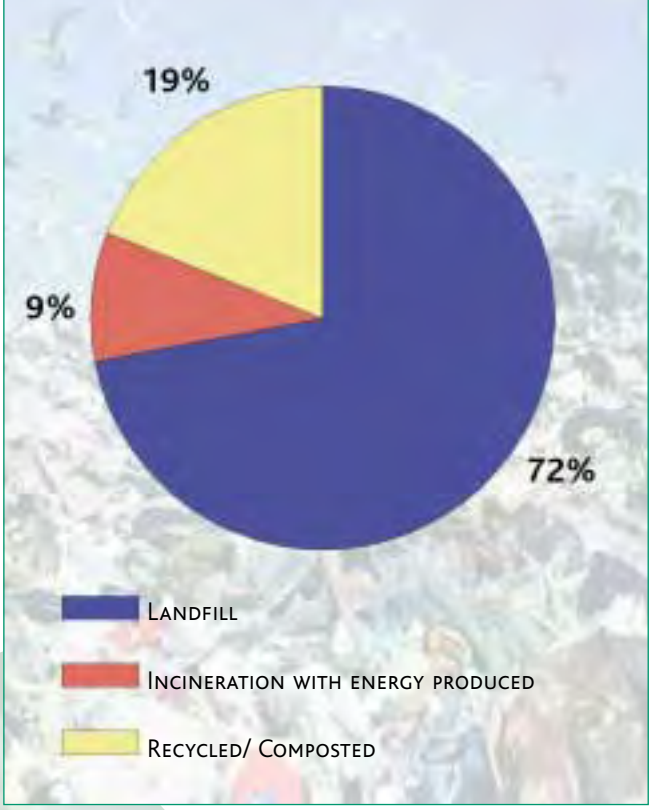
Municipal waste is defined by Defra (Department for Environment, Food and Rural Affairs) as being household waste and other waste collected by a waste collection authority or its agents, such as municipal parks and garden waste, beach cleansing waste, commercial or industrial waste, and waste resulting from the clearance of fly-tipped materials. The data for 2003/04[5] shows that the total amount of municipal waste has fallen to an estimated 29.1 million tonnes in England, compared to 29.4 million tonnes in 2002/03.

The way that municipal waste is being managed is gradually changing. In England, the amount of municipal waste sent to landfill was 78% in 2001/02 and 75% in 2002/03. This level has now declined to 72% in 2003/04. The proportion of municipal waste being recycled or composted has increased from 15.6% in 2002/03 to 19% in 2003/04. The proportion of waste incinerated with energy recovery has remained fairly constant at just under 9%. The public perception of waste incineration is still poor, despite major improvements in emission levels over the last 10 years, as a result of tightening legislation.

Household waste accounted for 87% (25.4 million tonnes) of municipal waste in 2003/04 in England, compared with 88.5% (25.8 million tonnes) in 2002/03. Figures also show that whilst there is a decline in the amount of waste produced, there is a continued increase in the proportion of household waste recycled or composted, rising from 12.5% in 2001/02, 14.5% in 2002/03 to 17.7% in 2003/04. There are a number of reasons why recycling and composting levels are improving, including new government policies and legislation (see Section 3), greater awareness of recycling and composting, and improved facilities for recycling and composting such as civic amenity sites, public recycling bins and kerbside collection schemes. Almost all local authorities collect some waste for recycling through kerbside collection schemes and these schemes accounted for 42% of the total household recycling in 2003/04, compared to 34% in 2002/03.

Figure 2: Management of municipal waste, England, 2003/04

Source: Defra – Municipal Waste Management Survey 2003/04



The Municipal Waste Management Survey 2002/03 shows that 66% of household recycling was collected via civic amenity sites and public recycling bins and 34% was collected via kerbside recycling schemes. In 2001/02, the figures were 69% and 31% respectively. This

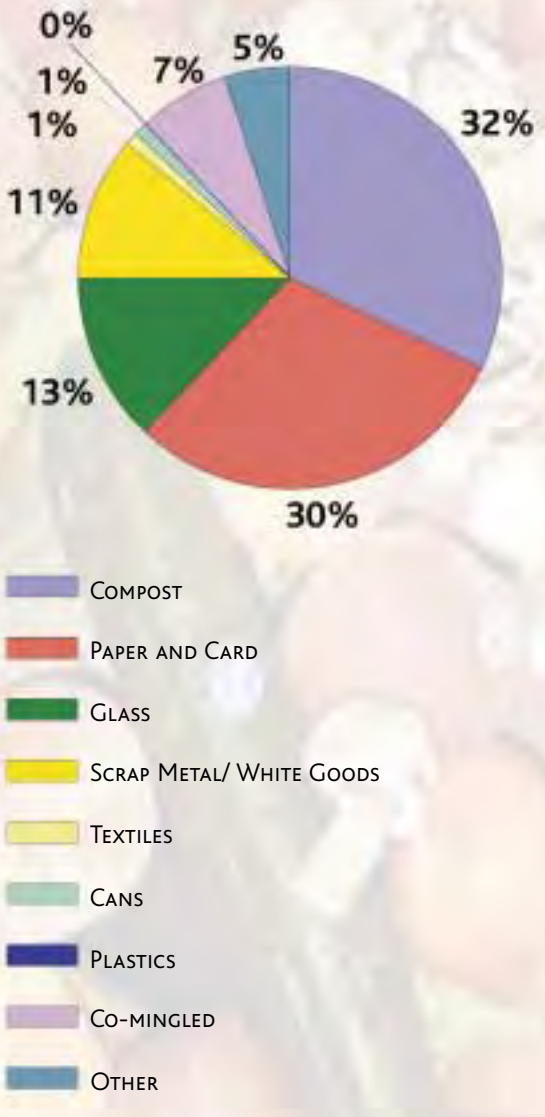
Every 90 minutes, we produce enough rubbish to fill your local swimming pool[1]

shows that kerbside recycling is increasing as a way of collecting waste materials. In 2002/03 most materials were collected by local authorities, with private or voluntary organisations recorded as being responsible for collecting only around 1% of the total materials.

A range of materials are collected from households for recycling. The most up-to-date data showing the types of materials recycled is the Municipal Waste Management Survey 2002/03. The survey shows that for the first time, compostable waste was the most common material collected for recycling, increasing by 24% on 2001/02 levels. This may be due to the increase in kerbside collection schemes for compostable waste. Paper and card, which was previously the most common material, still comprised 30% of the total material collected, and increased by 15% on 2001/02 levels. The amount of glass collected increased by 11% to 13% of the total material collected.

Figure 3: Types of materials recycled from households in England, 2002/03

Source: Defra – Municipal Waste Management Survey 2002/03



The amount of scrap metal and white goods collected stayed fairly constant. The amount of cans collected within household waste is very small at just 1%. However, they have a very high energy recovery rate, which means there are particularly strong environmental benefits in recycling them. Co-mingled materials can include a combination of paper and card, cans, plastics and textiles, which means that the individual waste streams for these materials may actually be higher than appears in the statistics, due to their inclusion in the co-mingled fraction.

There are strong regional variations regarding the amount of waste that is recycled. The highest household recycling rate in 2003/04 was in the East of England at 23.3%. The South East and South West were also among the top regions for recycling levels. The lowest was the North East region with a figure of 11.9%; the North East also had the lowest figure at 6.6% in 2002/03, but has made the biggest percentage gain of 5.3% in recycling levels. Sub-regional differences also exist, such as recycling rates of 12% in Stockport compared to 2% in Manchester in 2002/03.

The composition of household waste that is recycled can vary substantially between authorities. Whilst the data for the 2003/04 survey have not been fully analysed yet, the data from the Municipal Waste Management Survey 2002/03 shows that in London, 46% of material collected for recycling was paper, whilst in non-metropolitan regions, the dominant material source was organic material for composting at 34%.

2.3 Commercial and industrial waste

In 1998/1999, commercial and industrial waste accounted for 75 million tonnes[6]. Industry was the largest producer with 50 million tonnes of

the total waste, whilst commerce accounted for 25 million tonnes. These are the most recent figures obtained from a survey carried out by the Environment Agency of around 20,000 industrial and commercial businesses in 1998/9. The Environment Agency is currently carrying out a second survey and the results are expected soon.

The main industrial waste stream (25%) is mineral waste and residues, with a further 20% of general industrial waste. The individual sector that produced the most waste was the basic metals sector with nine million tonnes (31% of waste was landfilled, 31% re-used and 34% recycled). The food, drink and tobacco industry sector produced just over seven million tonnes (35% was landfilled, 17% re-used and 26% recycled) and the utilities industry sector produced just under seven million tonnes (49% was landfilled, 49% recycled and only 0.4% re-used). These figures show that there is a lot of potential for increasing re-use and recycling rates, and increasing legislation and reduced landfill space means that industry needs to find alternatives to the traditional waste management option of landfill. This is made even more urgent by the reclassification of some waste streams through the implementation of the Hazardous Waste Regulations 2005 and the limitations on the acceptance of such materials at many landfill sites.

In the commercial sector, waste streams are less varied and 75% is classified as general commercial waste with paper and card making up 10%. Retail produces the most waste at around just under six million tonnes (50% of waste is landfilled, 28% is recycled and only 2% is re-used). Travel agents and other types of service business produce five million tonnes of waste (59% is landfilled, 18% recycled and 1% re-used) whilst the hotel and catering sector produces just under four million tonnes of waste (60% of waste is landfilled, 15% recycled and only 0.9% re-used). With such heavy use of the landfilling option, there is a large potential for increasing re-use and recycling rates.

Within the individual waste streams, the most recycled materials are mineral wastes and residue, and metals and scrap equipment. Mineral wastes and residue are also the most re-used. The lowest rates of re-use and recycling are for paper and card, and construction and demolition wastes.

Overall, the re-use and recycling rates in industry and commerce are higher than for municipal waste, at 44% for the industrial sector and 24% for the commercial sector. These higher recovery and recycling rates can be partially explained by the increased financial incentives applicable in these sectors such as higher landfill costs for hazardous waste and also the lack of suitable landfill sites, as well as the commercial awareness of the cost of waste and the potential value that it may have.

There are a number of barriers to recycling. For example, plastic packaging accounts for 20% of the weight of all packaging and 53% of all goods are packaged in plastics. However, only 23% of plastic packaging waste was recycled in the UK in 2001. This is partially because plastic has a high volume to weight ratio, which can make recycling collections of plastic packaging waste less efficient than the collection of other recyclables which weigh more[7]. This is particularly the case for kerbside collections from municipal sources. In addition, many plastics are 'contaminated' with other materials e.g. two plastics in one product (bottles and labels made of different types of plastic), or are intrinsically mixed with other materials to achieve properties suitable for use e.g. flame retardants in plastic cable coatings. This 'contamination' can make recycling uneconomic or impracticable.

The lack of end-markets for mixed and single stream plastics also forms a barrier to increased plastics recycling. This is mainly because the food packaging industry, the biggest single market for plastics, has been reluctant to use recycled plastic because of concerns about food safety. However, a method of addressing this problem is by enclosing the recycled plastic between layers of virgin plastic to ensure the packaging conforms to hygiene standards.

2.4 Construction and demolition waste

The Office of the Deputy Prime Minister (ODPM) estimated that the construction and demolition waste in England and Wales was 93.9

million tones in 2001, up from an estimated 72.5 million tonnes in 1999[8]. Approximately 48% was recycled and a further 48% was beneficially re-used, mainly for layering or topping on landfill sites and backfilling quarries. The remaining 4 % was sent to landfill as waste.

Estimates suggest that the production of recycled aggregate and soil has increased from 25 million tonnes in 1999 to 45 million tonnes in 2001. This increase accounts for nearly all the increase in overall construction and demolition waste in England and Wales in that period. The amount of waste disposed at landfill sites has declined from about a quarter of the total to just 4% due mainly to the introduction of the landfill tax in October 1996, which has made it increasingly expensive to send construction and demolition waste to landfill. However, it is important to note that there has been an increase in the amount spread on registered exempt sites and a new category of re-use in backfilling quarries. Figure 4 shows this in graphic form.

Figure 4: Management of construction and demolition wastes in England and Wales, 1999 and 2001

Source: ODPM (2001)

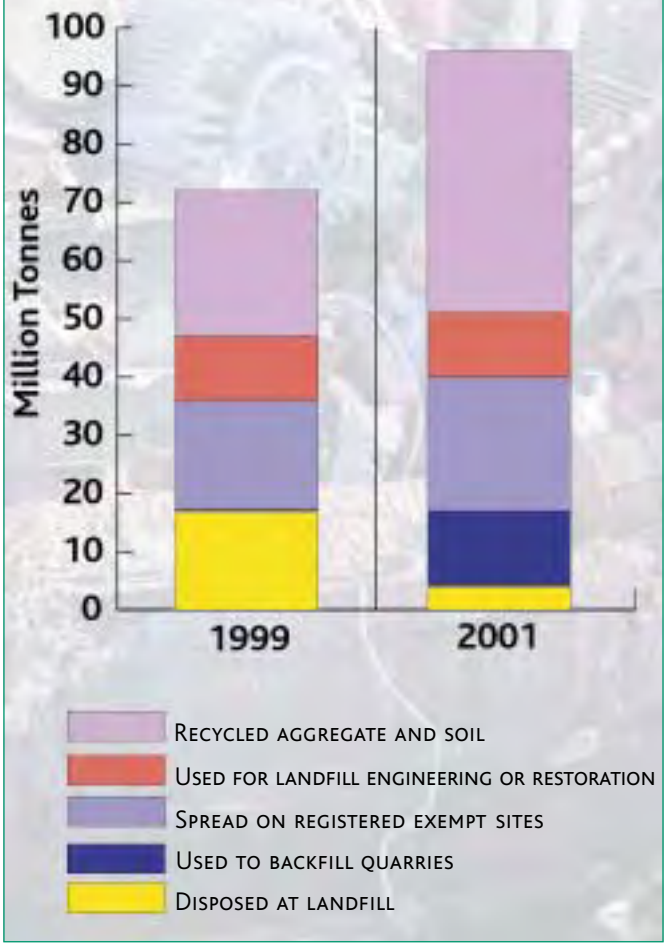


Photo courtesy of ECT Recycling

3. The recycling opportunity

3.1 From waste material to raw material

Section Two provided evidence that the UK generates large volumes of waste materials, most of which end up in landfill. Currently, only a small proportion of these materials are re-used or recycled. There are significant economic and technological barriers to recycling some types of waste materials. But with the right regulatory and legislative framework, there could be greater impetus to overcome these barriers. This section describes what the government is doing to encourage higher rates of recycling, and the business opportunities this will create for co-operatives and other forms of social enterprise.

Undoubtedly there is money to be made from collecting waste, especially when it is collected in large volumes, making the cost of haulage viable. Recyclable materials can be sold to wholesalers, many of whom are serving international markets for such materials. However, the really successful recycling businesses are those that process the waste materials, producing new goods and materials with higher added value which can be sold to local markets.

A wide range of products can be produced using materials derived from waste. These include paper, glass, plastics and textiles. Recycled paper can be used to make a range of products such as graphics paper (high grade products including office paper) and cellulose fibre for building insulation, food and non-food packaging, tissue and newsprint.

Glass can be used to produce packaging products and many types of construction materials. Glass insulation fibre and foam glass construction products can tolerate poor quality cullet, and the expected growth in the construction industry would suggest a large potential growth area for cullet re-use. Glass cullet can be used as filler in paints, plastics and flooring products.

Mixed plastics can be remade into construction products and street furniture, and combined with wood to produce durable items such as pallets and secondary packaging. Single source plastics (PNC, PET, HDPE etc) can produce higher value products such as textiles and clothing, disposable-ware, and many other items.

Textiles, including natural and synthetic fibres, can be used to produce fabric fill, fleece clothing, carpet and upholstery, building insulation (thermal and acoustic) and premium-priced eco-products, as well as (lower value) fill materials or wipes.

3.2 How policies and legislation have created a recycling market

Government legislation and policies on waste management will greatly enhance the rate at which recycling products and processes are developed in the short and medium term. Government policy is set out in *The National Waste Strategy for England and Wales*, published in 2000. This document established a number of key targets to reduce the amount of waste sent to landfill.

There is a target to recycle or compost at least 25% of municipal household waste by 2005, rising to 30% by 2010 and 33% by 2015. There is a target to reduce the landfilling of commercial and industrial waste to 85% of 1998 levels by 2005. Another target has been set to reduce the amount of biodegradable municipal waste landfilled (based on 1995 levels) to 75% by 2010, with further reductions to 50% by 2013 and 35% by 2020. Targets have been set in respect of recovering value from municipal solid waste of 40% by 2005, 45% by 2010 and 67% by 2015. Recovering value includes re-use, recycling and obtaining energy from waste incineration. In Scotland *The National Waste Strategy* sets similar figures of 25% by 2006 and 55% by 2020. In Northern Ireland the proposal is for 45% by 2020.

The waste strategy for England and Wales underwent a review that started in 2005[10] to reassess assumptions made in 2000 about costs, growth in waste and potentially achievable

recovery and recycling rates. The review is based on new data, advancements in technology, and a better understanding of the environmental, economic and social impacts of dealing with waste. The revised strategy was due to be published in the first half of 2006 and will set out the government vision and strategic direction on waste for the next 15 years, as well as the policies and actions to deliver the strategy.

The law governing the disposal of waste has been greatly strengthened in the past 15 years

BOX 1: UK WASTE LEGISLATION

Environmental Protection Act 1990[1]. This Act makes provision for the improved control of pollution arising from certain industrial and other processes. There is specific reference to the waste industry in Section 34 of the Act, which refers to a 'duty of care' for any person who imports, produces, carries, keeps, treats or disposes of controlled waste or, as a broker, has control of such waste. Waste management licences need to be granted by a waste regulation authority authorising the treatment, keeping or disposal of any specified description of controlled waste.

The Environmental Protection (Duty of Care) Regulation 1991[2]. This is a requirement for persons involved in waste management to keep written descriptions of waste and transfer notices. It allows for waste collection authorities to serve notices on these persons to provide the written descriptions of waste and transfer notices to them within a specified time period.

Controlled Waste Regulations 1992[3]. This regulation controls how waste is treated, what types of waste can be treated as household waste, and what types of waste should be treated as industrial or commercial waste.

Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991[4]. This states the process of applications for registration or renewal of registration as a carrier of controlled waste.

Waste Management Licensing Regulations 1994[5]. This states the need for waste management licences and the process of surrender or transfer of waste management licences.

Special Waste Regulations 1996[6]. This states what types of waste are classed as hazardous and therefore need to be treated in particular ways. In England and Wales, new legislation[7] is expected which will revoke the Special Waste Regulations 1996.

Transfrontier Shipments of Waste Regulations 1994[8]. These are measures relating to the regulation and control of the transit, import and export of waste (including recyclable materials) and the prevention, reduction and elimination of pollution caused by waste.

The Producer Responsibility Obligations (Packaging Waste) Regulations 1997 and the Packaging (Essential Requirements) Regulations 2003. Businesses with an annual turnover exceeding £2 million and handling more than 50 tonnes of packaging a year have to recover and recycle specified tonnages of packaging waste each year. There is also a requirement that all packaging should be manufactured so that packaging volume and weight is limited to the minimum amount necessary to maintain required levels of safety, hygiene and acceptance for the packed product by the producer and consumer.

The Animal By-Products Regulations 2003[9]. The Regulations prohibit the disposal of animal by-products (including raw meat and raw fish and former foodstuffs of animal origin) to landfill. Such material that is no longer intended for human consumption is required to be disposed of in accordance with the Regulations. This means treatment in an approved rendering, incinerator, biogas or composting plant.

BOX 2: EUROPEAN WASTE LEGISLATION

Packaging and Packaging Waste covers all packaging and packaging waste, whether it is used or released at industrial, commercial, office, shop, service, household or any other level, regardless of the material used. Member States must take measures to prevent the formation of packaging waste and encourage the re-use of packaging. Targets have been set for the end of 2008 to increase the recycling and recovery rates of packaging waste.

Waste Electrical and Electronic Equipment Directive (WEEE). This is primarily about producer responsibility but it also affects retailers and recyclers of electrical and electronic equipment. The Directive sets targets for the amount of WEEE to be collected separately from private households. It makes distributors and retailers responsible for making arrangements to take back WEEE free of charge in a convenient way for customers. Recycling and recovery targets are being set for WEEE and there is a requirement for WEEE to be collected and treated separately[11]. The Directive's producer responsibility obligations for household and non-household WEEE and take back obligations on retailers/distributors will come into force by December 2006[12].

The Restriction of Hazardous Substances in Electrical and Electronic Equipment Directive is related to the WEEE Directive. It restricts the use of various hazardous substances, including lead and mercury, in new electronic and electrical equipment from July 2006.

Batteries and Accumulators Directive. This directive provides for the recovery and disposal of batteries and accumulators in a controlled manner. Proposals for a new Producer Responsibility Batteries Directive were issued in 2003 and will come into force domestically in 2008. Collection schemes for the return of used portable batteries are to be established free of charge to end users. All industrial and automotive batteries will have to be recycled, and recycling and efficiency targets are being set for other types of batteries[13].

End-of-Life Vehicles (ELVs) Directive. This directive aims to reduce, or prevent, the amount of waste produced from ELVs, and increase recovery and recycling of ELVs. The directive has been adopted in the UK though End-of-Life Vehicles (Producer Responsibility) Regulations 2005. A key requirement is that owners must be able to have their ELVs accepted by collection systems free of charge from 1 January 2007. Producers must pay *'all or a significant part'* of the costs of treatment for ELVs. Rising targets for re-use, recycling and recovery have been set for January 2006 and 2015.

The European Landfill Directive[14]. The implications of this directive for the UK, as outlined by Defra[15], are that certain wastes will be banned from landfill including corrosive, highly flammable products and used tyres. All landfill sites have to be classed as for inert waste, hazardous waste or non-hazardous waste. There is a requirement for the pre-treatment of waste going to landfill (which can include sorting). The UK practice of co-disposal in landfills of hazardous and non-hazardous waste ended in July 2004.

Waste Incineration Directive. Incineration is an alternative waste management option to landfill. However, there are issues surrounding the air emissions of incinerators and strong public opinion against incinerators. This directive provides stringent operating conditions and sets minimum technical requirements for waste incineration and co-incineration. Co-incineration includes plants where waste is used as a fuel or is disposed of at a plant where energy generation is the main purpose. Wastes that can be incinerated are defined in the Waste Framework Directive, including municipal, clinical, hazardous, general and waste-derived fuels. Some important exclusions from the scope of the Directive include plants burning only animal carcasses (regulated by Animal Waste Directive) and, in many circumstances, vegetable and wood waste.

(see Box 1). This, along with a long list of European Directives (see Box 2) controlling the diversion of many materials away from landfill, requires waste producers to think carefully before producing and throwing away waste materials.

European and UK waste policy is based on a model known as the waste management hierarchy (see Figure 5). It sets out an order of preference for waste management options. The preferred options are to manage materials so that waste is not produced in the first place, or so that any waste production is minimised. The next options are to re-use or recycle materials, in order to save valuable materials and energy. If none of these options are practicable, then treatment (for example incineration with energy recovery) should be considered. The least favourable option is disposal (for example, landfill) as this leads to the waste of valuable resources and energy.

The combination of directives and regulations will ensure that over the next decade there is a steady and constant growth in the market for recycling and other types of environmentally beneficial waste management practice. This, in turn, will reduce the business risks associated with investing in these markets. For instance, the European Directive on Packaging and Packaging Waste sets out specific recovery targets to be achieved by 2008 of 60% for glass, 60% for paper, 50% for metals, 22.5% for plastics and 15% for wood. Meeting these targets will require the UK to increase packaging recycling by just over 1 million tonnes between 2004 and 2008.

Producer responsibility directives such as WEEE (see Box 2) and Packaging Waste Regulations mean that many businesses will have to increase their recovery and recycling of waste. The costs of this are directly incurred by producers, distributors and retailers. This will provide opportunities for recycling businesses.

Directives and legislation can create new business opportunities for recycling, and stimulate the development of new technologies and processes. For instance, the WEEE and Batteries and Accumulators Directives have encouraged businesses to develop plant and equipment that can safely recycle batteries and accumulators, an activity that was previously dismissed as uneconomic. Similarly, the End of Life Vehicles (ELV) Directive is leading to a strong increase in the recovery and recycling of plastics.

However, another set of policy innovation will push the incentive to recycle further. Taxes on waste and aggregates will make disposal to landfill prohibitively expensive by 2010.

Figure 5: The waste management hierarchy

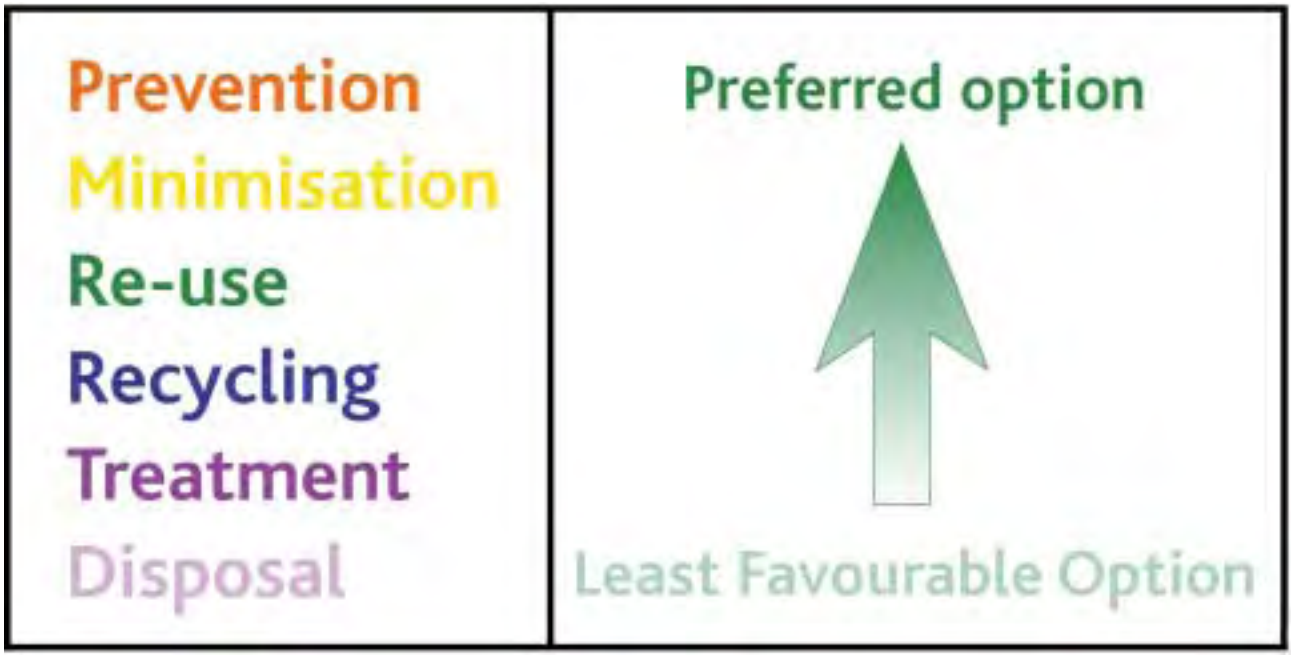
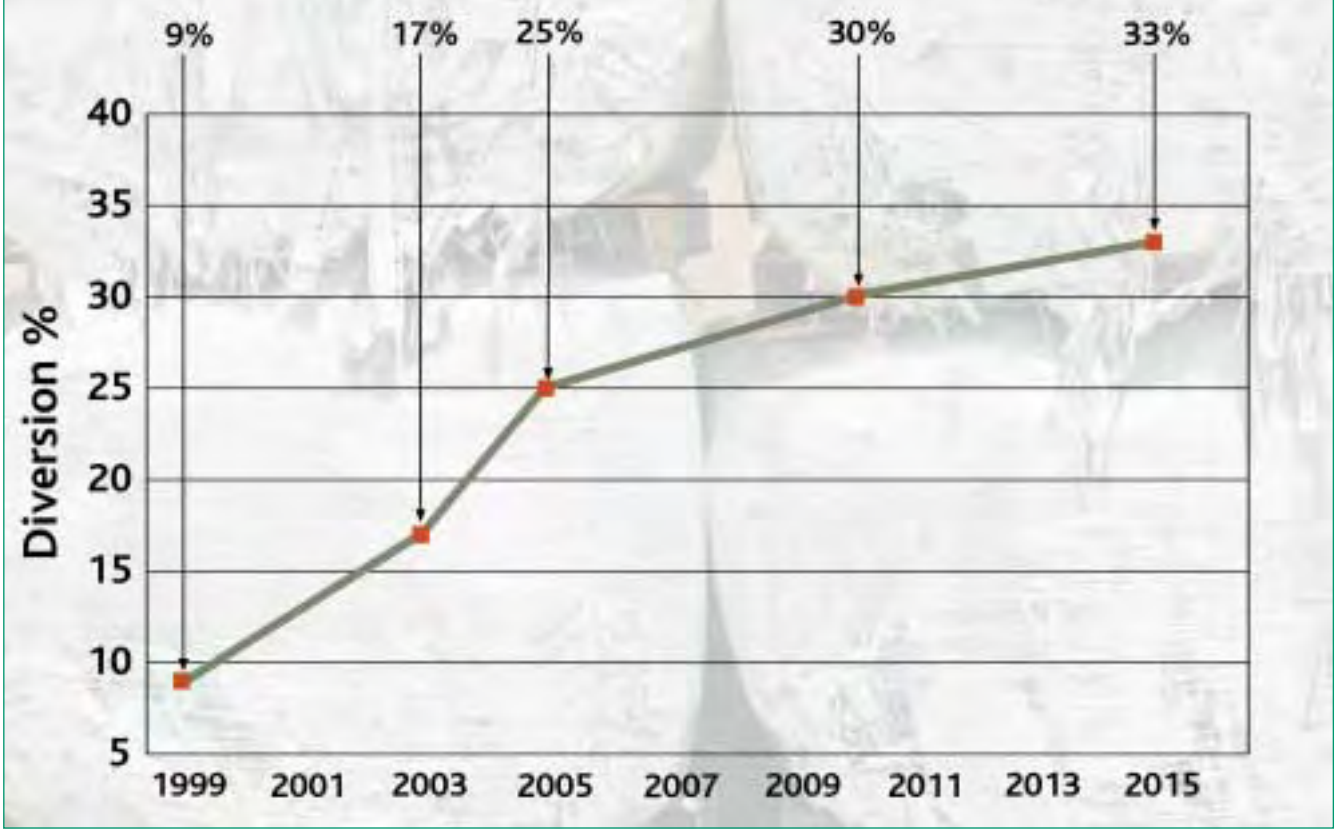


Figure 6: Timeline for meeting the waste strategy UK recycling and composting targets, 1999 - 2015

Source : www.wasteonline.org.uk/.../ page4.html



In October 1996, the UK Government introduced the Landfill Tax. This tax has an explicit environmental objective, and has had a notable impact on waste management practices by providing companies with a financial disincentive to send their waste to landfill. The tax on active waste is currently set at £15 per tonne and will increase by £3 per year until it reaches £35 per tonne in 2011/2012. The tax on inert waste remains steady at £2 per tonne. This is the taxable component only and other waste disposal costs will be incurred, such as transport, contractor costs, skip hire and so on.

There are also positive financial incentives in the form of Landfill Allowance Trading Schemes (LATS). Local authorities across England have been set limits on the amount of biodegradable municipal waste that can be disposed of in landfill sites through landfill allowances. These landfill allowances are tradable. Authorities with low landfill rates below their allowance can sell their surplus allowances to other authorities or they can bank unused allowances. Authorities can buy more allowances if they expect to landfill more than they have permits for or bring forward part of their future allocation by borrowing permits[16].

If the UK is to comply with the European Landfill Directive, recovery and recycling operations in the UK must grow at a higher rate than the growth in the generation of waste materials. The targets to achieve this are set out in Figure 6.

If the recovery and recycling targets are not met, the UK will incur fines from the European Union. These fines will be passed down to the individual local authorities that fail to meet agreed targets, and these local authorities will have to cut services or increase their charges on to council tax payers.

Finally, the government has set up a number of programmes, initiatives and bodies to encourage and increase the rate of recycling and sustainable consumption which come under the auspices of the Business Resource Efficiency and Waste (BREW) Programme. Box 3 also outlines how the Private Finance Initiative (PFI) is being

BOX 3. GOVERNMENT INITIATIVES TO ACCELERATE RECYCLING RATES

Business Resource Efficiency and Waste (BREW) Programme. Finances raised through the UK Landfill Tax are used to fund a range of environmental initiatives associated with the prevention, reduction and reclamation of polluted land, the development of public amenities, parks and historic buildings within 10 miles of a landfill site, biodiversity conservation projects and the running costs of recognised environmental bodies. BREW started in April 2005 and will develop and expand existing programmes that have already proved successful. There are a number of programmes within BREW (including the next three initiatives outlined below). BREW provides support to Envirowise, Carbon Trust and green business and waste minimisation clubs. BREW is also providing £5 million to the Regional Development Agencies in 2005/06 to co-ordinate local delivery and to carry out strategic resource efficiency projects in the regions.

Waste and Resources Action Plan (WRAP)[17] was established in 2001 to promote sustainable waste management. It has programmes to create stable and efficient markets for recycled materials and products within the six material streams: aggregates, glass, organics, paper, plastics and wood. It also has three generic programme areas which investigate business and finance, procurement and regional market development. WRAP has also established market development programmes for three difficult waste categories (tyres, plasterboard and batteries), and is expanding its existing business advice service to recycling sector companies.

National Industrial Symbiosis Programme (NISP)[18] aims to create resource efficiency by forming linkages between different industries that will lead to the wastes of one industry becoming a useful and competitively priced input for another industry. Member companies and organisations provide information on their input (materials they need) and output (waste they no longer want) resource streams. Data is analysed to identify synergies according to required needs.

Market Transformation Programme[19] looks at market projections and action plans on technological, market and policy developments. Consideration is taken of which product trends represent the greatest risk to our environment and opportunities to avoid these impacts. The key issues that affect the resource efficiency of products, systems and services are identified.

Private Finance Initiative (PFI). In the report *Waste Not Want Not*[20] the Defra Strategy Unit estimated that infrastructure investment required to achieve the government's landfill reduction targets is around £600 to £700 million per annum for the next ten years. Industry estimates the investment needed to be even greater. Other Defra research[21] shows that there is a major investment opportunity for the private sector and it is estimated at around £8 billion over the next ten years. The Government Spending Review 2004 has provided further resources to help local authorities invest in value for money waste disposal facilities. An additional £275 million in PFI credits will be available over and above the £355 million available from the spending review in 2002.

used to encourage private sector investment in recycling industries. Defra has estimated the scale of the investment opportunity to be in the region of £8 billion over the next ten years.

The overwhelming evidence is that secondary materials will be forced out of the waste stream by a combination of legislative drivers and economic instruments. The availability of this material presents a golden opportunity for those that have the right combination of skills and organisation.

3.3 The business opportunities for recycling

There are two main areas of business opportunity for recycling: converting waste materials into secondary raw materials, and processing these secondary materials to produce value-added products.

Most recycling activity in the UK is devoted to the first of these opportunities. This involves the collection, sorting and shredding of waste materials for sale as raw materials to manufacturers and materials producers. Often the process chain is quite short, which means that little value is added to the final product, resulting in an over-reliance on economies of scale and exposure to the vagaries of commodity prices. For example, glass bottles are converted to cullet (broken glass) and sold to the producers of road aggregate. Plastic bottles are melted down and made into plastic pellets for manufacturers of products such as garden furniture. Green waste (from parks and gardens) is turned into compost. Paper is collected and packed into huge bales and sold as raw material to paper mills.

The second area of business opportunity – processing secondary raw materials and adding value to these materials – calls for innovation in product design, and often high levels of initial capital investment. This area of opportunity can also be subject to economies of scale, although there is scope to develop high value-added specialist niche markets. A good example of this is the work of the design company Eight Inch and their use of recycled bottle glass to produce high-value flooring and work surfaces.

Recycling collection services are mostly undertaken by large, private sector companies or in-house local authority direct works teams. Social enterprises can and do compete in these markets, but to do so they must be able to engage in the same economies of scale as the private sector. However, one of the unique selling points of social enterprises is their commitment to sustainability. Social enterprises have demonstrated that by engaging communities in recycling, re-using and reducing waste, it is possible to develop a sustainable approach to waste management. Sustainability means devising solutions that give equal weight to social, economic and environmental issues. The case studies presented throughout this report show how the co-operatives and social enterprises in the community waste sector have devised a sustainable approach to waste management, based on the following competencies -

- **Social.** The ability to design waste management services that improve the

quality of life for local people. They achieve higher participation rates because they address problems at a grass roots level by directly engaging with, relating to, and responding to the needs of communities. This in turn stimulates a feeling of community pride and reduces vandalism, fly-tipping etc. Money received for collecting and selling recycling materials is reinvested in the community to address social exclusion and deprivation. The sector also plays a role in building the capacity of local workforces, creating stable meaningful employment, and adding training in life skills and other benefits that private employers seldom provide.

- **Economic.** The ability to deliver direct local economic benefits to communities, local authorities and businesses. Recycling can cut waste management costs by reducing the use of landfill or specialist waste treatment processes. It can also create value through the re-use of improved, refurbished or upgraded products by the wider community. Increasingly, the sector is adopting a business model for financing its waste management activities, and using grant funding more creatively to ensure the independence and sustainability of its waste management practices.
- **Environmental.** The ability to achieve and sustain high levels of participation in recycling services ensures that recycling targets can be met more easily, and often more quickly. This is a product of the sector's ability to directly and creatively engage with stakeholders in the design of waste management services that address their needs. Community engagement leads to more efficient waste segregation, increasing the value of the materials recovered, and also enables more complex waste management problems to be solved. Higher levels of recycling will lead to

environmental benefits, both local and global. Recycling close to where waste arises limits transport distances, which in turn helps to lessen global warming and climate change.

Community Recycling and Resource Recovery in California (see Box 4) is a good example of a social enterprise that has achieved economies of scale by focusing on a niche market. ECT Recycling (see Box 5) and FRC Group (see Box 6) are two British examples of social enterprises that have taken the same route.

BOX 4: COMMUNITY RECYCLING AND RESOURCE RECOVERY (CALIFORNIA, USA)

Community Recycling and Resource Recovery (CRRR) carries out large-scale organic waste composting in the Sun Valley area of Los Angeles. It is an offshoot of Community Recycling, a social enterprise established in 1974, which owns two other recycling operations. It collects grocery waste and cardboard packaging waste from over 1,000 supermarkets and grocery stores in Los Angeles. It receives over 2,000 tonnes of grocery waste, as well as municipal green waste, every day. This is composted to produce around 300,000 tonnes of certified organic compost a year, making it one of the largest organic compost producers in the world.

CRRR was established when the California Integrated Waste Management (CIWM) Board was starting to plan how it would achieve a State target of a 50% recycling rate. It had concluded that this could not be achieved without addressing the issue of organic waste, so when CRRR applied for a permit for its composting facility it was supported by the CIWM Board.

In 1994 CRRR launched a collection service for food retailers, hiring an expert from the sector to market the service. Initial results showed that savings in disposal costs were enough to offset the cost of running the service. The compost is sold to farmers across the sub-region, and this has supported a programme to promote agricultural uses for municipal compost. Specific end-markets now include grape, cotton and strawberry farms.

Key points

- Government targets can provide a major incentive for recycling initiatives
- Large-scale recycling projects tailored to the needs of specific industry sectors can be highly successful
- High-value end-products, such as organic compost, can make recycling projects commercially feasible

BOX 5: ECT RECYCLING (LONDON, ENGLAND)

ECT Recycling is the UK's largest not-for-profit recycling company, with 360 employees, providing recycling services to eight London Boroughs and eight other local authorities in the Midlands and the West Country. It has also recently won the full refuse collection contract for Ealing. Different recycling services are offered including kerbside collection, civic amenity sites, composting, green waste collections, estates recycling, public recycling sites and commercial recycling services.

ECT has adopted a partnership approach, working with other organisations which it believes share its ethos and values. For example, a new social enterprise, Bryson House Recycling, has been established as a joint venture with Bryson House, a charity based in Northern Ireland, and has won a number of local recycling contracts. The Furniture Resource Centre (FRC) in Liverpool has partnered with ECT on tenders, bringing its experience of bulky household waste and intermediate labour markets.

ECT Recycling is a not-for-profit social enterprise (company limited by guarantee) owned by ECT Group, an Industrial & Provident Society originally established in 1979 as a community transport organisation. In 1985, the organisation started a furniture recycling project and further diversified its recycling activities in 1994 with the launch of its first 'green box' or kerbside collection scheme for householders.

ECT believes that its not-for-profit status allows it to provide a higher quality service, since it does not have to pay dividends to shareholders and all its surplus can be retained for reinvestment. Its operating surplus has been increasing, but recent figures suggest that as turnover increases, the net profit margin has been falling-

- 2003: £343,616 surplus on trading turnover of £12.5 million (2.7% surplus)
- 2004: £416,836 surplus on trading turnover of £20.4 million (2.0% surplus)

Recycling contracts (£15.8 million) and secondary material sales (£4.5 million) contributed 86% of the group's total income of £23 million in 2004, with the remaining 14% sourced from grants. Overall the proportion of grant funding is falling year on year, in line with its overall objective of becoming independent of grant aid.

Key points

- Partnerships can enable social enterprises to grow and combine areas of technical expertise
- ECT achieved growth through diversification by focusing on its core competencies in transport and public sector contracting
- Not-for-profit organisations are able to reinvest all of their surpluses, giving them a competitive advantage over private enterprises

Photo courtesy of ECT Recycling

BOX 6: FRC GROUP (LIVERPOOL, ENGLAND)

Furniture Resource Centre (FRC) was established in 1988 as a small local charity with a company limited by guarantee trading arm. Its aim was to '*... enable people in poverty to get the furniture they need so that they can create homes ... and to provide employed and socially excluded people with salaried training*'. A furnishing service was launched in June 1994 with a range of furniture products and services being sold to social landlords (typically local authorities and housing associations).

Since 1993 FRC's annual turnover has risen from £260,000 to over £7 million. More recently its turnover has dropped to £5.5 million, reflecting a drop in the number of asylum seekers and council tenants requiring furnished accommodation. Grant funding has diminished from 84% to just 9% of total turnover since the company was set up. This growth in trading income has been achieved through a number of subsidiary and spin-off businesses, which together form a '*commonwealth of social businesses*', including-

- A manufacturing business for new furniture, and re-upholstering and renovation of furnished goods collected from the bulky waste contracts. This business eventually became uneconomic and all new furniture is now out-sourced
- The FRC Group relies on **CREATE**, an independent social business established in 1995, to provide salaried training in the refurbishment of white goods and other large domestic appliances
- **Revive** is an FRC trading subsidiary, established in 1998, to provide a retail outlet for new and refurbished furniture and CREATE refurbished goods
- **Bulky Bobs** is another FRC trading subsidiary, which collects bulky household waste for three local authorities, including Liverpool.

In 1993 FRC had 17 staff. This has risen to over 70 full-time salaried staff and around 30 salaried trainees. Taking into account subsidiaries and spin-offs, the wider commonwealth employs over 150 people. FRC has pioneered the development of an intermediate labour market, providing long-term unemployed people with a stepping-stone back into employment. Trainees receive qualifications and life skills as part of their year long contract with FRC, and 70% of trainees continue in paid work after training.

Key points

- Recycling services can also meet social needs
- Recycling is suitable for developing intermediate labour market activities
- A virtuous relationship can be developed between a commonwealth of social businesses engaged in complementary activities

3.4 Economies of scale

Economies of scale can be very important in the recycling sector. Transport and storage costs can consume a disproportionately large part of the budget of small recycling collection services, making them unable to compete on price with larger recycling operators. Entry into higher value-added recycling activities often calls for large investment in specialised machinery, and consequently large-scale operations. Social enterprises can be at a distinct disadvantage in such markets, especially if they have poor access to capital finance. The Bronx Community Paper Company was a proposal to establish a recycling paper mill, creating jobs for local unemployed people in a poor district of New York. But Banana Kelly, the community development agency behind the proposal failed to secure the necessary finance (see Box 7). But some social enterprises manage to overcome these barriers. Lintrup Biogas Co-operative in Denmark managed to raise nearly £4 million to build a biogas plant that used organic waste materials collected from its 66 co-operative farmer members (see Box 8).

However, economies of scale are not always the most important factor in determining business success. There are many areas of recycling that are not attractive to either the private or the public sector, and where economies of scale do not always result in a competitive advantage. Examples of this include recycling activities where -

- The costs are too high and/or the profit margins are too small to offer a reasonable return on investment
- The logistics of collection and transportation are too problematic
- The risk of failing is too high
- The market for the recycled product is unstable or underdeveloped
- It is too difficult to source the waste material.

For instance, collecting and recycling food waste from domestic households can be extremely problematic. It can be difficult to persuade householders to separate their waste. Food waste, especially cooked food, can attract

BOX 7: BRONX COMMUNITY PAPER COMPANY (NEW YORK, USA)

The Bronx Community Paper Company was a proposal to establish a 400,000 tonne per year recycled newsprint mill on a brownfield site in the Bronx district of New York. Although the project was not realised – it failed to achieve financing in 2000 – lessons can be learnt from the experience, particularly from the point of view of a social enterprise attempting to establish a large scale manufacturing project.

The project was initiated by an environmental lobby organisation, the National Resources Defense Council, and the Banana Kelly Community Improvement Association. The mill was to have been owned by Banana Kelly, which would empower the local community to create jobs from recycling. However, the scale of the project was far beyond the experience of Banana Kelly's staff, and their more relaxed approach created a clash of cultures when dealing with external investors and industry partners. The project was also forced into a contractual rather than stakeholding relationship with the city authority, leading ultimately to an adversarial position.

Key points

- Social enterprise has the potential to establish large scale manufacturing projects
- Genuine partnerships are required in order to overcome contractual and cultural differences

BOX 8: LINTRUP BIOGAS CO-OPERATIVE (ZEALAND, DENMARK)

The Lintrup biogas plant was constructed in 1990 by a co-operative of 66 farmers in West Jutland. The plant was financed using a bank loan (guaranteed by the local authority), equity contribution from the co-operative and a 40% grant from the Danish Government, making up a total investment of £3.9 million. It is owned by Linkogas AmbA, an independent co-operative society.

The plant, along with 19 other co-operative biogas plants in Denmark, was designed to support the livestock industry. Stock density is high and farmers are not allowed to export slurry. Localised treatment was therefore required, and by working together, farmers have been able to develop the biogas plant.

The plant treats a mix of organic wastes, the majority of which are cattle and pig slurries supplied by co-operative members. The slurry is supplemented by waste from food processing, abattoirs, the pharmaceutical industry, and sewage sludge from a local wastewater plant. The organic wastes are digested using a thermophilic (high temperature) process. The pasteurised end-product is applied to crops by co-operative members. The farmer benefits because the end-product is less odorous than slurry, making it more suitable for application to the land, and releases nutrients into the soil more slowly, reducing water pollution. The local community benefits from the production of a local renewable energy resource which is used to generate heat and power in a 2 MW combined heat and power plant.

Any surplus generated by the co-operative is reinvested for the benefit of the farmer members. The most recent figures available are for 1997 and 1998, which demonstrated that the plant was operating at breakeven, with a turnover of around £800,000 per annum.

Key points

- Co-operative structures enable economies of scale to be achieved in the processing of waste materials
- Biogas production reduces environmental pollution whilst providing the local community with a renewable source of energy

BOX 9: WASTECAP FOOD WASTE CO-OPERATIVE (BOSTON, USA)

The Boston food waste co-operative was set up by WasteCap, a non-profit public-private partnership that aims to develop cost-effective recycling services for the business community. Since 1996 WasteCap has been supporting the development of co-operatives to deliver new recycling services to members. The organisation establishes the structure, identifies partners to deliver the recycling service, and then markets the service to businesses. By bringing together businesses WasteCap is in a stronger position to negotiate with the service provider, and it can also target geographical areas in order to minimise haulage costs. Thirteen co-operatives have been established, collecting office paper, cardboard and food waste.

The aim of the food waste co-operative is to encourage better waste management and to help businesses reduce their disposal costs. The service is designed to collect specified food wastes from participating businesses. The collection is carried out by Herb's Disposal, a specialist waste haulage company contracted by the co-operative, for a total cost to co-operative members of around £40 per tonne. The organic waste is collected in drums provided by the contractor and is then taken to an approved agricultural composting site. The compost produced is sold to farmers and is used as a replacement for artificial fertilisers.

Key points

- Co-operative models can be used to structure recycling projects in the business community
- Development agencies can act as the entrepreneurs in establishing new co-operative recycling businesses

vermin, which in turn can lead to environmental health problems. Food waste is prone to putrefaction, resulting in unpleasant environmental conditions. The recycling options for food waste are few and mostly uneconomic. The best option is to turn food waste into compost, but this can be a slow process, requiring large amounts of space, which is at a premium in urban areas, close to where large volumes of food waste are available. WasteCap in Boston, USA (see Box 9), has found a solution to this problem by focusing on business food waste only. But, East London Community Recycling Partnership (see Box 10) has gone one step further, and has managed to devise a commercially viable approach to recycling domestic food waste.

Photo courtesy of East London Community Recycling Partnership

BOX 10: EAST LONDON COMMUNITY RECYCLING PARTNERSHIP (LONDON, ENGLAND)

East London Community Recycling Partnership (ELCRP) was founded in 2001 and has partnership agreements with over twenty organisations involved in the delivery of recycling and re-use services in the London Borough of Hackney. In addition to its recycling targets, ELCRP aims to improve the quality of the environment on housing estates and to address environmental health issues. ELCRP now has 35 staff, most of whom were either previously unemployed or engaged with employment training organisations. It operates a number of recycling projects and services, ranging from recycling collections to composting.

ELCRP has piloted a highly innovative food waste composting project on the Nightingale Estate in Hackney, using funding from the Royal Society of Wildlife Trusts' Community Recycling and Economic Development (CRED) programme and the Neighbourhood Renewal Fund. This high-rise housing estate had experienced significant problems with rotting food waste in the bin chutes and bin stores. Households are provided with a kitchen green bin into which they add 'EM Bokashi' microbes, which prevent putrefaction. ELCRP's innovative solution to the problem of food waste, which complies with the Animal By-Product Regulations, doesn't require the separation of meat and fish from the rest of the food waste, making it simpler for households to recycle. There is a weekly collection and the food waste is then loaded into a 'Rocket' composting machine. ELCRP's grass roots approach has been vital to the success of this project, which has managed to achieve an 86% participation rate on the estate.

ELCRP's project manager has marketed the food waste recycling project as a highly improved bin service rather than a recycling scheme, because this focuses attention on the added-value of improved environmental conditions, whilst the end-product provides an income to improve local amenities and the environment. The role of the local authority in the success of the project is also worth noting. Normally, local authorities look for easy solutions and often contract with big waste-management companies to deliver their services. However, these big companies cannot always meet the needs of local communities. For example, the lorries used by big companies might be too large to access some housing estates. In contrast, ELCRP's bespoke doorstep collection services are neat and tidy and meet the local community's needs.

Key points

- Innovative solutions to recycling problems are strengthened by high levels of community involvement and participation
- Recycling projects can add value by addressing associated issues such as environmental health
- Processing waste into marketable products creates additional income streams

4. Community Recycling: a way forward

4.1 The community waste sector

The community waste sector encompasses a wide range of social economy organisations, including charities, community enterprises, co-operatives and other forms of social enterprise. Organisations in the community waste sector work closely together through bodies such as the Community Recycling Network (CRN), Furniture Re-use Network (FRN), and the Community Composting Network (CCN).

CRN describes itself as '*the national umbrella organisation for community-based, not-for-profit and co-operative waste management groups*'. CRN was established by the environmental campaigns group Friends of the Earth, and became an independent body in 1992. It has approximately 400 full members and associates. According to the CRN website[1], the majority of members '*are involved in not-for-profit, community-based waste minimisation, re-use and recycling schemes which range from one-person village operations to large, not-for-profit kerbside collection services covering major cities. CRN members working in partnership with local authorities - including Beacon Councils - and waste management companies have achieved some of the highest recycling rates in the UK and offer separated kerbside recycling collections to approaching 3 million households*'.

FRN was established in 1988. The FRN website[2] describes FRN as '*the national co-ordinating body for 300 furniture and appliance re-use and recycling organisations in the UK. The FRN promotes the re-use of unwanted furniture and household effects for the alleviation of need, hardship, distress and poverty. 1.5 million items per year are re-used and passed on to low income families. 63,000 tonnes of waste is diverted from landfill and 5000 people are working in the UK to collect and deliver furniture*'. FRN members repair and distribute over 250,000 domestic appliances a year to low-income families across the UK that cannot afford to purchase new appliances.

CCN was established in 1996. It supports and promotes the community management and use of bio-degradable waste materials. It is a membership organisation with over 230 members. The CCN website[3] describes the activities of its members as being '*very diverse; projects range in scale from individuals or small groups working on allotment sites or promoting home composting, to social enterprises with local authority contracts providing kerbside collection services. The common theme is that the local community is involved in the management of the organic waste they are producing and are not-for-profit and locally accountable organisations*'.

The majority of the organisations that make up the membership of these three networks are small-scale operations. Most are engaged in the collection of segregated waste, to which they add value by separation and bulking up. The recycled materials are then either sold to intermediate waste merchants or, in some cases, elements of the waste are recovered and improved (such as white goods or furniture) and then re-sold or given to customers often from low-income households.

Smaller organisations of this type can become stronger by working together to act as a consortium in order to gain larger contracts from business or local authorities. This approach has been successfully adopted by the Tower Hamlets Community Recycling Consortium (see Box 11). The other option is for small-scale community organisations to grow. The previous section of this report contains case studies describing how ECT Recycling (see Box 5) and the FRC Group (see Box 6) achieved growth through contracts with local authorities. However, local authority contracts are not always essential for growth. Magpie Recycling Co-operative in Brighton has developed a substantial recycling business, paid for by households, in competition with a free collection service provided by the local authority (see Box 12).

BOX 11: TOWER HAMLETS COMMUNITY RECYCLING CONSORTIUM (LONDON, ENGLAND)

Tower Hamlets Community Recycling Consortium (THCRC) is a co-operative (company limited by guarantee) formed in 2001 to deliver recycling services for households in the London Borough of Tower Hamlets. The local authority had concluded that the recycling service would be best operated by a community-based organisation. In response to this requirement, a co-operative was formed by interested partners, using model secondary co-operative (or co-operative consortium) rules. Partners include the Tower Hamlets Environmental Trust, London Recycling Consortium and Islington Waste Savers. The consortium made a bid for the collection service and won a five year contract serving 30,000 households in the borough, most of whom live in high rise flats.

THCRC is organised into three functions: operations, corporate services and the contractor's office. The management team is accountable to a board of directors who provide strategic leadership and democratic accountability. The board meets several times a year and receives regular reports from the management team.

It took THCRC two years to win the local authority contract, and during this period the organisation had to be funded through the partners' own resources. The consortium has tried to be self-sufficient and receives no grants for running costs. The building that the consortium is located in is financed through a mortgage secured against its fixed income.

THCRC employs 35 people and has a turnover of £1.2 million. In order to keep costs down, the consortium has developed innovative ways of making door-to-door collections in high-rise buildings and maximising community participation. It has designed a dedicated high-rise door-to-door recycling trolley that can go up lifts and allows for the doorstep sorting of recycled materials. It has also designed a recycling winch for removing bulk bags of recycled materials, such as bottles and paper, from high-rise flats that do not have adequate lifts.

An important complementary part of the service is the Friends Network – an association of resident-volunteers that assists with the smooth delivery of the collection service in each block or floor, provides feedback to the consortium, and helps to promote recycling in their block or floor.

Key points

- Co-operative consortiums are an effective way for small community recycling projects to achieve economies of scale
- Innovation in community participation and collection techniques from high-rise buildings has improved productivity

There are some clear patterns that mark out the smaller community recycling initiatives. They tend to be led by one person with a clear vision who mobilises a nucleus of supporters within the local community. There is a strong and continuing commitment to this local community which can result in a tendency to avoid high levels of growth that might undermine this community focus. There is an emphasis on not-for-profit structures, which can limit the scope for raising investment capital, making the organisations more reliant on grant and loan finance.

BOX 12: MAGPIE RECYCLING CO-OPERATIVE LTD (BRIGHTON, ENGLAND)

Magpie is an employee-owned workers' co-operative that offers subscription and fee paying recycling services to local homes and businesses. It started in 1990, with three volunteers collecting cans, glass and office paper from businesses. In 1992 it was incorporated as a co-operative. At this time, there was a lot of support from the business community and local council officers, who were able to provide help such as breaks in rent for premises. But Magpie was unable to obtain grant funding, which was only available to charities or not-for-profit organisations. Instead, the three founding members obtained support from the Government's Enterprise Allowance Scheme, in the form of weekly wages of £40 for the first year.

Subscription kerbside collection services began in 1996 and have since expanded to a customer base of 5,000 domestic and 1,000 commercial customers. The subscription 'green box' service collects glass, cans, foil, paper, card, plastics, Tetrapak and textiles. Householders are required to pre-sort material for collection, which takes place once a week using customised electric powered milk floats. The co-operative has diversified the services it offers to include-

- Consultation on recycling strategies for local authorities
- Furniture collection for refurbishment and resale
- Gardening services and removal of garden waste for composting.

It currently has 35 employees, with a turnover in excess of £500,000. Most profits raised are ploughed back into the organisation to run new projects and reinvest in equipment, such as new vehicles. There are occasional profit shares with the workers.

Despite giving initial support to Magpie, the local authority now offers a free (paid for through council tax) doorstep recycling service, whereas Magpie's customers pay £15 per quarter. It has been found that, in the main, Magpie's customers are happy to pay this fee because the service is better. Magpie sells itself as a trustworthy recycler, guaranteeing that materials will not end up in landfill sites or waste incinerator plants. Innovation is central to Magpie's business model with new services developed in consultation with the local community. Magpie communicates with its customers via a website and a twice-yearly newsletter. It believes that the public are more likely to sort their waste for recycling if they know that it benefits the local community.

Key points

- Operating a paid-for domestic kerbside collection service can be feasible, even in competition with free collection services
- Domestic customers will pay for multi-material collection services, including more difficult materials
- Brand identity can be strengthened by adopting other environmental practices such as electrically powered collection vehicles

Small-scale organisations in the community waste sector have some clear competitive advantages over larger private sector businesses, which counterbalance their lack of economies of scale. These competitive advantages include –

- **Strong community support.** This can lead to higher levels of participation and compliance with more onerous tasks such as waste segregation
- **Volunteers.** Support in the form of local volunteers for the workforce and management boards of recycling projects can keep costs down
- **Lower profit targets.** Not-for-profit structures mean that the organisations do not have shareholders and can operate on lower profit margins, or reinvest more of their surpluses in improvements to services.

The lack of pressure to generate large profit margins can also help community recycling projects think more innovatively about market opportunities and identify new niche markets. This happens because the projects are motivated by social and environmental goals rather than the profit motive. Öko-Service in Graz, Austria, is a good example of a community-based recycling organisation that has developed a range of niche markets (see Box 13).

However, these competitive advantages come attached with potential weaknesses. The

BOX 13: ÖKO-SERVICE (GRAZ, AUSTRIA)

Öko-Service is an independent, not-for-profit company established in 1994 to provide environmental services and support for the unemployed to re-enter the labour market. It employs 10 full-time staff and 20 transitional workers nominated by the local labour office. Nominated workers are employed for either 16 or 24 months, depending on their age, and receive educational, vocational and on-the-job training. The organisation has a strong commercial focus concentrating on –

- Raising financial resources to enable the business to become self-sustaining
- Developing a more professional approach to attract private sector partners
- Creating greater opportunities to expand into unexploited niche markets.

It collects garden waste, cork, window frames, electrical and electronic equipment, as well as waste cooking oil from homes and commercial premises. It also provides a composting service, a garden and shredding machinery hire service, and a mobile dishwashing and crockery service (to promote re-use at functions).

At present the organisation is reliant on the local labour office and the European Social Fund to pay workforce wages. The garden waste service is subsidised by the municipality on the basis of waste diverted from conventional disposal. A number of partnerships have been developed with both public and private sector organisations. This approach has been used to develop new niche markets, for example waste cooking oil is collected and made into bio-diesel by a partner, expanding the range of services offered by Öko-Service, and allowing joint marketing of services with partners. The company is able to be innovative because it has low overheads and its transitional employment model also allows it to invest human resources in the development of new niche markets.

Key points

- Operates a transitional employment model, similar to the intermediate labour market activities of the FRC Group
- Uses partnerships to test and develop new niche recycling markets

goodwill of the community and volunteers can evaporate if the broader benefits of recycling are not tangible. Projects that are reliant upon volunteers can end up being victims of their own success when increased demand leads to intolerable workloads, resulting in volunteer fatigue and burn-out. Not-for-profit structures can mean that there is an over-reliance on grants and loans to finance investment in equipment and machinery.

Furthermore, there is no reason why small-scale community-based recycling projects cannot benefit from economies of scale whilst simultaneously holding on to the competitive advantages associated with being small-scale. East London Community Recycling Partnership (see Box 10) and Tower Hamlets Community Recycling Consortium (see Box 11) have developed structures that do this. Consortia and partnerships are both forms of co-operative structure. The final part of this section examines what contribution co-operative structures can make to strengthen the community waste sector.

4.2 The co-operative advantage

Co-operative structures are already widely used in the community waste sector. Half of the case studies in this report are of co-operative organisations. Taken together, they demonstrate the scope and flexibility of co-operative structures to provide sustainable solutions to the waste problem. Co-operatives are a distinctive form of social enterprise, with a common global identity, which is regulated by the International Co-operative Alliance (Box 14).

In the context of the community waste sector, co-operative structures can be developed that address some of the potential weaknesses associated with small-scale, community-based initiatives. The advantages of a co-operative approach to recycling can be grouped together in two interlocking areas –

- **Membership.** Democratic, voluntary and open membership structures are a defining feature of co-operation. By developing structures that enable the key stakeholders to become full and active members, co-operatives provide a platform for building community engagement and participation. Unlike private sector enterprises, where ownership and control is based on how much each person invests, co-operatives are fully democratic structures which make decisions on the basis of one-person-one vote, regardless of how much each member has invested. Unlike some charitable structures, based on systems of patronage involving trustees, donors and beneficiaries, the co-operative approach is more solidly based on systems of equality, equity and solidarity. When combined with the values of self-help and self-responsibility, co-operative

BOX 14: A CO-OPERATIVE IS.....

A people-centred organisation, jointly owned and democratically controlled by its members. Trade is a fundamental human activity, and co-operatives are trading enterprises, providing goods and services and generating profits. Those profits are not taken by outside shareholders as with many investor owned businesses, but are under the control of the members, who decide democratically how they should be used.

- Co-operatives invest in education and training for their members, enabling them to contribute more effectively to the sustainable development of their enterprises.
- Co-operatives are part of and work for the sustainable development of their communities.
- Co-operatives are based on the values of self-help, self-responsibility, democracy, equality, equity and solidarity. Co-operative members believe in the ethical values of honesty, openness, social responsibility and caring for others.

The thousands of co-operative enterprises throughout the UK are just part of a global movement that employs an estimated 100 million people. The UN estimates that the livelihoods of half the world's population are made secure by co-operative enterprise.

structures provide the basis for genuine community involvement.

- **Business model.** Co-operatives work to the principle of member economic participation, which allows members to invest in their enterprise and receive a limited share of the profits, based on their transactions with the co-operative. This is in contrast to the not-for-profit structures used by some community-based recycling initiatives, which can result in an over-reliance on grants and loan finance. Co-operative principles recognise the rights of members to a limited return, whilst also requiring all co-operatives to set aside some of their profits to indivisible reserves.

The global co-operative movement has a long history and tradition of using its values and principles to develop new solutions to community concerns. Box 15 contains a case study of Kitakyushu ELV Co-operative Association in Japan, which has developed a highly innovative approach to the recovery and recycling of scrap vehicles. By bringing together seven independent businesses involved in different aspects of the recycling and recovery process, the co-operative has provided an equitable structure for joint investment and marketing, based on a co-operative supply chain.

Co-operative principles can be applied to a wide range of settings, engaging different types of stakeholders in a variety of organisational relationships appropriate to the aims and objectives of the enterprise. Box 16 contains a description of how Sundance Renewables, a co-operative that makes biodiesel from waste cooking oil, has used a not-for-profit, workers' co-operative structure.

4.3 A co-operative approach to recycling

Turning waste materials into the raw materials for a new and dynamic community recycling sector can be greatly enhanced by adopting co-operative values and principles. Adding value to waste requires some level of initial capital investment, and a secure supply of waste materials. Both of these key inputs can be provided by the community, in a way that reinforces the commitment of the community to the success of the co-operative. Structures can be established that allow the community to benefit from its supply of waste materials, through the community's ownership and control of recycling co-operatives.

Communities are more likely to engage in waste recycling and participate in waste segregation practices if they benefit directly or indirectly from these efforts. By investing some of their profits in the community, co-operatives can fulfil the seventh co-operative principle, *concern for community*, and at the same time reward their community for providing them with raw materials.

This community/co-operative relationship can be further reinforced by enabling the community to invest in the co-operative, and paying a return on that investment. Community members with capital invested in the co-operative have a greater incentive to maintain and increase their provision of materials for recycling. By creating a virtuous circle that connects the roles of supplier, investor, volunteer, worker and customer, community-based recycling co-operatives can be at the leading edge of innovation in recycling practices.

Although there are no UK examples of significant community investment in recycling co-operatives, there are precedents in other areas of co-operative endeavour. A good example, illustrating the potential for community investment, is Baywind Energy Co-operative. Baywind owns and operates six wind turbines in Cumbria, financed by over £2 million share capital raised from the local community and other supporters of wind energy. There is no reason why recycling projects cannot secure the same type and level of support from the communities they serve.

Co-operative structures can address some of the most significant challenges facing the community waste sector. These include –

- **Achieving economies of scale**, by forming co-operative consortia, similar to the Tower Hamlets Community Recycling Consortium (see Box 11)
- **Securing community involvement**, by offering ownership and control through

democratic membership structures, and strengthening the links between participation in recycling initiatives and the broader benefits to the community

- **Encouraging community investment**, by developing co-operative structures that allow members to invest share capital, and to receive a limited return for their participation in recycling
- **Completing the recycling circle**, by enabling the community to be suppliers, investors, volunteers, customers and beneficiaries in community-owned and controlled co-operatives
- **Developing higher value-added recycling activities**, using investment capital from the community to engage in recycling activities that process recycled and recovered materials, and use these as raw materials in high value-added products and process
- **Establishing co-operative supply chains**, by forming co-operative associations between independent community-based recycling projects engaged in recycling activities that form a supply chain, similar to the Kitakyushu ELV Co-operative Association in Japan (see Box 15)
- **Supporting co-operative entrepreneurs**, co-operative structures provide a powerful basis for linking social entrepreneurs to their communities, combining an entrepreneurial outlook with structures that engage all the key stakeholders. Collaborative working and strong partnerships between stakeholders are needed to bring together appropriate expertise and to achieve competitive levels of productivity.

This section has concentrated on the way forward for organisations in the community waste sector. It has highlighted the competitive advantage of developing co-operative structures for the sector and described a co-operative approach to recycling. The next and final section of the report examines the scope for engaging consumer co-operative societies in recycling, and the potential for partnerships between the community waste sector and consumer societies.

BOX 15: KITAKYUSHU ELV CO-OPERATIVE ASSOCIATION (KITAKYUSHU, JAPAN)

The Kitakyushi ELV (End of Life Vehicle) Co-operative Association was established as part of the Kitakyushu Eco Town recycling park's automobile recycling zone. Seven individual businesses, involved in different stages of car wrecking and the secondhand car-parts sales supply chain, have been brought together from previously dispersed sites around the town. Exterior, engine and electrical parts are stripped out and supplied to the used parts market. Good-quality iron and non ferrous metals are recovered, and supplied primarily as steel making materials.

Member businesses now benefit through the more efficient dismantling of cars, joint marketing of parts and materials, and joint ownership of capital intensive equipment. For example, the co-operative owns a steel press which enables members to add value to their recycling processes. Establishment of the co-operative was dependent on the support package offered by the eco-town project, which included grants for capital investment. It has also benefited from Japan's comprehensive Extended Producer Responsibility legislation.

Key points

- Co-operatives can be a highly effective structure for supply chains linking complementary business activities
- Co-operatives can enable members to make joint investments in order to improve their value-added recycling activities
- Government legislation and grant aid can initiate recycling activities

BOX 16: SUNDANCE RENEWABLES (CARMARTHENSHIRE, WALES)

Sundance Renewables is a workers' co-operative, established as a company limited by guarantee. Its aims are to develop the knowledge, understanding and use of renewable energy amongst local communities. In 2002, the organisation embarked on a project to produce biodiesel from waste cooking oil. As a not-for-profit co-operative, all profits are reinvested in the business, but this has made it harder to attract investment finance because the company only offers a limited return on capital. This is counterbalanced by the commitment of the directors (in terms of vision, time and financial resources), which has been central to the successful development of the biodiesel plant.

The plant was designed and built through a partnership with another co-operative, Biofuels. Development of the commercial biodiesel plant has taken two years and has cost in the region of £200,000. These costs were met through a mixture of grant funding and £40,000 raised through loans and member contributions. Initial funding came from CREATE and was to be match-funded by Cleanstream (the Welsh equivalent to CRED – see Box 10). However, late in the application process, Cleanstream refused funding because it decided that energy-from-waste schemes were no longer eligible. The £40,000 shortfall in funding was raised through members and a loan.

Used vegetable oil is collected free of charge from businesses; a good network of donors is essential since it is not commercially feasible to purchase the raw material. Sundance has not had any problems sourcing materials; its supply network has gradually increased, although impurities in the oil can cause problems. The process is cost-effective, even though Sundance is based in a rural area, producing in the region of 5,000 litres of biodiesel per week based on a collection radius of 30 miles. A larger vehicle is to be purchased with financial help from the Wales Council for Voluntary Action. Sales of biodiesel began on 1st November 2004 and the quality of the fuel has been recognised by the achievement of a European Quality Standard. Demand has grown and Sundance Biodiesel is now planning to build another plant.

Prior to setting up the pilot plant, funding from Co-operative Action was used to produce a guide and run training courses about establishing biodiesel plants. This could lead to the development of a network of plants and the expansion of the biodiesel industry.

Key points

- The workers' co-operative structure harnesses members' commitment to environmental action
- Developing innovative products and processes can take time, which can result in funding difficulties
- Recycling waste vegetable oil can be commercially viable, even in rural areas

Photo courtesy of Sundance Renewables

Photo courtesy of Sundance renewables

5. Engaging consumer co-operative societies in recycling

5.1 Introduction

In 2001 the Co-operative Commission into the future of the UK co-operative sector said its mission was '*to challenge conventional UK enterprise by building a commercially successful family of businesses that offers a clear co-operative advantage*'[1]. It argued that the co-operative advantage is based on a virtuous circle where the attainment of social goals provides a competitive advantage leading to commercial success, which then reinforces the ability to meet social goals.

Recycling provides the perfect opportunity for all co-operatives to demonstrate this virtuous circle. There are over 1,500 co-operatives in the UK with a combined annual turnover in excess of £13 billion. The proportion of waste recycled or re-used is one of ten Key Social and Co-operative Performance Indicators (KSCPIs)[2] that Co-operatives[UK] recommend should be adopted by all co-operatives to measure their performance.

This section of the report focuses on how consumer co-operative societies can engage in recycling. Other types of co-operatives can and do make a significant contribution to recycling efforts. But there are several reasons for focusing on consumer societies. They are the largest part of the co-operative movement when measured in terms of membership and turnover. They are also the most integrated part of the movement. More than 90% of consumer societies' food trade is sourced through the Co-operative Retail Trading Group (CRTG), which is also responsible for The Co-operative brand. Collectively, consumer societies have the greatest potential for making a real difference to how recycling is practised by the co-operative movement and by the communities they serve.

5.2 Current waste management practices

Consumer societies experience significant costs associated with the disposal of waste. No firm data is available for how much consumer societies presently spend on waste management. Dr Robin Kent of Envirowise estimates that waste costs UK industry at least £15 billion a year or around 4.5 % of total turnover. Kent says that *'The total cost of waste is generally around 20 times the first estimate that a company makes. Most of these costs are hidden and companies simply do not consider them when looking at the cost of waste. A first step in assessing performance is finding the true cost of waste. The 'true cost' of waste is not only the cost of the raw materials but is also a function of how much added value has been put into the product before it is lost from the production process.'*

At present, few businesses recognise the true cost of waste. Studies by Envirowise have consistently shown that, on average, the true cost of waste is actually ten times the disposal cost. The rest of the cost arises from inefficient use of raw materials and energy and from having to handle and store waste.

During the course of the research for this report, the NCBS carried out a limited telephone survey of a number of consumer societies to determine the scale and cost of their existing waste management arrangements. In addition, the NCBS asked consumer societies if there were any issues standing in the way of an initiative to either work with or create their own co-operative recycling businesses.

A range of consumer societies were interviewed in order to identify current costs and waste management strategies. Due to the variety of size and activities in the movement, it was difficult to establish an average position for waste disposal costs, or a standard waste management strategy. However, the largest single contributor in terms of volume and cost of waste disposal was food retail.

The survey found that waste disposal cost estimates ranged from between less than £3,000 to over £900,000 per annum. This large degree of variation was due to three main factors: the differences in trading activities, size and scale, and the accuracy of waste monitoring and accounting systems used by consumer societies. The survey found that the majority of those interviewed had limited amounts of accurate data, both in terms of volumes produced and the cost of disposal. This was a concern in view of the commitment of the co-operative movement to monitor and report on KSCPIs, which include a performance indicator based on the proportion of waste recycled or re-used. Over half of those surveyed will not be able to report on this performance indicator unless their management systems are amended.

The NCBS survey showed that just 20% of respondents could report on waste generation and disposal costs against individual parts of the waste stream (glass, paper, food, plastic, etc). Only a few consumer societies were able to produce waste statistics across each retail group in terms of both tonnage and associated disposal costs. There was a strong degree of correlation between the sophistication of the environmental management system and the level of disposal costs reported to the NCBS survey. Those that tracked their waste performance reported higher disposal costs than those that had rudimentary systems; suggesting that consumer societies with underdeveloped monitoring systems were underestimating the cost of managing their waste. The survey also revealed that although a majority of consumer societies have been considering options to increase their amount of recycling, only around 30% have given any thought to setting up their own recycling centres.

However, the relatively modest starting point for some also represents a considerable opportunity. There are a number of reasons why some consumer societies undervalue waste as a potential asset. Some, in common with privately-owned businesses, see waste as an overhead that has to be tolerated. The effort to minimise waste is often perceived as an activity that will yield fewer benefits compared to paying for the offending material to be removed. This perception is incorrect and often large savings can be made with very little management time or front-end investment. All businesses need to appreciate that the true cost of waste is more than just the cost of disposal.

It also includes the additional cost of buying inappropriate or inefficient raw materials, using more energy than necessary, and paying for labour to deal with the waste. Envirowise predicts that most companies can save at least 1% of their turnover by introducing a systematic waste minimisation programme.

Some consumer societies spoke of their existing arrangements and expressed satisfaction with their recycling record. They were members of CRTG, the consumer societies purchasing organisation, which for a number of years has been operating a take-back scheme for some waste packaging items (mainly plastics and cardboard). These materials are baled and sold to recycling companies in return for Packaging Recycling Notes (PRNs), which are redeemable for cash. The cash is then returned to the CRTG members at the end of the year.

CRTG has an important part to play in the waste minimisation and recycling practices of its member societies. But this does not mean that member societies can hand over all responsibilities for recycling to CRTG. Individual consumer societies can make a large difference in their own right, as initiatives by the Co-operative Group (see Box 17) and Midlands Co-operative Society clearly demonstrate.

The Co-operative Group in Manchester currently collects paper, card, cups, cans, bottles and electrical equipment. The waste is collected, weighed, segregated and stored in a basement area before it is transported to commercial waste companies. In 2003 this facility collected 3,314.3 tonnes of waste which was recycled, and created an income for the group of £74, 362. This facility has now reached saturation point so the Co-operative Group is planning to create a World Class Recycling Centre (WCRC) in a warehouse close to the existing handling station. The new facility would allow for under-cover loading and unloading, material storage, weighing and recording, hand picking and segregation. New material handling equipment would be able to provide additional storage capabilities for material such as waste electrical equipment that require no processing but need to be bulked up prior to recycling. The Co-operative Group estimates that 99% of materials transferred to the WCRC could be recycled and will enable them to move towards their long term goal of zero waste.

The Midlands Co-operative Society began its recycling push three years ago by having cardboard collected from 150 of its sites by contractors. In order to reduce the cost of this operation (both in terms of money and environmental impact) an automatic baler was installed at the supply depot in Leicester. Now delivery trucks can collect waste cardboard and paper from its sites when delivering, and deposit the waste at the baler when they return to reload. Using this system the society currently collects 90-92% of its waste cardboard. The society then buys recycled products such as paper and wrapping paper from the recycler in order to close the loop.

The Midlands Co-operative Society also collects its own waste plastics. They were keen that the plastic should remain in the UK, so they chose a UK based recycler which produces items such as garden decking and street furniture. The society now buys waste bins for its car parks which are made from recycled plastic. Waste wood from broken pallets is sent to be turned into chipboard which is used in the manufacture of kitchen worktops. The society's Funeral Service also uses waste-wood off-cuts from coffin making in a furnace which provides heating to its premises. In the future the society hopes to begin testing its prototype gasification plant in 2006 which will be able to produce electricity from waste dairy and meat products.

BOX 17: THE CO-OPERATIVE GROUP (MANCHESTER, UK)

The Co-operative Group provides an excellent example of closed-loop recycling. It collects used stationery from its offices in Manchester, which it sends to a nearby paper mill that manufactures tissue paper (recycled toilet and kitchen paper), which is then sold in co-operative retail outlets across the UK. Not only does this provide savings in terms of diverted landfill costs, but additional value can be extracted from the resale of the recycled material.

The recycling initiative covers all of the Co-operative Group's major office centres in Greater Manchester, including the Co-operative Insurance Society, the Co-operative Bank, Travelcare, Funeralcare and the Co-operative Group Pharmacy. The normal office waste bins were replaced with recycling bins for specific individual materials, including paper. All recycling materials are weighed, sorted and baled at a recycling centre within the Manchester office complex.

The output from the recycled pulped paper is used to make a range of Co-op brand products including 100% recycled toilet tissue, 100% recycled kitchen towel and soft bathroom tissue, which contains 20% recycled paper.

The cost savings come from lower levels of skip hire, haulage to a landfill site, landfill tax and waste transfer note administration. The following estimates have been made about the success of the project-

- 2002: 890 tonnes diverted from landfill, saving £57,850
- 2003: 1,247 tonnes diverted from landfill, saving £81,055
- 2004: 1,431 tonnes diverted from landfill, saving £93,015.

Since the scheme was established, the business has saved £231,920 on landfill disposal costs alone. The scheme also generates revenue from the sale of the recycled products. The sale of Co-op brand soft recycled bathroom tissue has risen by 7.97% between 2003 and 2004, with a sales value in 2004 of £348,646. The sales of recycled kitchen towel have declined slightly by 5.2% between 2003 and 2004, but still had a sales value of £179,370 in 2004.

Key points

- Closed-loop recycling can involve re-using waste materials collected from one part of the business to produce products for sale in another part of the business
- Once established, recycling systems are likely to grow in efficiency
- Large consumer societies, such as the Co-operative Group, can achieve major economies of scale in their recycling activities

5.3 Closed-loop recycling

Managing waste in a more efficient manner, through resources efficiency, minimisation, or recycling would certainly cut costs. However, the use of some wastes to produce saleable products would maximise the economic benefits, whilst simultaneously achieving the social and environmental objectives of consumer societies. Referred to as closed-loop recycling, this is where an organisation takes responsibility for ensuring that any waste arising from its products is collected, processed and re-used as a secondary material in other products it sells. This calls for the integration of procurement, marketing, distribution and manufacturing activities.

Some consumer co-operative societies are already engaged in closed-loop recycling, as the examples of the Co-operative Group and Midlands Co-operative Society have demonstrated. The Japanese consumer co-operative movement has also embraced closed-loop recycling. JCCU, the Japanese Consumer Co-operative Union, has developed closed-loop recycling practices for six product areas (see Box 18), illustrating the breadth of product range to which the closed-loop recycling concept can be applied. The story of Sabonso Co-operative (see Box 19) demonstrates how closed-loop recycling can also lead to the formation of new co-operative ventures, as part of the strategy to close the

BOX 18: JAPANESE CONSUMERS' CO-OPERATIVE UNION (JCCU)

JCCU, the umbrella organisation for Japanese consumer co-operative societies, has developed closed-loop recycling processes for six types of waste materials –

1 **Polyethylene terephthalate (PET) plastic bottles**. Waste PET plastic bottles are collected by consumer co-operative members, who clean the bottles and remove the labels, before returning them via supermarkets, for their use as the raw material in the manufacture of refillable PET soap bottles. This closed loop provides an end use for recycled PET, and fulfils the consumer societies' packaging recovery obligations. The manufacturing process uses PET flakes rather than PET pellets, further reducing energy usage.

2 **Milk cartons**. Used cartons are collected at co-operative stores and recycled to produce own-brand toilet paper and tissues.

3 **Egg boxes**. Used egg boxes are collected and recycled to produce new egg packaging.

4 **Glass bottles**. Used bottles that contained own-brand soy sauces, rice vinegar and salad dressing are collected at co-operative stores, washed and re-used for the same purpose.

5 **Waste edible oil**. Cooking oil used in co-operative societies' stores or by their ready-made meals subsidiaries, is collected, processed and used to fuel co-operative societies' delivery trucks.

6 **Fish waste**. Raw fish waste from the JCCU fish processing centre and from the co-operative societies' in-store processing, is collected and reprocessed into animal feed stuff. This is used in farms which have supply contracts with the co-operative societies.

Key points

- Demonstrates the scope for using existing organisational networks to develop new recycling initiatives
- Own-brand products offer greatest scope for closed-loop recycling and member engagement in recycling

BOX 19: SABONSO CO-OPERATIVE (KAWASAKI, JAPAN)

In Japan, consumer co-operatives are an integral part of communities, with 30% of the population belonging to a local society or club. Although co-operative supermarkets exist, much of their business is still conducted through the 'Han', a community unit of 4-10 households. A Han group makes weekly orders of goods. This form of purchasing is deemed to build co-operative loyalty and a strong sense of community. It maintains consumer control and enables communities to be directly involved in the identification of new product requirements. An example of this is provided by the Kawasaki Seikatsu Club Co-operative, which is one of 25 co-operatives that are part of the Seikatsu Club Consumers' Co-operative Union with a total of more than 250,000 members. The Kawasaki Club wanted to recycle used cooking oil, so it decided to establish a new workers' co-operative manufacturing soap.

The Sabonso Co-operative in Kawasaki was established in 1989, financed by 1000 yen equity contributions from the general public. It uses waste cooking oil, which was polluting local waters, to make clothes detergent products. The co-operative collects waste oil from school kitchens as well as municipal buildings, homes and restaurants. Most of the finished product is sold through Seikatsu Club channels.

Minimising environmental impact and resource use are high priorities for Seikatsu Club members. The Club-funded research and development activities have therefore been focused on the development of recycled products. The community roots and scale of the Seikatsu Club networks mean that there is not only a large customer base for co-operative recycled products, but access to raw materials such as PET plastic and waste vegetable oil. Through these Club networks, local people are able to influence the Co-operative Union's polices on purchasing and product development.

Key points

- Member engagement at a grassroots level in new product development is important in winning their support for recycling initiatives
- Network structures that link local clubs can create economies of scale and lead to the development of viable markets for recycled products

loop. Central to this process is the involvement and engagement of co-operative members, not only as consumers of products, but also as the recyclers of waste.

There are many other examples of products which fit this closed-loop recycling model that are being pursued by the private sector, but could easily be taken up by consumer co-operative societies. Below are just a few examples of how the closed-loop model is being used by organisations –

- ITW Hi-Cone is a manufacturer of canned beverage packaging in Fullerton, California. It has built a recycling centre for its photobiodegradable plastic six-pack rings, which is staffed by a not-for-profit organisation employing disabled people. The manufacturer compensates schools for the collection and return of the six-pack rings, which are reprocessed into new packaging materials.
- Visy, a large Australian packaging and recycling company, is a leading promoter of the closed-loop model. It has worked with Qantas Airways to develop a closed-loop process for its in-flight catering service. It also developed a closed-loop programme for the Sydney Olympic Games in 2000.

- Marks & Spencer is the first retailer in the UK to trial the use of recycled plastic in food and drink packaging on a large scale, and to gauge customer reaction to the concept. Recycled PET is being incorporated into salad bowls, beverage bottles, recipe pots and trays, with the recycled content ranging from 30% to 50%. The clear windows in sandwich packs are made from vegetable material (cellulose).
- London Remade has launched a project to promote and research closed-loop recycling using funding from landfill tax credits. So far it has secured the support of Eurostar, St. George's Hospital, London 2012, the Science Museum and the Natural History Museum to develop closed-loop practices.

Closed loop-recycling is a particularly appropriate concept for consumer co-operative societies because it embodies the same principles as the virtuous circle, aligning economic, social and environmental benefits, upon which the co-operative advantage is based. It is also a highly practical way of engaging members in the activities of societies, and leads to highly visible outcomes.

5.4 Next steps

Consumer co-operative societies stand to gain hugely from engaging more in recycling activities. Carefully selected projects will result in economic, social and environmental benefits for consumer societies and the communities they serve. There is a growing body of knowledge and understanding within consumer societies about recycling, but if significant progress is to be made, new expertise will be needed. The community waste sector has a strong affinity with co-operative values and principles, and has the necessary expertise, both in recycling and community engagement, to assist consumer co-operative societies in developing new approaches to recycling.

Working in partnership, consumer co-operative societies and the community waste sector are strongly placed to succeed in the recycling market for a number of reasons, including -

- Their shared understanding and experience of working with the public sector
- Their combined ability to achieve the economies of scale that are necessary for commercial viability
- The membership base and know-how to organise community involvement in recycling initiatives
- The scope to provide direct benefits to members and customers who engage in recycling activities, and tangible evidence of the broader benefits to the community
- Scope to develop joint ventures which draw on the expertise, membership and resources of consumer societies and community-based recyclers.

There is a strong case for developing these joint ventures as co-operative enterprises, using whatever co-operative structure is most appropriate to the recycling activity, including consortia, community co-operatives or workers' co-operatives. By investing in recycling, co-operatives and the community waste sector will have a competitive advantage over private sector enterprises, based on the bond between co-operatives and the communities they serve.

Notes

1. Introduction

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2. The waste problem

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4. Community recycling: a way forward

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3 Community Composting Network www.communitycompost.org

5. Engaging consumer co-operative societies in recycling

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Waste management and recycling are urgent global priorities. Co-operatives and community organisations can harness the energy of consumers, employees, neighbourhoods and the broader public in new and enterprising co-operative solutions to the challenges we all face.

Drawing on examples from across the world, as well as the UK, Erik Bichard, Director of the National Centre for Business & Sustainability, describes how co-operatives and communities are developing a better way to recycle.

Co-operative Action

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