IPPR

BRIEFING

Mark Rowney

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THE WASTELINE

REDEFINING ‘WASTE’ AND IMPROVING RESOURCE MANAGEMENT POLICY

Institute for Public Policy Research

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EXECUTIVE SUMMARY

Britain needs to radically rethink the way it manages its resources. The country needs to depart from the linear approach, whereby we take resources such as food and metals from the natural environment, turn them into products, use them, and then dispose of what is left as 'waste'.[1] Our approach to resources should be circular: one in which non-biological resources like metals are reused again and again, while biological resources such as food are reused as fully as possible before being returned to the Earth's ecosystem – for example, by composting the material rather than burning it.

This briefing paper is about that transition towards a better approach to resources. In it, we identify three strategic goals that policy must support, and set out recommendations for how we can move towards achieving those goals, which are:

- a better understanding among business and government of how the UK's resources are used
- a cultural and behavioural shift throughout society in favour of reusing materials
- an end to inefficient and polluting treatment of reusable and recyclable (or 'secondary') materials.

The drivers and benefits of better resource management

Since 2000, commodity prices have risen sharply and become more volatile. The average standard deviation of monthly metal, food and fuel prices from their annual price average was 4.1 per cent between 1980 and 2005, and exceeded 10 per cent on only four occasions. Between 2005 and 2012, that average standard deviation was 15.1 per cent. Many factors have caused this, including global population growth and a reduction in global poverty. Research by Chatham House concludes that prices will continue to escalate. Even if they do not, however, making better use of our resources is still a win-win for businesses and consumers, because it brings down costs.

Resource scarcity and rising prices are causing high levels of concern among businesses that are already looking to reuse secondary materials where possible. H&M are offering customers vouchers in exchange for old clothes; Heinz and Ford are looking to collaborate by making car parts out of tomatoes.

This transition towards improved resource productivity could bring a number of benefits to the UK. It has been estimated that it could increase UK manufacturing profits by 12 per cent a year (£10 billion per annum), and create 314,000 new manufacturing jobs.

To fully capture these benefits, consumers must participate. One way of securing this greater participation would be to cut down on unnecessary demand for materials. This could mean, for example, reducing the public's expenditure on food that it doesn't eat: in 2012 we discarded £12.5 billion of edible food. A reduction

1 Under EU law, 'waste' means 'any substance or object which the holder discards or intends or is required to discard' (article 3 of directive 2008/98/EC [EU 2008]). This focuses on action, intent or mandate by the last owner, not on the economic value of the material disposed of. This definition runs counter to this paper's central argument: that 'waste' is an opportunity, not a problem. We have therefore used the term in quotation marks in this paper, as its legal definition is not fit for purpose.

in food 'waste' generation could reduce local authorities' expenditure on 'waste' management: in 2011/12, local authorities spent £3.2 billion collecting discarded materials. The transition will also bring environmental benefits. To take one example, the process of mining platinum emits 14,500kg of CO_2 per kilogram of material, whereas preparing platinum for reuse emits just 750kg of CO_2 per kilogram – 95 per cent less.

However, the market is unlikely to achieve this transition alone, and will need government to play a facilitating role in making the UK a circular economy. To give one illustration of the scale of the challenge, the electronic goods sent to landfill annually contain about £24 million worth of gold. That gold is spread throughout the UK. Currently, neither business nor government has the information necessary to begin extracting the economic value of that gold on any scale. Although of value to the market, collaboration between companies to capture this value potentially falls foul of competition rules, whereas government is not restricted by this problem.

Resource management and 'waste' policy

This paper is primarily concerned with analysing Britain's 'waste' policy to date, which has been a significant driver of cultural change in the UK. Despite early scepticism of this policy agenda, 'waste' sent to landfill fell by 61 per cent, and recycling of municipal 'waste' increased by 306 per cent, in England between 2000/01 and 2012/13. Scotland and Wales have been similarly successful. This suggests that we can be optimistic, and that further cultural change is possible.

Since the Coalition came to power, however, 'waste' policy in the UK has stalled. The landfill tax escalator has been abolished. All English targets have been abolished, and work on English 'waste' policy relating to construction, demolition, commercial and industrial 'waste' has stopped – as has work on policy relating to energy from 'waste' in England. The Department for Business, Innovation and Skills and the Department for Environment, Food and Rural Affairs (Defra) are currently developing a resource management policy, but it lacks ambition, seeking only to meet minimum EU landfill targets and leaving voluntary initiatives to cover everything else. Meanwhile other countries such as the US, China, Japan and Germany have significantly more developed resource management policies.

We still send large amounts of secondary materials to landfill and incineration, which is a waste of valuable resources and has negative environmental consequences. Getting policy right in this area will require a full re-evaluation of the basic philosophy behind 'waste', so that secondary materials are no longer regarded as a burden, but rather are seen as crucial to the UK's economic development.

We must therefore support policy development by improving the data, which is woefully lacking, on how materials 'flow' around the UK. Without that evidence, a comprehensive resource management policy cannot be developed, and the market cannot bring about and benefit from the circular economy. The government must also take initial steps to encourage behaviour change, and end inefficient and polluting treatments of secondary materials.

Policy recommendations

Our first recommendation is the establishment of an Office for Resource Management (ORM) within Defra. This office should be staffed by secondees from industry and other government departments, and should be tasked with increasing our understanding of how resources are used in the UK, and facilitating a cultural change in their use and reuse.

Since everyone has to eat, initial steps to encourage behaviour change should begin with our food 'waste'. EU law requires most foods to carry an indication stamped on its label of how long it will be of optimal quality: the 'best before' date. Too often, this is mistaken as an indication that this food is unfit for consumption beyond that date, which leads to unnecessary wastage. We therefore recommend that Defra and the new ORM should work with other EU member states and the European Commission to ease regulation over food labelling. The requirement for foods to be labelled 'best before' should be scrapped, which would mean that the only mandated label would be 'use by', necessary for food safety reasons. Meanwhile, following thorough cost–benefit analyses and a formal consultation, Defra could require English food businesses to take all reasonable steps to separate food from other discarded materials. As is common in many areas of regulation, what is 'reasonable' would be determined by the business in conjunction with the enforcement officer. Defra should also consider banning the use of macerators to dispose of food in public sewers.

Our interviewees stated that the landfill tax escalator was abolished in order to support business, but complained that it meant they no longer had long-term certainty of policy. HM Treasury says it needs time to consult on how to better enforce the tax. However, there remains a need to discourage the inefficient and polluting disposal of valuable secondary materials. With recycling rates slowing and the economy recovering from the longest recession in the UK's history, there is a case for reinstating policy certainty. The Treasury should consider gradually increasing the financial penalties for sending 'waste' to landfill in the next parliament, once a balanced economic recovery has been established.

Finally, policy should start to consider some incineration as analogous to landfill. Fears that it would be impossible to encourage recycling have proven unfounded. Therefore, the Treasury should launch a consultation to find the most effective means of reducing incineration which imposes the lowest burden on business and local authorities. Its terms of reference should include an examination of the costs and benefits of introducing a fiscal incentive to reduce incineration, of introducing regulations to ban specific materials to incineration, and of doing nothing.

Conclusion

The consensus view is that resources will become increasingly scarce, expensive and volatile. Yet even if that does not transpire, making better use of our resources is a win-win for businesses and consumers. Government has already succeeded in delivering one cultural change in the form of huge increases in recycling over the last 15 years.

Another culture change is now needed. We must encourage reuse as well as recycling in order to drive down incineration and landfill, and ultimately ensure that 'waste' is seen as a resource with an economic value rather than merely as something to be disposed of.

INTRODUCTION

Britain needs to think differently about its resources. With commodities expected to remain expensive and volatile for the foreseeable future, business is already beginning to think more about how it uses, and reuses, resources in both production and service provision. As higher commodity prices filter into a higher cost of living, consumers will also need to think differently about how they use resources and avoid 'waste'. A fresh approach to policy is required from government in order to support this cultural change and ensure that the UK maximises its potential in terms of creating jobs, supporting business, lowering costs and maximising savings for local government and consumers, and mitigating climate change.

This briefing paper outlines the rationale for a new government approach, and the strategic policy levers needed to facilitate a culture change in resource management. It is based on a literature review, interviews with experts on 'waste' management from industry, government, consultancies and other non-governmental organisations, and a research roundtable with key stakeholders. It will focus on 'used' or 'secondary' materials, which are sometimes erroneously referred to as 'waste'.[2] Utilities such as gas and electricity fall outside the scope of this briefing.[3] Chapter 1 presents the benefits that better management of resources would bring to the UK. Chapter 2 then outlines how government 'waste' policy has supported this transition to date, and identifies strategic gaps. Chapter 3 concludes with strategic recommendations for a new industrial policy to improve the UK's resource efficiency and security.

2 Under EU law, 'waste' means 'any substance or object which the holder discards or intends or is required to discard' (article 3 of directive 2008/98/EC [EU 2008]). his focuses on action, intent or mandate by the last owner, not on the economic value of the material disposed of. This definition runs counter to this paper's central argument: that 'waste' is an opportunity, not a problem. We have therefore used the term in quotation marks in this paper, as its most relevant definition is not fit for purpose.

3 For a critique of, and policy recommendations for, the UK's policy for energy efficiency in housing by IPPR, see Platt et al 2014.

1. A NEW APPROACH TO MATERIALS

This chapter will outline three potential benefits of a new approach to materials in the UK: helping business to cut resources costs and create jobs, reducing the financial costs of 'waste', and mitigating climate change.

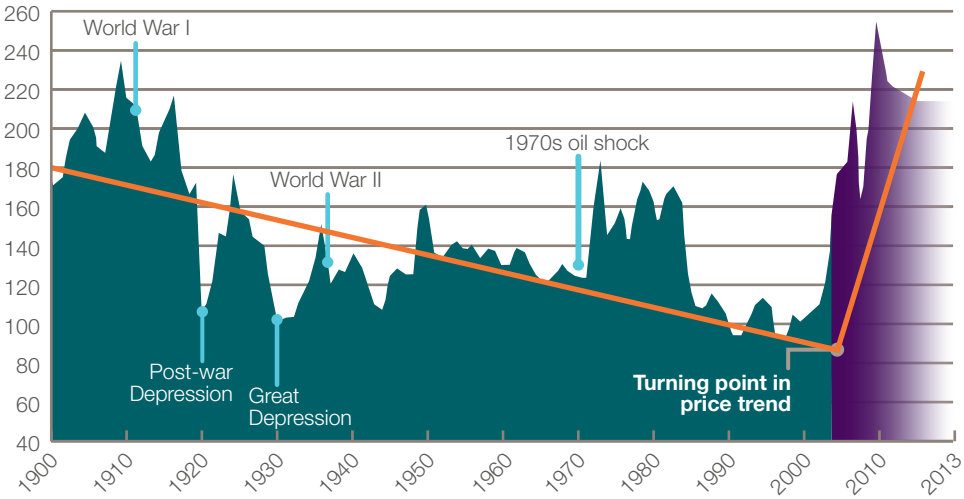
1.1 Helping businesses to cut resource costs and create jobs

Rising resource costs

In recent years, policy has focussed on the need to support businesses through the economic crisis and into recovery. This has given rise to a renewed focus on economic policies that support business, such as facilitating innovation, developing a strong skills base and ensuring access to finance. However, business has been facing another issue which has received less attention.

Figure 1.1 below shows that since 2000, the real cost of commodities has risen sharply. This rise has undone a century of declining commodity prices.

Figure 1.1
Real-terms increases in commodities prices since 1900, by McKinsey commodity price index* (100 = 1999–2001)



Source: Adapted from EMF 2014
***The McKinsey commodity price index is based on the arithmetic average of four commodity sub-indices: food, non-food agricultural items, metals and energy.**
Note: Data for 2013 was calculated based on the average of the first three months of 2013.

UK manufacturing has been badly affected by these price rises: since 2004, the sector's spend on goods, materials and services costs has risen, while its labour spend has fallen (Lavery et al 2013). Of all profit warnings issued by FTSE 350 companies in 2011, 29 per cent were attributable to rising resource prices (Defra 2012a). Not only have prices been rising, but the level of price volatility for metals, food and non-food agricultural output was higher during the 2000s than in any decade in the last century (EMF 2014). Between 1980

and 2005, the average standard deviation of the monthly prices of metal, food and fuel from their moving annual price average was 4.1 per cent, and exceeded 10 per cent on only four occasions. Between 2005 and 2012, that average standard deviation was 15.1 per cent (Lee et al 2012).

Business confidence is being damaged. EEF's latest survey of manufacturing executives showed that rising input costs was their biggest concern: 61 per cent of respondents cited these rises as a risk to future growth (EEF 2014). Research by Chatham House (2012) has found that price rises are projected to escalate in the future, and predicts that resource politics – rather than environmental preservation or sound economics – will dominate the geopolitics of the future (Lee et al 2012). Even if these predictions are not borne out, bringing down costs by making better use of our resources still represents a win-win for businesses and consumers.

The causes of price rises are numerous. Global demand for resources is expected to increase because of growth in the size of the global population. Poverty reduction could create three billion new middle-class consumers by 2030. Deposits of raw materials have become less concentrated. Increased eco-efficiency has sometimes led to increased energy and resource usage, as efficiency gains are offset by consequent increases in consumption. Agricultural productivity growth is slowing, and soil fertility and the nutritional values of food are declining. Supply chains continue to become more complex, which further heightens the geopolitical and other risks inherent in them. As has always been the case, local opposition to production sites can cause regulatory and licencing issues which increase production costs (EMF 2014, Hazell 2013, Defra 2012a).

Examples of these effects are already apparent. For example, globally the average concentration of copper ore has dropped from 8 per cent in the mid-nineteenth century to 0.6 per cent in 2013. This has increased the costs of extraction, which contributed to the doubling of the cost of copper mining over 10 years (Hazell 2013). Another example is that flooding in Thailand led to a shortage of resources for UK car manufacturers (Defra 2012a).

A new business model for resources?

These factors are causing business leaders to become more interested in where their materials are sourced from. Manufactured products may depreciate in value over time, but they do not become worthless. One tonne of clothing might be sold for £27,000 when new but, if reused, is worth £2,600. If recycled, that same tonne is only worth £121 (Hazell 2013). Used cars contain raw materials that are worth £850 per tonne on average, even if the car itself is worthless, and mobile phones contain metals worth an average of £6,000 per tonne (Green Alliance 2013).

Businesses need to end the linear 'take, make, dispose' approach to resources, which is only possible if resources are easily available in large quantities. This approach ultimately results in secondary materials being misclassified as 'waste'. Instead, business needs to adopt a circular approach to resource management. Non-biological resources such as metals should be reused continuously. Biological resources such as food should be utilised as fully as possible before being returned to the biosphere. In effect, revenue and profit should be decoupled from new material input. This approach, combined with other measures (such as changing the design of products and encouraging leasing[4]) would help the UK's current 'linear economy' become a 'circular economy'.

4 Because, under a lease, ownership is shared, there are more parties with an interest in maximising the economic lifespan of a product. For example, a leased washing machine is more likely to be repaired continuously and have multiple users over a longer period than one that is owned outright by a homeowner, which tend to be maintained infrequently and ultimately disposed of sooner rather than later.

New business models for sourcing secondary materials are already beginning to emerge. For example, mobile phone manufacturers now offer customers a lump sum when they hand in their old phone for an upgrade. Last year the clothing retailer H&M started offering vouchers to customers in exchange for old clothes, which are then reused second-hand, recycled into textiles, cleaning cloths or damping and insulating materials, or otherwise recovered for energy (EMF 2014). Both Xerox and Caterpillar capture 95 per cent of their products at the end of their lives for remanufacturing (Vladimirova 2013). Tesco is reducing food 'waste' through product-specific measures such as sending surplus bran used in its bakeries to be used as animal feed, and ending multi-buys on bagged salads (Tesco 2013). Food can even be used for manufacturing. For example, Heinz and Ford are working together to make car parts out of leftover tomatoes (Shankelman 2014), and Sustainable Health Enterprises have started distributing sanitary pads made from banana fibres (Lewin 2014).

Increasing profitability and creating jobs

This transition will help businesses' profitability and create jobs. It has been estimated that improved resource productivity would increase the profits of UK manufacturing by 12 per cent a year (£10 billion per annum), and create 314,000 new manufacturing jobs (Lavery et al 2013). Three sub-sectors[5] alone could create between £5.6 billion and £8 billion of value for the UK just by remanufacturing their products (Vladimirova 2013). The Furniture Re-use Network has calculated that every 93 tonnes of electrical and electronic equipment that is reused creates seven full-time and three trainee jobs (FRN 2014). A recent report shows that higher recycling and reuse could result in up to 747,829 additional jobs across the EU by 2025 (Beasley et al 2014).

However, the market will not deliver this change alone. A strong theme that emerged from our roundtable discussion and interviews with industry experts was that there is very little detailed material flow analysis[6] in the UK to enable the private and public sectors to develop proper resource management strategies. For example, one tonne of gold, worth about £24 million, is sent to landfill in the UK annually (Gover 2013). That gold is spread throughout the UK, in tiny amounts, in electronic goods – as are other valuable metals. Currently, neither business nor government has the information necessary for them to begin to extract the economic value of that gold on any scale. Instead, business has to rely on bilateral relationships (such as the Heinz–Ford example outlined above) to improve resource efficiency. However, collaboration among businesses in securing their supply chains risks falling foul of competition law.

The examples above demonstrate the importance of consumer cooperation to business, and that consumers will cooperate in return for a financial incentive. eBay is the classic example of consumers reusing materials in return for financial reward. However, consumers must also come to regard 'waste' as having a social or economic value if the UK's resource management is to be successful. This will require steps by government to encourage behaviour-change in consumers.

1.2 Reducing the financial costs of 'waste'

A large amount of secondary materials continue to be disposed of as 'waste' in the UK (see chapter 2 for more details). This bears a cost to the taxpayer, to the consumer and to business, in terms of both unnecessary expenditure and lost-opportunity costs, which are usually much larger.

'Waste' can generally be dealt with in one of four ways (which are discussed in greater detail in chapter 2). It can be:

5 Electrical, electronic and optical products; machinery and equipment; and transport equipment.

6 In other words, analysis of throughput of process chains comprising the extraction or harvest, chemical transformation, manufacturing, consumption, recycling and disposal of materials.

- disposed of in landfill sites
- used to recover energy from the material – usually by incineration, although other methods such as anaerobic digestion[7] exist
- recycled (or composted) into a new material
- reused as a second hand product.

Sources of 'waste'

Unfortunately, the lack of UK material flow analysis referred to above is reflected in the quality of data available on 'waste'. The most recent figure for 'waste' production for the UK is 288.6 megatonnes, from 2008. It is estimated that in that year, 88 per cent of 'waste' came from construction, mining, quarrying, commercial and industrial sources; only 11 per cent came from households[8] (Defra 2011a). However, although household 'waste' constitutes a small proportion of the UK's total 'waste', its importance is magnified because the entire population contributes to household 'waste' in a personal capacity. Evidence of a cultural change in how the public as a whole views 'waste' will be most clearly evident in what it discards in the future, and how it disposes of it.

Household waste

Data on the breakdown of household 'waste' is published infrequently. The latest available data for England is for local authority collected 'waste' in 2010/11,[9] when it was estimated that 19 per cent of local authority collected waste was paper and card, 17 per cent was food and 20 per cent was garden and other organic waste[10] (Resource Futures 2013). However, local authority waste includes commercial as well as household waste.

Thanks to recent work by the Waste and Resources Action Programme (WRAP), we do now have a more detailed understanding of household food 'waste'. WRAP has estimated that in 2012 households threw away 7 million tonnes of food 'waste' alone – roughly 19 per cent of all food and drink bought by households. This made up almost half of all food 'waste' produced by the UK. Sixty per cent of this 'waste' was entirely avoidable – that is, the food would have been edible at the point at which it was thrown away. That 60 per cent is equivalent to six meals a week per household, and cost UK households £12.5 billion to purchase that year. A further 17 per cent of household food waste was 'possibly' avoidable – that is, it consisted of food such as bread crusts and potato peelings that some people prefer not to eat, but which are perfectly edible; only 23 per cent (bones, banana skins and so on) was deemed unavoidable (Quested et al 2013). Furthermore, a quarter of all avoidable food 'waste' is thrown away whole or unopened (such as an intact piece of fruit or an entire loaf of bread) (Quested and Murphy 2014). Given not only the wastefulness this represents but also the rising cost of food, policy should be put in place to help the public cut down on this unnecessary demand as much as possible. Food 'waste' that is genuinely unavoidable should be have its full economic value extracted through composting, recycling into other products or anaerobic digestion.

In addition to food waste, UK households send used clothing with an estimated value of £140 million to landfill instead of realising its value, such as through schemes of the type offered by H&M (Defra 2013a). We also send electrical products with a gross value of £200 million to household 'waste' recycling centres (ibid). WRAP

7 Anaerobic digestion describes a variety of processes by which microorganisms break down biodegradable material in the absence of oxygen. During this process, a biogas is produced which can be used as fuel in power stations. It also produces a digestate that can be used, like compost, as a fertiliser in agriculture.

8 The remaining 1 per cent consisted of sewage, batteries, healthcare 'waste' and other hazardous 'waste'.

9 Data is available for 2006/07 (Defra 2009) but not for any other year since then other than 2010/11.

10 The remainder was made up of plastics (10 per cent) glass (7 per cent), metal (4 per cent), wood (4 per cent), textiles (3 per cent), electrical and electronic equipment (2 per cent), and other waste such as hazardous or sanitary waste, mattresses, furniture and soil (14 per cent).

estimates that there is almost £3 billion of value in used electrical goods in the UK, only 7 per cent of which gets reused, and almost 40 per cent of which goes to landfill, even though they still work (WRAP 2013a). There is a lost social opportunity too: only 37 per cent of the demand for cheaper, used furniture is being met (FRN 2014).

In 2011/12, local authorities spent £3.2 billion managing municipal 'waste', and the Local Government Association (LGA) projects that this will increase to £3.7 billion by 2020. This figure could be reduced if we prevented 'waste' arising, or reused it when it did arise. Diverting just 615,000 tonnes of easily reusable material away from landfill or incineration would save the taxpayer more than £60 million per year in avoided disposal costs, and generate £375 million in revenue from resold goods, together netting £435 million of additional value to the economy. This 'easily reusable' material consists solely of textiles, waste electrical and electronic equipment and furniture, and represents only a tripling of the small amount of material that is currently reused in the UK (LGA 2014).

Other waste

The construction sector is the UK's single biggest producer of 'waste', the management and disposal of which costs the construction industry 30 per cent of its pre-tax profits (WRAP 2013b). Businesses spent £885 million managing their 'waste', which made up 27 per cent of all 'waste'[11] produced in 2008 (Defra 2013a). However, the opportunity costs are higher than this: evidence shows that simple measures to reduce waste, which pay back within a year, could save businesses £18 billion (Oakdene Hollins 2011). For example, the hospitality and food service sector wastes 920,000 tonnes of food each year, equivalent to one-sixth of all meals served in the UK; 75 per cent of that wastage was avoidable and could have been eaten. Of the total food 'waste' produced, 34 per cent was a consequence of customers not cleaning their plate. The total cost of this food 'waste' to the sector has been put at £2.5 billion a year (Oakdene Hollins et al 2013).

With the price of commodities rising, it is clear that the UK could benefit significantly from thinking about and treating materials differently. Such a transition would also bring environmental benefits.

1.3 Mitigating climate change

A cultural change in how we view 'waste' will help mitigate climate change in two ways. First, when considered in the traditional way, 'waste' produces greenhouse gas (GHG) emissions primarily when it is sent to landfill.[12] GHG emissions directly emitted by 'waste' accounted for 3.2 per cent of the UK's total GHG emissions in 2011, which represents a 64 per cent fall from their 1990 levels. This reduction was as a result of declining levels of waste sent to landfill (see chapter 2), and increased methane capture techniques (CCC 2013). By reusing more 'waste', and sending less to landfill, further reductions can be made.

However, a circular approach to our resources will result in even greater falls in GHG emissions than those associated with landfill diversion. Because energy is required to extract materials and manufacture products, replacing demand for primary materials with the use of 'waste' will indirectly result in a reduction of the emissions that would have otherwise been generated. For example, approximately 7–10 per cent of global GHG emissions come from metals mining alone, and one metal, platinum, has a carbon imprint of around 14,500kg of CO_2 emitted per kilogram when mined. However, the imprint from secondary recovery of platinum (from used electrical goods, for example) is around 750kg of CO_2 per kilogram (Defra 2012a).

11 Categorised as 'commercial and industrial waste'.

12 90 per cent of direct greenhouse gases (GHG) from 'waste' are produced by landfill. These GHG emissions are mainly methane from biodegradable wastes, including food, paper and card.

Furthermore, in 2011, imports accounted for 39 per cent of the UK's carbon footprint – which means that there could be significant potential to reduce the UK's total carbon footprint by using secondary materials rather than importing primary materials (Defra 2013a). Small steps towards a circular economy can make a large impact. The same low-cost measures that would deliver £18 billion of annual savings to businesses (see section 1.2 above) would also deliver indirect annual carbon efficiency savings of 90 megatonnes of CO_2 (Oakdene Hollins 2011) – equivalent to 15 per cent of the UK's 2011 carbon emissions (CCC 2014).

1.4 Conclusion

It is clear that a cultural shift towards better resource management – including considering 'waste' as a resource rather than a problem – would have clear benefits to consumers and industry, as well as to the wider environment. Policy needs to ensure that secondary materials are utilised, with minimal wastage, in the production of goods and services. The next chapter will examine the extent to which historic and current policy relating to secondary materials achieves this end.

2. RESOURCE MANAGEMENT AND 'WASTE' POLICY

The previous chapter demonstrated that Britain needs to undergo a cultural change. Instead of used products being thought of as 'waste', they need to be viewed as a resource. To maximise the positive benefits of this change, the whole population needs to take part in it.

Britain does not yet have a fully developed and comprehensive resource-management policy, although some early steps have been taken. The remainder of this paper will examine those steps, and then focus on one element of resource-management policy: Britain's secondary materials, or 'waste', policy. This chapter will set out current and historic 'waste' policy in England, Scotland and Wales, consider each nation's policy outcomes, and draw some conclusions about a future policy trajectory for better resource management. Chapter 3 makes strategic policy recommendations to address those conclusions.

2.1 The fledgling materials-management policy

The government has demonstrated that it appreciates the enormity of the challenge outlined in chapter 1 of this report. In 2012, Defra and the Department for Business, Innovation and Skills (BIS) published a joint 'resource security action plan' (BIS and Defra 2012). This was the government's first attempt to position 'waste' in the context of the UK's long-term materials security.

The plan emphasised the need for better data to facilitate the necessary transition. In it, BIS challenged itself with the task of capturing data on waste electrical and electronic equipment (WEEE); WRAP was also charged with developing a high-level critical materials flow analysis of key WEEE product categories (ibid).

Table 2.1
Policy responses to security of supply ('X' = 'in place, 'O' = 'in development')

	China	US	Germany	Japan	South Korea	EU	UK
Vision	X		X	X		X	
Political support	X	X	X	X	X	X	
New institutional arrangements		X	X	X	X		
Material risk-assessments		X	X	X	X	X	X
Information provision		X	X	X		X	
Metrics			X	X		O	
Overseas mining investment and support	X		X	X	X		
Support for domestic mining		X	X				
Mining research			X	X	X	X	
Strategic stockpiles	X	X		X	X		
Diplomacy	X	X	X	X	X	X	
Innovation: substitution*		X	X	X		X	X

Source: Baker 2014
*That is, research into substituting one material in short supply with another – the initiative to make car parts out of tomatoes (mentioned above) being one example of this.

The action plan was, however, very narrow in scope. It focused almost exclusively on rare earths and materials necessary for WEEE products, and although some of these materials are thought to pose immediate resource-security problems, businesses are more concerned about the long-term security of other resources. Furthermore, the measures to improve data that it announced have not yet produced the detailed materials and products flow analysis that business and local authorities need in order to encourage more efficient reuse of 'waste'.

The UK is way behind its competitors in this regard – several of them have taken much stronger steps towards creating a resource-management policy. Table 2.1 above, prepared by EEF, shows just how far behind the UK is in terms of resource management policy development.

Given these weaknesses, we will now examine the UK's 'waste' policy to examine how well it can support the transition to a circular economy.

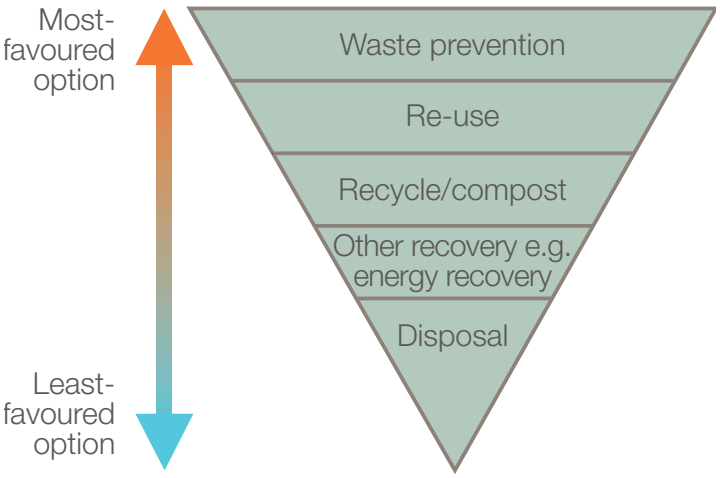
2.1 Historic policy

EU law and the waste hierarchy

EU law and regulation sets the basic targets and strategy for all 'waste' policy in the UK. Some EU 'waste' policies are important drivers of UK 'waste' policy.[13] One of these is the Landfill Directive,[14] which requires member states to reduce the amount of biodegradable municipal 'waste' going to landfill by 65 per cent by 2020 (relative to 1995 levels).

Another is the Waste Framework Directive.[15] As well as requiring member states to take measures to promote recycling and reuse, this directive gives the 'waste hierarchy' formal legal status. This hierarchy establishes a priority approach to policy by indicating an order of preference on how 'waste' should be managed and reduced. It is usually presented diagrammatically, as in figure 2.1 below. The Waste Framework Directive requires member states to apply the hierarchy in 'waste' prevention and management legislation and policy, subject to some limited exceptions.

Figure 2.1
The waste hierarchy



Source: Adapted from http://archive.defra.gov.uk/corporate/policy/guidance/env-impact/area/waste/

13 There are, of course, many EU laws regulating 'waste'. For further details, see http://europa.eu/legislation_summaries/environment/'waste'_management/index_en.htm
14 Directive 1999/31/EC. See http://ec.europa.eu/environment/waste/landfill_index.htm
15 Directive 2008/98/EC. See http://ec.europa.eu/environment/waste/framework/

UK-wide policy

The principal policy for the whole of the UK over the last two decades was, and remains, the landfill tax, first introduced in 1996. It is currently the primary means by which the UK meets its obligations under the Landfill Directive.

The tax is payable by the landfill operator, who passes the cost onto its customer – that is, a business or a local authority. It has two rates: one for active 'waste' and one for inactive 'waste'.[16]

The initial rate for 'inactive waste' was £2 per tonne, and rose to £2.50 per tonne in 2008 (HMRC 2014). The 'active waste' rate was introduced at £7 per tonne, and rose by between £1 and £3 per tonne each year until 2007, when it reached £24 per tonne. In that year, the landfill tax escalator was increased, to rise by £8 per tonne every year. In 2014, the 'active waste' rate reached £80 per tonne (ibid).

English, Welsh and Scottish 'waste' policy from the late 1990s to 2010

England

English policy around the turn of the century was described by one interviewee as being 'not ambitious enough, soon enough'. In the late 1990s in particular, senior politicians were described as sceptical about whether the behaviour change required to encourage recycling and reduce landfilled 'waste' could be achieved. English policy therefore focused on fulfilling the Landfill Directive's requirements, rather than pushing 'waste' up the hierarchy of priorities. This lack of belief that high rates of recycling could be achieved led to a presumption that increased incineration would be necessary.

Although local authorities were given municipal and household waste recycling targets[17] in 2000, our interviewees felt that they were quite low. In the absence of formal sanctions for breaching them, they were signal-setters rather than drivers of change in themselves. The Landfill Allowance Trading Scheme (LATS), which became enforceable from 2005 and which set local authorities annual allowances for the landfill of biodegradable 'waste', was considered to be a stronger tool.[18] Authorities faced fines of £150 per tonne if they breached their annual permitted allowance. However, these fines only become enforceable in 2005.

In 2007, England became more ambitious. The landfill tax escalator was increased, and a new 'waste' strategy was put in place (Defra 2007). Local authorities' targets were increased to above the minimums required under EU law.[19] A new target to reduce the amount of household 'waste' sent to landfill or for energy recovery was also introduced.[20]

Wales

By contrast, Wales was seen by interviewees as the trailblazer of ambitious 'waste' policy. In 2003 Wales set a recycling target that was more ambitious than England's,[21] and also set 'waste' prevention targets.[22] The following year, a landfill

16 'Inactive waste' is largely water insoluble and non- or very slowly biodegradable, examples of which include sand, subsoil, concrete and bricks. 'Active waste' describes all other forms of 'waste'.

17 The targets that were set were the recovery of 40 per cent of municipal 'waste' by 2005, of 45 per cent by 2010 and of 67 per cent by 2015. For the recycling and composting of household 'waste', targets were set of 25 per cent by 2005, 30 per cent by 2010 and 33 per cent by 2015 (EAUC 2014).

18 Under this scheme, allowances could be traded or banked for future years, and future allowances could be borrowed against. See http://archive.defra.gov.uk/environment/waste/documents/lats-beginners-guide.pdf

19 Under these targets, 75 per cent of municipal 'waste' to be recovered, and 50 per cent of household 'waste' be recycled or composted, by 2020 (Defra 2007).

20 By 2010, household 'waste' not reused, recycled or composted was to be reduced by 29 per cent (relative to 2000) (Defra 2007).

21 The Welsh government set a target of recycling 40 per cent of waste by 2010 (WAG 2011) – more ambitious than the English target of recycling 33 per cent by 2015.

22 These targets were that by 2009/10 (and from then onwards), the amount of 'waste' arising per household should be no greater than those in 1997/98 (in Wales), and that by 2020, 'waste' arising per person should be less than 300kg per year (WAG 2011).

allowance scheme was set up, similar to England's[23] but with fines of £200 per tonne for breaching them (WAG 2011).

Scotland

Scotland's approach at this time was criticised by interviewees. Although it introduced a strategy in 1999 and an action plan in 2003, there were no targets, just 'aims'[24] (SEPA and SE 2003). Local authorities were obliged to develop their own approaches to implementing those plans,[25] albeit with some funding from the Scottish Executive.[26] This strategy was described by interviewees as both 'crude' and 'a mistake', because local authorities developed different approaches of varying quality and ambition.

English, Welsh and Scottish 'waste' policy from 2010 onwards

England

Since 2010 all English targets, and the landfill tax escalator,[27] have been abolished. Most interviewees described the Coalition's 2013 'waste' strategy (Defra 2013a) as a disappointment – a sentiment concurred with by 81.2 per cent of respondents to a survey of 'leading figures from all parts of the waste and resources sector', who considered the review that fed in to the strategy to be either 'not very' or 'not at all' ambitious (Beasley and Georgeson 2011). Only the 5p tax on plastic bags was met with enthusiasm by interviewees, because of the difficulties that plastic bags cause in machines that process 'waste'. In 2014 Defra stopped all policy development on 'waste' relating to the construction, demolition, commercial and industrial sectors, which create the overwhelming majority of 'waste' in the UK (see chapter 1). Policy relating to energy from waste has also been abandoned (Rogerson 2013). Instead, government is relying upon voluntary action by business and community groups, and on the ongoing work of WRAP (see the box below).

The Waste and Resources Action Programme (WRAP)

WRAP is a government quango, and was established in 2000. It has two priorities: minimising resource use and diverting priority materials from landfill. It pursues a variety of activities, including the provision of funding, training, communications, market information, research and tools, templates and apps. One example of its work is the Courtauld Commitment,[28] a voluntary agreement which aims to reduce 'waste' within the UK grocery sector. It is also responsible for public campaigns such as 'Recycle Now' and 'Love Food, Hate Waste'.

WRAP was universally praised by everyone we spoke to, particularly for its work with large food retailers to reduce food 'waste'. Many of our interviewees considered it to be the global standard in what it does. However, most interviewees also thought it had its limitations. The scale of the transition to a circular economy requires a level of support that only direct government intervention can deliver. Voluntary initiatives, although valuable, are not sufficient to change behaviour without government support.

Wales

The landfill tax escalator caused Wales to review its policy to determine if its future plans were as cost-effective as they could be. In 2010, Wales concluded that pursuing increases in recycling and prevention would, in the long-run, be

23 Except that no trading of allowances is permitted under the Welsh scheme. This makes the Welsh scheme a driver for meeting targets whereas the English scheme was more of a support for landfill diversion.

24 To stop the growth of municipal 'waste' in 2010; achieve 25 per cent recycling and composting of municipal 'waste' by 2006 (55 per cent by 2020); recover energy from 14% of municipal 'waste'; and reduce landfilling of municipal 'waste' from around 90% to 30% (SEPA and SE 2003).

25 See section 34 of the Local Government (Scotland) Act 2003.

26 £230 million over three years.

27 The LATS has also been abolished, but most interviewees agreed that it had served its purpose of allowing local authorities time to adjust to the higher rates of landfill tax.

28 See http://www.wrap.org.uk/category/initiatives/courtauld-commitment

cheaper than the status quo (WAG 2010). It set a series of ambitious targets for the reuse, recycling and composting (or anaerobic digestion) of municipal 'waste' (WAG 2011),[29] as well as targets to reduce 'waste' generation, energy recovery from 'waste' and landfill disposal of 'waste' (ibid).[30] The strategy is being followed up with sector-specific plans to deliver on the targets (WAG 2012a).

Scotland

Scotland's Zero Waste Plan was published in 2010 (Scottish Government 2010). It set a strategic target for 70 per cent of all waste generated in Scotland to be recycled, and a maximum of 5 per cent to be sent to landfill, by 2025. In 2012, the Waste (Scotland) Regulations were passed to help implement the plan. Among other things, these regulations require:

- all businesses and organisations to present key recyclable material separately for collection
- food businesses to present food 'waste' separately for collection, and to stop the use of macerators to throw food into sewers
- local authorities to provide basic recycling services to all households, and separate food 'waste' collection services in non-rural areas (ZWS 2014).

In contrast to England's recent changes to policy, interviewees were very supportive of Welsh and (recent) Scottish policy. Although it is less reliant on targets than Wales, Scotland's policies concerning the separation 'waste', and particularly food 'waste', were praised. Not only is food a contaminant for recyclable material, but most thought that the visibility of food 'waste', when sorted from other 'waste', psychologically encourages businesses and their employees to reduce that 'waste'.

However, before drawing any conclusions on current 'waste' policy, and asking whether it is fit to achieve the goals outlined in chapter 1, we must first examine the outcomes of those policies.

2.3 Policy outcomes: England, Wales and Scotland

Unfortunately, this element of our research was hindered by the lack of comprehensive data on 'waste' and materials flows, an issue which our interviewees highlighted repeatedly (see chapter 1). For example, Defra's 'waste' statistics for the whole of the UK only cover the period 2004–2008, and so cannot be used to assess any more recent trends. Looking at statistics produced by the individual nations, in England[31] and Wales[32] there is a dearth of information relating to 'waste' other than municipal 'waste'. We therefore cannot compare Scottish policy outcomes[33] with English and Welsh outcomes for business 'waste', nor can we draw any conclusions about business 'waste' production and management in the UK overall. Given that business

29 70 per cent of all 'waste' by 2025 (WAG 2011).

30 Under these targets, by 2024/25 local authorities in Wales must reduce energy recovery from 'waste' to a maximum of 30 per cent of 'waste' collected by 2024/25, and landfill disposal to 5 per cent of all 'waste'. Household 'waste' generation must be reduced by 1.2 per cent a year (from a 2007 baseline) until 2050 – thereby reducing it by 50.2 per cent over that period. Wales has also introduced targets for construction and demolition 'waste', and commercial and industrial 'waste' (WAG 2011).

31 DEFRA has only published figures for construction, demolition and excavation 'waste' for the years 2008 to 2010 (Defra 2012b), and has not published any figures for mining or quarrying 'waste'. Their last survey of commercial and industrial 'waste' was carried out in 2010 (Defra 2011b). In that publication, Defra was unable to come to any firm conclusions about the effect of worsening economic conditions on 'waste' produced by this sector because of 'the absence of regular time series data on business waste'.

32 Figures for 'waste' from the Welsh public sector are only available for 2007, and for the Welsh commercial and industrial sector for 1998/99, 2002/03 and 2006/07. 'Waste' figures for other sectors have not been published.

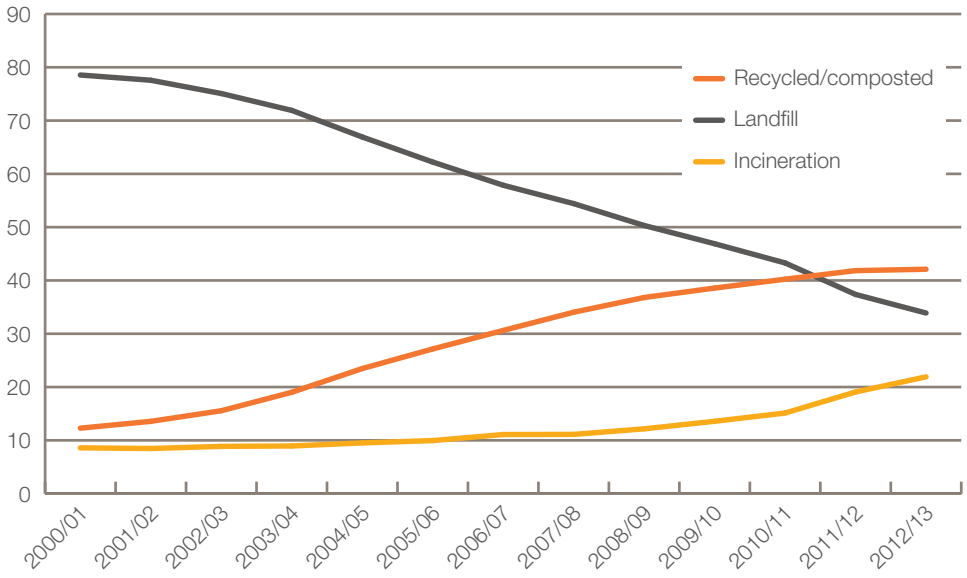
33 In Scotland, construction and demolition 'waste' generation fluctuated between 2004 and 2007, and has since fallen steadily, as we might expect it to in response to both economic contraction and the increased landfill tax escalator. Scottish commercial and industrial 'waste' generation fell by 50 per cent between 2004 and 2011 (SEPA 2011)

generates most ‘waste’ in the UK, this is a significant gap in our understanding. The remainder of this section will therefore focus on local-authority-collected, municipal and household ‘waste’.

England

Figure 2.2 shows how the management (in terms of whether it is sent to landfill, recycling or incineration) of all local authority collected ‘waste’ in England changed between 2000/01 and 2012/13.

Figure 2.2
Percentage of English local authority collected ‘waste’ landfilled, recycled or incinerated, 2000/02–2012/13



Source: Defra 2013b

Several observations can be made from this chart.[34] The volume of local-authority-collected ‘waste’ sent to landfill dropped by 61 per cent between 2000/01 and 2012/13; 34 per cent of English local-authority-collected waste was disposed of in landfill in 2012/13. Recycling and composting increased by 306 per cent over this period, coming to account for 42 per cent of local-authority-collected waste. However, the rate of increase has slowed recently, and almost flatlined between 2011/12 and 2012/13. The policy focus on landfill diversion has also led to a 228 per cent increase in incineration between 2000/01 and 2012/13, with the rate of that increase becoming steeper in more recent years. Figures for reuse are not separately provided. Instead, the notes to Defra’s figures say that the figures for ‘recycled/composted’ waste include ‘small amounts of materials sent for reuse’ (Defra 2013b).

34 The statistics given in this source (Defra 2013b) also show that total municipal ‘waste’ collected fell by 12 per cent between 2007/08 and 2012/13. None of our interviewees thought that the landfill tax or LATS had been responsible for this decline: most believed it was down to a combination of the recession and sluggish recovery having reduced general consumption of materials, and the work of WRAP in encouraging less food ‘waste’. We cannot draw any firm conclusions about policy’s impact on ‘waste’ prevention in England.

Wales

Welsh figures are only available until 2010/11, and refer to municipal 'waste' rather than local-authority-collected 'waste'. A direct comparison with England's policy outcomes is therefore not possible. However, there has been a dramatic reduction in landfill disposal of municipal 'waste' in Wales, from 93 per cent in 2000/01 to 51.2 per cent in 2010/11. The proportion of municipal 'waste' reused, recycled or composted rose from 7 per cent to 45.3 per cent over the same period. Wales does not give separate figures for reuse or incineration[35] (WAG 2012b).

Scotland

Figures for Scotland focus on household and biodegradable 'waste', rather than local-authority-collected 'waste', so again, direct comparisons with England and Wales are not possible.[36] The volume of biodegradable 'waste' collected by Scottish local authorities sent to landfill fell by 41 per cent between 2004 and 2011[37] (Scottish Government 2014). Statistics on recycling and incineration refer to household 'waste', so a direct comparison with the fall in biodegradable 'waste' sent to landfill is not possible. However, the statistics do demonstrate an increase in Scottish household 'waste' recycling, from 16.6 per cent of total household 'waste' in 2004 to 40.1 per cent in 2011. Incineration also increased over this period, but by 2011 accounted for only 1.8 per cent of household 'waste' management (SEPA 2011).

2.4 Conclusions

British 'waste' policy and the outcomes it has delivered tell a remarkable tale of cultural and behavioural change within government, in industry, and across the general population. The UK has come a long way since the late 1990s, when most secondary materials were simply landfilled, towards using secondary materials more efficiently. In all three nations, the amount of 'waste' sent to landfill has fallen, and the amount recycled has risen. This national cultural shift in attitudes towards 'waste' gives cause for optimism about government's ability to help bring about the cultural change needed to transition to a circular economy.

However, 'waste' policy has so far done little to encourage reuse, and many secondary materials are still being needlessly disposed of in landfill. In England, the increase in energy generated by incineration is concerning (see box below), and may mean that incineration has increased at the expense of the potential economic and environmental benefits of increased recycling. We still have a long way to go before we create a circular economy.

Incineration versus anaerobic digestion

Most energy recovery from 'waste' is through incineration. The heat generated is generally used to boil water to generate steam, which can then be used for heating or to generate electricity (Defra 2013c). Anaerobic digestion (AD), on the other hand, only works with biodegradable material: the rotting material produces a biogas that can then be burnt as a fuel for power generation.

There are two drawbacks to incineration. First, it has a relatively severe impact on the environment. It is predicted that incineration plants that generate only electricity emit 78 per cent more CO_2 per kilowatt-hour than a gas power station, and only 5 per cent less than a coal power station (Warhurst and Watson 2006). By contrast, Friends of the Earth

35 Like England, municipal 'waste' generation has been dropping although the decline started earlier in Wales in 2004/05. From that year, generation of municipal 'waste' fell by 17.6 per cent by 2010/11. Again, we are not able to conclude what is driving this drop.

36 However, it should be noted that – unlike in England and Wales where there have been drops in the amount of local-authority-collected/municipal 'waste' generated – household 'waste' generation in Scotland stayed broadly flat between 2004 and 2011, falling by only 6 per cent over the period (SEPA 2011).

37 Total 'waste' sent to landfill fell by 40 per cent over the same period.

has shown that AD reduces carbon emissions by offsetting the need for power stations that use fossil fuels. In fact, they concluded that AD can give higher net carbon savings than composting (FoE 2007). The last time HM Revenue and Customs (or rather its forerunner, HM Customs and Excise) compared the external costs of landfill with those of incineration, they found that in their central case, the external costs of landfilling municipal solid 'waste' were £10 per tonne, whereas the incineration (with energy recovery) of that 'waste' had external costs of £13–£14 per tonne (HMCE 2004).

Second, most incineration extracts materials from the economy that might be more valuable if they were reused or recycled. AD is more selective, since only biodegradable material can be used; wood, plastics and so on are not suitable. In the case of food, which is not suitable for reuse, our interviewees generally felt that AD was the best use of discarded food, as it produced both energy and digestate (which is similar in function to compost).

The philosophy behind 'waste' policy therefore needs to fundamentally change. The UK needs to move away from the 'waste hierarchy', and 'waste' can no longer be considered a separate problem compartmentalised from the rest of the economy. Preventing the generation of secondary materials that are vital to our economy is not the panacea that the waste hierarchy dictates.

Scotland and Wales are much closer to adopting this mindset at the government level than England, where progress on secondary materials policy has ceased, and many councils prefer incineration to recycling or reuse. Relying on WRAP and local authorities to promote voluntary and community-based action on 'waste' is not going to contribute to the development of a circular economy. The work of Defra and BIS to date on developing resource management policy is welcome, but inadequate.

Real progress in every nation would see policy towards secondary materials subsumed into a fully developed resource-management policy. To enable this to become a reality, we have identified three strategic goals that need to be addressed in order to expand 'waste' policy into a resource-management policy.

1. **A better understanding of the UK's resources by business and government**
   It is clear from our analysis that the available detailed data on material flows is lacking, which makes evidence-based policymaking harder. Furthermore, as businesses seek to use more secondary materials, they will need a detailed understanding of the UK's material flows. This absence of detailed data must therefore be addressed urgently.
2. **A cultural and behavioural shift throughout society in favour of reusing materials**
   Over the last 20 years a cultural change has taken place that has made recycling commonplace. In future, however, reuse – of a whole product or of its parts – must come to be seen as the best way to treat secondary materials, with recycling only taking place if that is not possible. This cultural and behavioural shift is essential if 'waste' is to become viewed as a valuable resource across the country.
3. **An end to the inefficient and polluting treatment of secondary materials**
   The UK continues to send large amounts of secondary materials to landfill, and is incinerating an increasing amount of them. Not only is this polluting, but it is a waste of resources that could be more efficiently used. It must be minimised, so that only secondary materials that cannot be treated in any other way are landfilled or incinerated.

The final chapter of this report will outline some policy measures to help achieve these goals.

3. FROM 'WASTE' POLICY TO RESOURCE MANAGEMENT POLICY

Chapters 1 and 2 showed that there is a need for the UK to think differently about 'waste', and that current policy cannot deliver this change. However, there is a lot that English policy could learn from the other nations of the UK. This chapter will therefore make policy recommendations for how England can address the three strategic gaps outlined at the end of chapter 2:

- a better understanding of how the UK's resources are used by business and government
- a new cultural and behavioural shift in throughout society in favour of reusing materials
- an end to inefficient and polluting treatment of secondary materials.

3.1 An Office for Resource Management

Currently, responsibility for policy areas relating to resource management, including 'waste' policy, is spread throughout Whitehall. For example, Defra's responsibilities include supporting WRAP, liaising with the EU on the Waste Framework Directive's targets,[38] packaging policy, 'waste' regulation and 'waste' licensing. BIS' mandate relates to both secondary materials and wider industrial policy such as the End-of-Life Vehicles Directive,[39] WEEE, the use of hazardous substances and the Technology Strategy Board. The Department for Energy and Climate Change (DECC) oversees policy relating to energy generation and costs, including energy recovery from 'waste', the renewable heat incentive and energy efficiency. The CLG has responsibility for local government policy, the weekly collections support fund, and other areas such as planning. HM Treasury sets the landfill tax, writes and updates the National Infrastructure Plan[40] (which covers 'waste' management infrastructure) and runs the related UK Guarantees scheme. The Department for Transport looks after the renewable transport fuel obligation; the Foreign and Commonwealth Office negotiates international trade agreements; and the Scottish, Welsh and Northern Ireland offices work on cross-border coordination. Policy diversification like this can result in limited accountability and lack of strategic coordination or oversight for an issue.

We therefore recommend the establishment of an Office for Resource Management (ORM). This would address two strategic aims: increasing our understanding of our resources, and facilitating cultural and behavioural change.

We believe that the ORM should be situated within Defra, where expertise on waste and materials is strongest. Others, such as the Institute of Civil Engineers[41] and EEF (Baker 2014), have called for the ORM to be located in BIS so that the economic importance of resource efficiency can be elevated. However, BIS is an overloaded department with too many existing responsibilities. Generally, rather than parcelling out all economic policy areas to BIS, individual government departments should take responsibility for issues of economic importance within their policy areas.

38 Directive 2008/98/EC; see EU 2008.

39 Directive 2000/53/EC. See http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0053

40 https://www.gov.uk/government/collections/national-infrastructure-plan

41 http://www.ice.org.uk/getattachment/8185ef54-ca0d-457d-8a1f-d0e2212e1fb3/State-of-the-Nation--Infrastructure-2014.aspx

Instead, the ORM should be modelled on other cross-departmental bodies such as the Office for Low Emission Vehicles within the Department for Transport. It should be staffed by personnel seconded from industry and from government departments including Defra, DECC, BIS, the Treasury, DCLG and the Scottish, Welsh and Northern Ireland offices. Crucially, the organisation must have a champion at ministerial level to oversee its running.

The ORM should be given the remit of increasing information collation on resource use, encouraging cultural change, and coordinating policy related to resource management. The ORM's first priority for policy development should be to construct detailed mapping and modelling of material flows in the UK. It should also improve the resource security action plan[42] so that it is long-term and cross-sectoral. It must work with experts in behaviour change, marketing and so on to begin planning public communications that bring home the urgency of better resource management. It should also consider the business case for stockpiling crucial materials, and develop business cases for ways of collating, in a single collection point, key secondary materials for use by industry.

The ORM should not take over policy development from other departments. Rather, it should produce policy that covers areas which would otherwise be missed, and promote resource management across government departments by offering guidance and support to other officials on how to create a circular economy. It should coordinate, review and suggest amendments to other departments' policies to ensure that they are 'resource-proofed'.

3.2 Scrap 'best before' food labelling

Discarded food increases local authorities' expenditure on 'waste' management, costs consumers billions every year, makes recycling inefficient by contaminating recyclables, and is a major source of GHG emissions from landfill. However, it has great potential for encouraging behaviour-change, because everyone has to eat. Addressing food wastage should be a priority for resource-management policy.

EU law requires most food to be labelled with 'best before' dates, and to have a 'use by' date.[43] The former is used for the majority of foods, and relates to quality: it is not intended to indicate whether food is safe to eat. The latter date is used for highly perishable foods that could quickly present a risk of food poisoning[44] (Defra 2011c). Other forms of food date marking (such as 'sell by' and 'display until' dates and 'once opened, use within X days' guidance) are not legally required.

WRAP conducted research into consumers' attitudes to these labels, and found that 'helping consumers to better understand date labels… could make a significant contribution to reducing… [the amount of] food and drink thrown away before ever being cooked or served' (WRAP 2011). Of the people surveyed, 96 per cent felt 'very' or 'fairly' confident that they understood what food dates meant. However, when asked what information the labels gave, only 14 per cent accurately described what 'best before' meant, and only 15 per cent were able to do the same for 'use by'. Instead, 62 per cent gave a generic definition that did not distinguish between the date labels, the most common among which was a blanket 'use/eat-by' rule. Kitchen diary analysis showed that products carrying 'best before' dates tended to be thrown away after that date, but there was a spike in the number of people who threw food out a day after that date, which suggested that consumers were

42 See Defra 2012a

43 Directive 2000/13/EC. Some foods can also be marked 'best before end' if their durability is expected to be longer than three months. See http://europa.eu/legislation_summaries/consumers/product_labelling_and_packaging/l21090_en.htm

44 The exception to this rule is eggs. The Food Standards Agency's advice is that eggs can be eaten a day or two after their 'best before' date, provided that they are thoroughly cooked. This adds to the confusion over food date labelling. See http://food.gov.uk/news-updates/news/2011/dec/eggs#.U7v-SUBup8F

interpreting ‘best before’ as meaning ‘use by’ (ibid). However, WRAP’s published research also showed that consumers were very likely to rely more on their own judgement than on date labelling in ascertaining food safety, although this decision varied between products (Brook Lyndhurst 2011).

‘Best before’ dates are a ‘nanny state’ regulation. As one of our interviewees said, ‘a wrinkly apple can make a great crumble’. Ascertaining food quality should be left to consumers: the effect of this regulation is to encourage consumers to waste and replace food that is edible. WRAP should urgently conduct research to investigate whether abolishing ‘best before’ dates would have any adverse consequences. If no such consequences are found, **Defra and the ORM should lobby the EC to amend Directive 2000/EC/13 to revoke the requirement for foods to be labelled ‘best before’**. This would mean that the only date-marking label mandated by law would be ‘use by’.

3.3 Consult on encouraging food businesses to separate discarded food from other materials

However, not all food ‘waste’ can be consumed (bones and banana skins, for example), so there will always be a need for food ‘waste’ collection. Rather than sending it to landfill or for incineration, both of which are environmentally damaging, these should be sent for anaerobic digestion, composted, or perhaps – as technology develops – recycled into manufactured products like car parts. However, interviewees told IPPR that sourcing fuel is a major problem for the anaerobic digestion industry.

As described in chapter 1, the hospitality and food service sector alone wastes enough food annually to provide one-sixth of all meals served in the UK. To address excessive food ‘waste’ from businesses that produce, prepare, distribute or sell food, Scotland is phasing in a requirement for these businesses to separate food ‘waste’ from other materials (see chapter 2). Our interviewees were enthusiastic about this policy because it promised to reduce the contamination of other recyclables, and increase the visibility of food ‘waste’ to the producer. Visibility is a vital psychological tool to encourage ‘waste’ prevention.

An all-encompassing obligation to sort food from other materials would not be practicable, and in any event Defra should carry out a thorough cost-benefit analysis of adopting the Scottish system across England. If the results of that analysis prove favourable, then over the course of the next parliament **Defra should launch a formal consultation to explore options for ensuring that English businesses that sell, distribute, prepare or produce food to take all reasonable steps to separate discarded food from other secondary materials**, modelled on Scotland’s approach. Any formal requirement should be limited to businesses operating in non-rural areas, and should only apply to those that discard a minimum amount food ‘waste’ – 5kg per week, for instance. As is common in many areas of regulation, what is ‘reasonable’ would be determined by the business in conjunction with the enforcement officer.

To reinforce this policy, and to prevent the sewer system from being clogged by discarded fat, **Defra should ban food businesses from disposing of food into public sewers**, again adopting Scotland’s approach.

3.4 Consider greater financial penalties for landfill disposal when the economic recovery is secured

There is good evidence that the landfill tax has contributed to a reduction in landfill. Our interviewees were dismayed by the withdrawal of the landfill tax escalator, as it has removed policy certainty for all business. They understood that the purpose

of removing the escalator was to ease the tax burden on business during a period of recession. The government's official rationale is that it was abolished in order to allow time for a consultation on improving enforcement of the tax by examining how certain fine materials such as grit are classified under the landfill tax (HMT 2014).

An easing of the tax burden on business had merit during the economic crisis, but the economy is now beginning to look stronger. Concerns over enforcement of landfill penalties, while important, should not distract from the broader policy goal of giving business certainty about the government's commitment to better resource management. With recycling rates slowing and the economy recovering from the longest recession in the UK's history, **the Treasury should consider greater financial penalties for landfill disposal in the next parliament, once a balanced economic recovery has been established**. This should include an assessment of how any policy change might affect rates of recycling and incineration.

3.5 Reducing incineration

Chapter 2 showed that incineration is not an environmentally friendly method of electricity generation. Unfortunately, mixed municipal 'waste' falls outside the EU's emissions trading scheme, so a price is not placed on emissions from that sector. Furthermore, incinerator fuel is generally unsorted, and so includes material from which a higher economic value can be realised through other forms of secondary material management. Incineration adds little to securing the nation's resource security.

A recent study of incineration taxes across Europe found

> *'a broad overall trend that higher incineration charges are generally associated with higher percentages of municipal waste being recycled and composted… The chain of causality may be indirect – incineration facilities tend to be more prevalent where landfill is either restricted or banned, or where the costs of landfill are made high through the deployment of taxes… The higher the avoided costs of residual waste disposal or treatment become, the stronger the incentive for waste prevention and recycling.'*
>
> Watkins et al 2012

Incineration, with or without energy generation, should be considered in the same bracket as landfill. Fiscal incentives to reduce incineration would provide a clear signal that neither it (nor landfill) are economically or socially acceptable. However, these would place a significant burden on businesses and local authorities, and are a blunt tool with which to reduce incineration. There may be a case for distinguishing between incineration that generates electricity only, and that which also generates heat. Other measures – such as amending planning regulations, removing tax benefits provided to incinerator operators, and banning the incineration of certain materials – may be more effective at reducing incineration.

Therefore, **the Treasury should launch a consultation on how incineration can be reduced most effectively, and in a way which causes the lowest possible burden on business and local authorities**. The terms of reference should include an examination of the costs and benefits of introducing fiscal incentives to reduce incineration, introducing regulations to ban the incineration of specific materials, and doing nothing.

3.6 Conclusion

Resources are increasingly scarce, expensive and volatile. Environmentalists, business groups and other stakeholders are calling for more concerted action to limit waste, encourage resource management and create a circular economy.

In the past, policy across the UK has succeeded in delivering cultural change, reducing the use of landfill and promoting greater recycling. We can therefore be optimistic about the ability of policy to succeed again – this time, in encouraging the cultural change necessary to bring about the circular economy, and all of its benefits. The challenge now is to encourage reuse as well as recycling, to drive down incineration and landfill, and ultimately ensure that 'waste' comes to be seen as a resource with an economic value, rather than as something to be disposed of.

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