ALDERSGATE GROUP
LEADERS FOR A SUSTAINABLE ECONOMY

AMPLIFYING ACTION ON RESOURCE EFFICIENCY

UK EDITION

CONTENTS

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ALDERSGATE GROUP

The Aldersgate Group is an alliance of leaders from business, politics and civil society that drives action for a sustainable economy in the UK and EU.

Our members include some of the largest businesses in the UK, leading NGOs, key professional institutes and politicians of all parties. We believe that economic success, both now and in the future, depends upon a political and economic framework that delivers a healthy environment and sustainable use of resources, good environmental performance at the organisational level, growth, jobs and competitive advantage in rapidly growing environmental sectors.

Our policy proposals are formed collaboratively and benefit from the expertise of our members who span a wide range of industry sectors and public interests. Our breadth and collegiate approach allows us to formulate progressive policy positions to benefit all organisations and individuals.

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While members support this publication and provided extensive input, individual recommendations cannot be attributed to any single member and the Aldersgate Group takes full responsibility for the views expressed.

ORGANISATION MEMBERS

EXECUTIVE SUMMARY

A resilient and competitive economy is one that can create more with less and deliver greater value with less input.

The UK's resource productivity increased between 2000 and 2014[1], yet trends over the same period show a simultaneous decline in physical exports and increase in imports[2]. The widening gap suggests the UK is becoming more reliant on material production in other countries and consequently more susceptible to price volatility in commodities markets and exchange rate fluctuations. Transitioning to a resource efficient economy is a viable (and proven) avenue for the UK to further increase its resource productivity, boost employment and competitiveness and curb resource dependence and waste.

Countries around the world – not least China, the Netherlands and Scotland – have already embedded resource efficiency into their national strategy. Yet a coherent UK resource efficiency policy is lacking, putting the UK at a disadvantage as other countries drive this agenda forward.

This report provides a range of case studies and policy recommendations that would build a productive and globally competitive economy that is fit-for-purpose in the 21st century. The studies are taken from several pioneering businesses amongst our membership and those taking part in the EU LIFE+ funded REBus project, of which the Aldersgate Group is a partner. The 26 pilots taking part in the project have already seen a total of £4.89m in financial benefit, allowed for 62,619 tonnes in material savings and reduced greenhouse gas emissions by 1,953 tonnes[3] (see Chapter 1).

Recognising the economic, social and environmental benefits inherent in moving toward greater resource efficiency, the government should:

- Develop a coordinated approach to integrate resource efficiency principles across government, including its upcoming industrial strategy. The government should also remain engaged with the development of the EU's Circular Economy Package, which will impact UK businesses active in the Single Market (Chapter 1)
- Develop ecodesign standards to support improved product standards and protect consumers from poor quality goods (Chapter 2)
- Strengthen its innovation framework to ensure businesses of all sizes have access to funding and expertise that would help improve their resource efficiency (Chapter 3)

1 The Office of National Statistics (ONS) calculates resource productivity by dividing gross domestic product (GDP) by material consumption. Between 2000 and 2014, domestic material consumption fell by an average of 1.8% annually while GDP grew by 1.7%.

2 ONS (July 2016) *UK environmental accounts: 2016.*

3 These figures are correct as of 30th November 2016. The gains from the pilot projects continue to be monitored.

- Lead by example through its own central procurement practices, worth £122bn in 2015–16, to boost demand for resource efficient goods and services (Chapter 4)
- Review its fiscal policy to introduce incentives, such as reduced VAT rates, so that resource efficient products and services are promoted over their counterparts (Chapter 5)
- Supplement its landfill tax with waste legislation that facilitates the re-use and transportation of secondary materials and treats disposal as a last resort (Chapter 6)
- Strengthen the availability of data needed to inform and drive opportunities in resource management (Chapter 7)

Our recommendations touch on policy areas covered by several government departments, such as HM Treasury, Department for Business, Energy & Industrial Strategy (BEIS) and Department for Environment, Food & Rural Affairs (Defra) so coordination across departments will be vital for success.

The businesses highlighted in this report and those involved in the REBus project have already applied resource efficient principles to their operations, reducing their environmental impact whilst improving material savings and seeing financial returns. Despite these successes, UK businesses cannot make rapid progress in isolation and require a coherent resource efficiency policy framework to enable the transition to happen at scale.

Nick Molho
Executive Director, Aldersgate Group

Dr Steve Wallace
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ONE: A DELIVERABLE RESOURCE EFFICIENT ECONOMY FOR THE UK

Resource efficiency is a key part of building a productive and globally competitive economy in the 21st century.

Why pursue resource efficiency?

Resource efficiency is a practical response to resource constraints and the linear 'take-make-dispose' economic model that runs counter to the reality of finite stocks. It offers developed economies a pathway to resilient and environmentally sustainable growth, a systemic answer to reducing dependence on resource markets and a means of managing exposure to the volatility of commodity prices[4].

In England, it is expected that 395 million tonnes of potentially recyclable materials will move through the waste management sector between 2013 and 2020. Current trends suggest only 65% of that will be returned to the economy. The remaining 35%, representing £1.4bn in recyclate revenues, will be lost due to materials not being easily recoverable[5].

There are clear gains for the progressive businesses and governments that embrace a shift towards further resource efficiency. For instance it has been estimated that recycling all the household plastics collected at the kerbside in 2013–2014 would have saved 400,000 tonnes of CO_2 emissions compared to putting them in landfill. This is the equivalent to taking 125,000 cars off the road[6].

Resource efficiency is also strongly linked to the natural environment. Greater resource efficiency would reduce pressure on food production and enhance land productivity. For example, Thames Water has found innovative ways to process its wastewater to produce 150 tonnes a year of top-grade fertiliser that can be sold (see Box 1.1).

Whilst environment protection is a clear co-benefit of resource efficiency, the economic benefits are just as well documented:

- The World Economic Forum estimates that the economic gain from material savings could exceed $1tn annually[7].
- The European Commission estimates that its Circular Economy Package could deliver a net savings of €600bn or 8% of annual turnover for businesses in the EU[8].

4 World Economic Forum (2014) *Towards the Circular Economy: accelerating the scale-up across global supply chains.*

5 Environmental Service Association (June 2013) *Going for growth: a practical route to a circular economy.*

6 WRAP (Spring 2016) *Plastics market situation report.*

7 World Economic Forum (2014) *Towards the circular economy: accelerating the scale-up across global supply chains.*

8 European Commission (December 2015) *Closing the loop: Commission adopts ambitious new Circular Economy Package to boost competitiveness, create jobs and generate sustainable growth.*

BOX 1.1. FERTILISER FROM THAMES WATER'S SEWAGE


© Thames Water

The UK uses 138,000 tonnes a year of phosphate fertiliser, all of which is imported from abroad. The first of its kind in Europe, Thames Water's £2m nutrient-recovery reactor produces slow release fertiliser from the wastewater coming into Slough sewage works. Wastewater is a sustainable source of phosphorus and nitrogen, which are key ingredients in fertiliser and whose price has increased five-fold since 2007.

Thames Water expects to avoid spending money on chemical dosing to remove phosphorus from the wastewater and clear equipment of struvite at Slough. All such operational savings help put a downward pressure on customers' bills. The new reactor will also improve the quality of treated effluent leaving the sewage works, reducing nutrient levels and in turn reducing algae growth in rivers and streams that would otherwise suck oxygen out of watercourses leaving little for fish and other wildlife. The reactor is expected to sustainably produce 150 tonnes a year of top-grade fertiliser for sale to crop-growers, golf green-keepers and gardeners.

By 2030, the UK could see major returns. Research commissioned by SUEZ estimates that a shift to resource efficiency would see a total net gain in Gross Value Added (GVA) of £9.1bn in 2030[9]. WRAP predicts that a move to a more circular economy could create 40,000 gross jobs and reduce unemployment by 12,000 in London alone[10]. This is especially true for businesses involved in reuse, repair, remanufacturing and rental, especially among low to mid-skilled occupations where future job losses in London are expected.

9 Suez/Eunomia (September 2016) *A resourceful future: expanding the UK economy.*

10 WRAP, LSDC, GLA and LWARB (December 2015) *Employment and the circular economy: job creation through resource efficiency in London.*

A successful resource efficiency policy requires cross-government coordination

Waste management has long sat within the remit of the Defra and its predecessors. The new BEIS department is a well-placed partner to drive forward a cross-government resource efficiency strategy.

BEIS marks a welcome amalgamation of business, energy and climate change expertise and has been tasked with the development of a national industrial strategy. Harnessing the waste management expertise in Defra, the industrial strategy is an opportunity to develop a pan-economy, long-term strategy that builds on the UK's strengths to create a productive, competitive and low carbon economy with benefits spread across different regions of the UK. The industrial strategy should be used to drive greater resource efficiency across different industrial sectors and maximise supply chain benefits from doing so.

Given the importance of fiscal measures in stimulating greater resource efficiency (Chapter 5), HM Treasury also has an important role to play in supporting the UK's move towards a more efficient and productive economy.

Beyond UK policy, the EU's Circular Economy Package will remain important for UK businesses after the UK has left the EU because it is developing product standards, innovation funding, recycling targets and other incentives to drive greater resource efficiency across the Single Market. Where possible, the UK government should remain engaged in its development during the UK's transition out of the EU. Remaining involved in the development of the Package and developing UK standards that match or (where technically and economically feasible) exceed EU standards will strengthen the export-readiness of UK businesses and deliver environmental benefits.

BOX 1.2. WHAT IS REBUS?

REBus, an EU LIFE+ funded partnership project, is pioneering and testing a methodology that enables companies to transform their strategies to be more profitable, resilient and resource efficient.

The project is led by WRAP, working in partnership with the Rijkswaterstaat (Dutch Ministry of Infrastructure & Environment), Aldersgate Group, the Knowledge Transfer Network (KTN) and the University of Northampton. REBus has secured €3.1m funding from the European Commission's LIFE+ fund, UK governments and project partners.

The project has launched pilots on supply (production and retail sale of goods and services) and demand (purchase and use of the goods and services) by providing technical expertise to businesses in developing business models and engaging with their customers and supply chains:

DEMAND SIDE

REBus partners in the Netherlands are driving the delivery of resource efficient business models (REBMs) through the public procurement process. This includes supporting both government and company procurers, developing new models before and during the tendering process.

SUPPLY SIDE

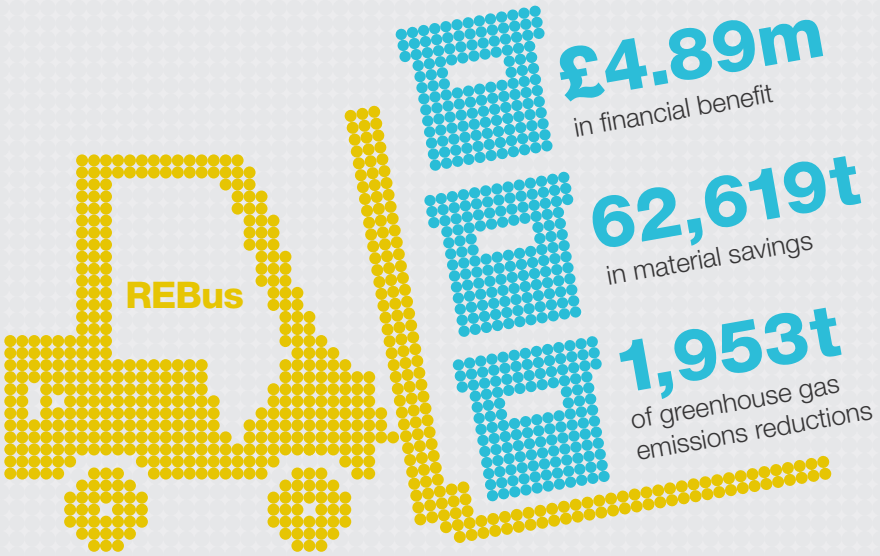
In the UK, REBus is working with businesses to build the financial case for a transition from traditional to more resource efficient business models. This includes some innovative SMEs who have entered the market with circular business models and need support in refining their proposition to customers.

What is the business case for taking action?

In 2013, the Aldersgate Group partnered on project REBus (see Box 1.2), which has been working directly with businesses across the UK and Netherlands in a range of market sectors (including electrical and electronic products, textiles, construction and ICT) that are worth €350bn across the EU.

RESOURCE EFFICIENCY
DELIVERING ON THE GROUND

Across its pilots, REBus has delivered:



Across its 26 pilot projects, REBus has delivered a total of £4.89m in financial benefit, allowed for 62,619 tonnes in material savings and reduced greenhouse gas emissions by 1,953 tonnes[11] to date. The businesses running pilots will continue to reap these benefits as they implement their resource efficient business models for years to come.

With these results, lead partner WRAP examined the extent to which the business models that have been piloted throughout the REBus project could deliver economic and environmental benefits for the EU economy if they were adopted on a large scale[12]. Extrapolating the results from our pilot projects to the whole EU economy shows significant economic and environmental gains for the EU out to 2030. The forecasts were conducted across three separate scenarios (termed: no new initiatives[13], current trajectory[14] and transformational change[15]).

11 These figures are correct as of 30th November 2016. The gains from the pilot projects continue to be monitored.

12 WRAP (December 2016) *Extrapolating resource efficient business model potential across Europe.*

13 The first scenario involves no new initiatives and a very limited increase in the 'circularity' of the economy.

14 The second scenario envisages a continuation on the current trajectory, with significant further increases in recycling and remanufacturing likely.

15 The third scenario sees substantial progress in recycling and remanufacturing, but also major development of the reuse, servitisation and biorefining sectors.

In the third scenario, which assumes that there is a much more extensive adoption of resource efficient business models, there could potentially be around £281.74bn GVA created by 2030, a reduction in material demand of 184 million tonnes, an additional 172 million tonnes of material diverted from landfill and a reduction in emissions of 154 million tonnes CO_2eq.

RESOURCE EFFICIENCY
SCALING UP ACROSS THE EU

When REBus results are scaled up across the EU economy, it shows that by 2030, the adoption of resource efficient business models could deliver:

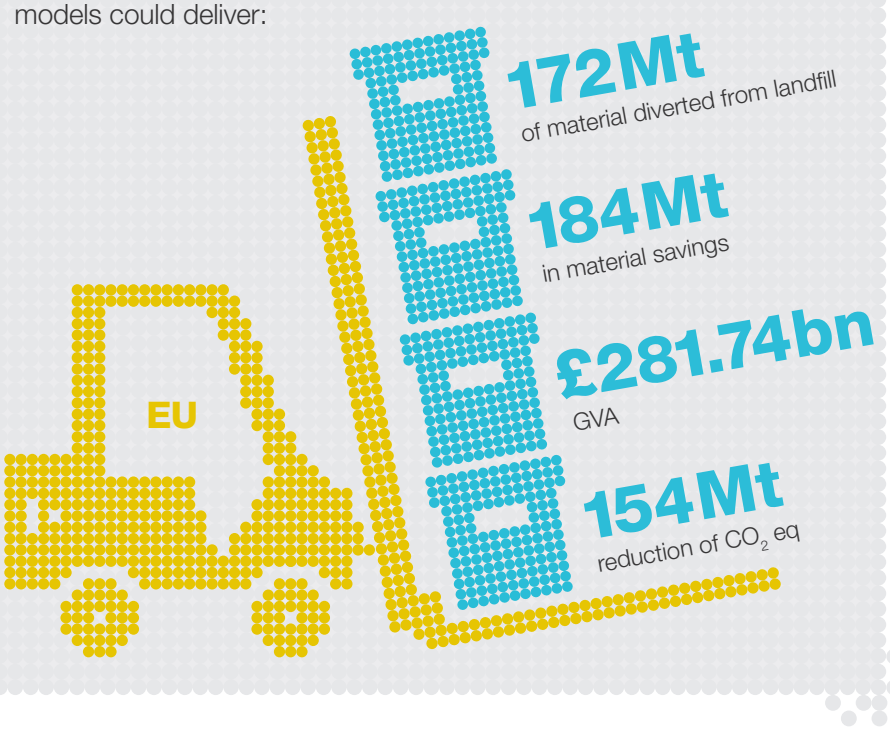


Figure 1.1 shows that although GVA displacement (reduction in manufacturing) is highest in the transformative scenario, the gains are also the greatest and more than offset any losses. Figure 1.2 and 1.3 show, as can be expected, that greater adoption of resource efficiency leads to greater reductions in material use and associated greenhouse gas emissions.

Figure 1.4 shows that the potential gains from resource efficient business models under the current development path and transformative scenarios are distributed across European economies. Opportunities exist in all economies to increase GVA. The UK is second only to Germany as a country that would see the greatest potential net gains in GVA if its economy made a significant shift towards more resource efficient business models.

Whilst the benefits of improving material resource efficiency are significant, the limitations of current technology and processes must be remembered to ensure that higher targets do not result in greater use of other resources, such as energy and water, to meet them. The move to circularity must be approached through the prism of system-wide efficiency.

FIGURE 1.1 GROSS VALUE ADDED

Potential GVA impacts to 2030 across Europe

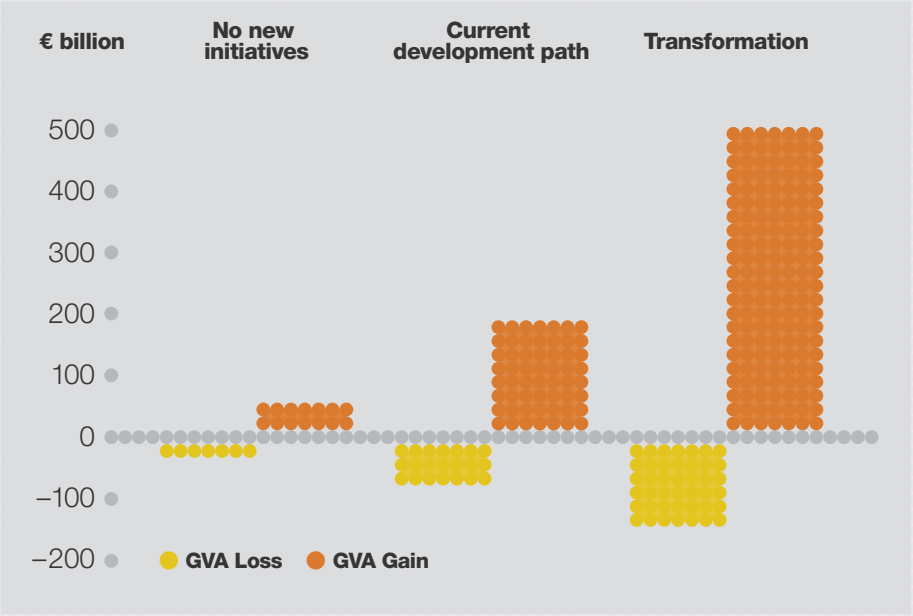


FIGURE 1.3 EMISSIONS

Potential greenhouse gas emissions reductions to 2030, a global perspective

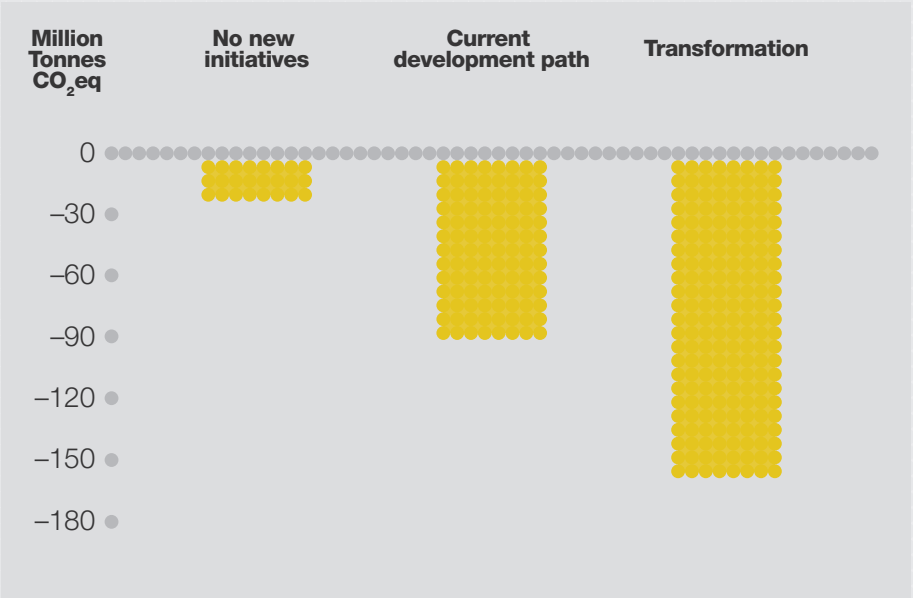


FIGURE 1.2 MATERIALS

Materials diverted and use avoided to 2030 across Europe

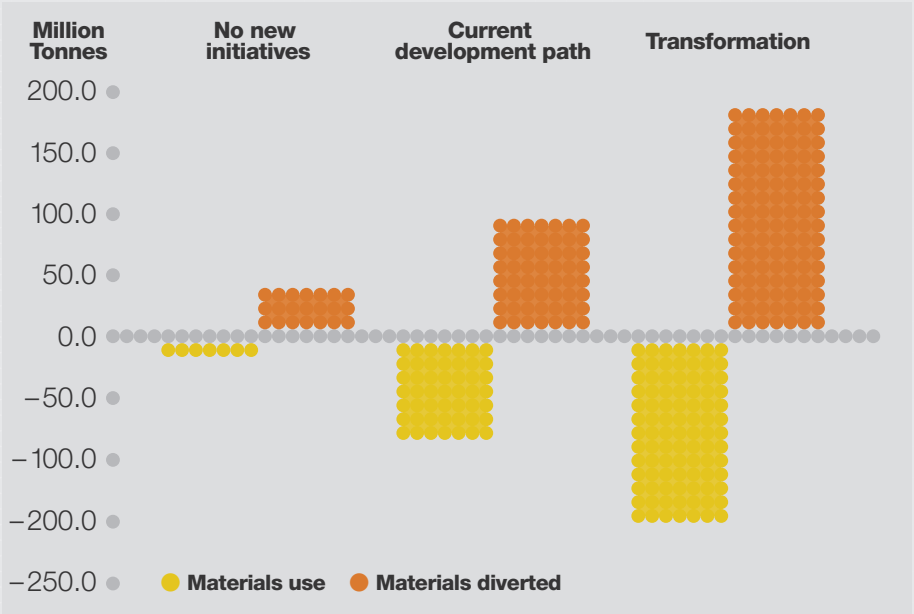
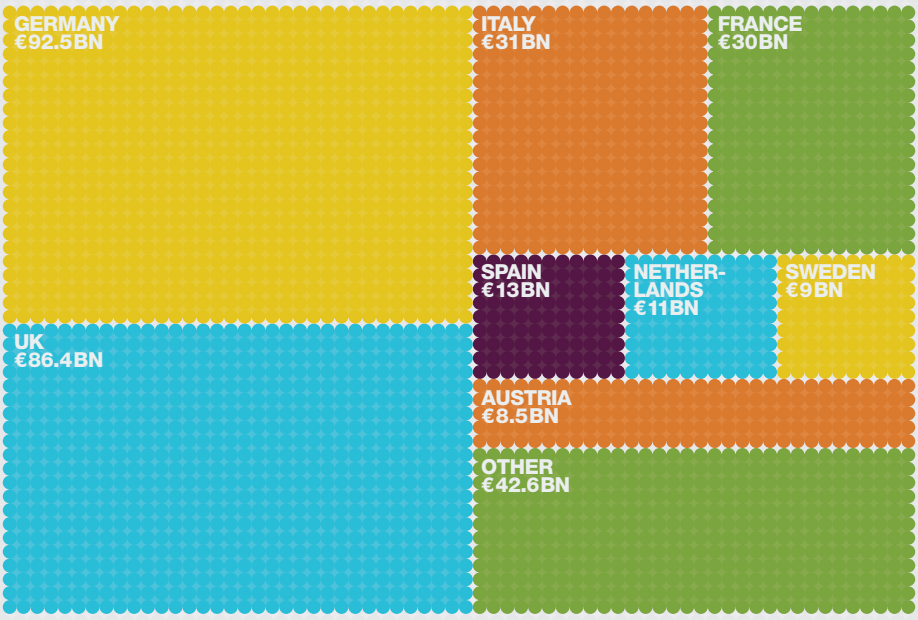


FIGURE 1.4 NATIONAL GAINS

Potential GVA gains to 2030 across Europe totals €324bn



TWO: DESIGNING OUT WASTE

Criteria requiring resource efficient product design is key to stop resources becoming waste in the first place.

The design stage is critical

More than 80% of a product's environmental impact is determined at the design stage[16]. This shapes a product's composition and volume, as well as its durability, repairability and recyclability. Adopting an ecodesign approach places special consideration on a product's environmental impacts across its lifecycle and helps stamp out unnecessary waste early.

Without ecodesign, it is often consumers that lose out as they are purchasing from a market where products are not lasting as long as they could. As noted in a recent Green Alliance report, improving product design is not a call for new technologies, but for new market rules that drive businesses to compete over the quality of their products[17].

Driving product standards upwards

Mandatory standards, signalled well in advance, have played a major role in improving resource efficiency. For example, the EU's ratchet on automotive engine emissions standards (coupled with the UK government's approach to a sliding scale of vehicle excise duty linked to greenhouse gas emissions standards) has led engine manufacturers and car designers to invest billions in research and development to deliver more fuel-efficient vehicles that reduce costs to the end user and improve air quality[18]. Today, it would take 50 new cars to generate the same level of emissions as a single vehicle built in 1970[19]. The End of Life Vehicle Directive has also been instrumental in ensuring that most of a car is recycled.

Similar challenges must be set in other industry sectors by using clear ecodesign standards across an increasing range of products. These standards must encourage design and disassembly methods that facilitate the reuse and remanufacturing of valuable components. Such standards should be applied equally to imports as to domestically manufactured products, allowing UK businesses to play to their strengths in the production of high added value products.

Existing ecodesign policy

The EU's Ecodesign Directive introduced minimum energy efficiency standards for a range of products sold on the Single Market and has been highly successful to date, delivering over 40% of Europe's 2020 target, which required a 20% improvement in energy efficiency. In fact, the EU's energy savings are equivalent to 165 million tons of oil annually, more than half the energy consumption of Germany[20]. IKEA's application of resource efficient design on just one product line has resulted in a savings of 680 tonnes of CO_2 per year, which is the equivalent of energy use in 480 European households (see Box 2.1).

16 Graedel, T. E & Allenby, Braden R & American Telephone and Telegraph Company (1995) *Industrial ecology.*

17 Green Alliance (November 2016) *Better products by design: ensuring high standards for UK consumers.*

18 Read more: http://bit.ly/2iPe2WU

19 Ibid

20 Economist (October 2016) *The EU is reviewing the policy that makes its appliances so energy efficient.*

BOX 2.1. CHANGING MATERIALS IN AN IKEA PLASTIC BOTTLE

TOMAT is a product currently on the IKEA shelves made of 100% virgin plastic. Working together with a supplier, IKEA found a way to use its own waste partly to replace virgin material. From February 2017, 50% of the bottle will be made of IKEA's shrink wrap waste.

By shifting only half of this bottle from virgin to IKEA's own waste, the business save 680 tonnes of CO_2 per year, which is the equivalent of energy use in 480 European households.

This is a journey and IKEA is looking for other materials and technologies to reduce virgin materials use further. IKEA is on an innovation quest to use more sustainable materials in its products.

© IKEA Group

The UK government estimates that by 2020, the annual net savings to the UK economy resulting from EU ecodesign standards will be in excess of £850m per year, with reductions in greenhouse gas emissions of more than seven million tonnes per year[21]. To consumers, this means an average annual saving of £60 on energy bills, rising to £120 by 2020[22].

Regardless of the format of the UK's relationship with the Single Market following its departure from the EU, British business will want to continue to export goods and services to the European market and will therefore need to adhere to these new ecodesign standards in their products.

21 DECC (July 2014) *Energy efficient products – helping us cut energy use.*

22 Then Secretary of State for Energy and Climate Change, Amber Rudd, speech (24th March 2016) *On the energy benefits of staying in the EU:* http://bit.ly/1WUb4dZ

In 2011, we started using lifecycle assessments to inform our sustainable product thinking, because decisions made in the design phase have a huge knock on effect on every other stage of the product's life. As a result, our products design team now use our own Sustainable Design Toolkit when designing all new products

FIONA BALL
HEAD OF RESPONSIBLE BUSINESS
SKY

The EU Circular Economy Package's Action Plan highlights ecodesign as a key measure. Whilst continuing to engage with the development of the Package, the UK should develop its own set of resource efficiency product standards that should be at least as good as, if not stronger, than what will be in place in the EU. By strengthening its own product standards, the UK can be at the forefront of resource efficient product design, improving the productivity of its economy and strengthening the export potential of its businesses whilst reducing environmental impacts.

THREE: BUILDING TRACTION IN THE MARKET FOR INNOVATION

Access to expertise and funding are key to ensure that circular products and business models get traction in the market.

Going circular requires shifting business as usual

The shift to a more resource efficient economy will see the emergence of new business models and, in some areas, the development of new energy efficient, low carbon and resource efficient technologies as well as a shift in processes. These business models and technologies are rapidly developing but are sometimes perceived as risky.

A clear lesson from the REBus pilots is that a change in business model requires a long lead-time paired with technical support in the formative stages; this is particularly true for SMEs. For REBus supply side projects, the lead times from initial commitment to launching a new model ranged from six to 18 months. This underlines the need to develop financial and technical support mechanisms for businesses and highlights the importance of stable government policy that extends over more than one parliamentary term: wider surveys have identified policy uncertainty as a major barrier[23,24,25].

> The REBus delivery team added huge value helping overcome many of the barriers that were presented, for example questions over the waste hierarchy, questions over how to decontaminate equipment etc. Most importantly, they supported us with the procurement aspect which helped us overcome a barrier that had been blocking our business from launching for nearly nine months
>
> 
>
> **MICHAEL MCLEOD**
> **FOUNDER AND MANAGING DIRECTOR**
> **UNIGREENSCHEME**

Developing a viable innovation framework

Barriers to innovation exist across businesses of all sizes. All face short-term cost pressures. SMEs and start-ups in particular lack well-resourced facilities, brand recognition and established routes to market. To address their barriers and boost businesses' capacity to innovate and develop new resource efficient business models, government must improve access to funding and technical expertise.

Giving innovators access to funding

General investment in the UK has grown. In 2015, the UK's technology sector attracted record levels of investment with $3.6bn in venture capital funding, a 70% increase on 2014[26]. But whilst this is an improvement, it is relatively small considering that in 2015 the ride-sharing app Uber alone attracted more investment than the entirety of the UK technology industry[27].

23 POLFREE (October 2012) *Business barriers to the uptake of resource efficiency measures.*

24 Ellen MacArthur Foundation (2013) *Towards the circular economy.*

25 CIWM (2014) *The circular economy: what does it mean for the waste and resource management sector?*

26 FT (January 2016) *UK tech sector raises $3.6bn venture capital in 2015.*

27 BBC (September 2016) *Silicon Valley Brits: 'We had to leave the UK behind'.*

Despite the positive financial gains of the REBus pilot projects, workshops held by the Aldersgate Group over the course of this project identified that many investors still consider changes to business models to be high risk strategies and price that risk into their lending terms, creating a disincentive to innovate[28].

The government's new £23bn National Productivity Investment Fund includes £4.7bn for science and innovation as well as £400m from the British Business Bank to unlock £1bn of new investment in innovative firms. The boost to funding is welcome, though broad and lacking a specific vision for the direction in which the UK will innovate. Potential models exist: for example, an expanded version of InnovateUK's 'Circular Economy: business models' programme could be established, whereby investment is allocated in the form of a loan, which is paid back into the fund (with interest) based on the success of the project. The London Waste and Recycling Board (LWARB) has recognised the challenges that SMEs face in accessing appropriate finance and expertise within the capital (see Box 3.1).

BOX 3.1. LWARB'S NEW INVESTMENT STRATEGY

The concept and risk framework of the circular economy is still not widely understood in the financing community. As a reaction to this the London Waste & Recycling Board (LWARB) is about to launch a new investment strategy, seeking to design funding solutions to cater for SMEs of all sizes who are looking to overcome the challenges presented through adopting new, innovative operating models.

This strategy will entail development of acceleration and incubation programmes to support startups in gaining market traction, the launch of venture capital funds to encourage the existing angel and venture ecosystem to invest in circular models and investment into private equity funds providing growth capital into scaleable circular businesses. Underpinning all of these programmes is the January 2017 launch of Advance London[29], a new, dedicated ERDF funded advisory service designed to support SMEs in their transition into or scale up of circular business models.

Linking projects to expertise

Most of the pilots delivered through REBus would not have happened without access to the expertise from the REBus delivery team (see Box 3.2). In particular, pilots report that guidance was helpful in terms of market research, generating internal buy-in across departments (i.e. sales, finance and marketing teams) and communication once a product or service was brought to market. This expertise would have been difficult to afford otherwise, particularly for SMEs.

If businesses do not have the competencies to adopt circular business models then incentives put forward by UK government will only have marginal impact. REBus has developed guides[30] to aid businesses in implementing new business models based on learnings from the REBus project. The learnings cover all the stages of implementation including innovation, developing a business case and rolling out the new business model. Whilst the guides will form a foundation for action and raise awareness of what is required, specific, external technical support is likely to be needed by many businesses for some time yet.

28 Aldersgate Group (October 2014) *Financing the transition to circularity.* http://bit.ly/2d3tRW5

29 Read more: http://bit.ly/2jia9qP

30 Read more: http://bit.ly/2jdObVK

BOX 3.2. IPOWER OUTPERFORMS PROJECTED ENERGY GENERATION

Social enterprise iPower is focused on reducing energy bills and carbon emissions through BlueGEN installations (small scale fuel cells) in social housing and other properties in an effort to make clean energy affordable to all.

iPower adopted a funded model for Micro-CHP provision whereby they lease the Micro-CHP kit to clients and the supplier bears the maintenance costs. REBus expertise was key to (a) developing a thorough risk assessment early on, which whilst time-consuming saved significant time down the line, (b) helping secure finance for capital expenditure to purchase additional units, (c) engaging clients on the viability of a Micro-CHP funded model and (d) developing a sector-specific marketing strategy.

The pilot, which became fully operational in January 2016, is exceeding its projected performance, generating 3156 kWh in its first 85 days. It is estimated that the net savings for the pilot will amount to 19.96% in Year 1, rising to 36.4% by Year 10. CO_2 mitigation is estimated as 3–4 tonnes per year.

© iPower

BOX 3.3. THE DUTCH GREEN DEAL

In 2011, the Dutch government launched a new programme to drive eco-innovation, including resource efficiency, called the Green Deal[31]. Through the provision of expertise rather than funds, the programme helps companies, industry organisations and NGOs address barriers such as ambiguous or restrictive legislation, legal confusion or a lack of partners[32].

Dutch policymakers have seen much appetite for the Deals from applicants and government itself. Those taking part in the programmes have reported major benefits such as increased confidence in their business model and better lines of communication with government. This year the EU has launched the Innovation Deal, which is modelled after the Dutch programme.

The Dutch government has addressed these non-financial barriers by providing advisory support through its Green Deal (see Box 3.3). The UK should consider developing its own programme to complement its increased provision of funding and the work already carried out by InnovateUK.

31 Read more: http://bit.ly/2jyQHt6

32 Parliamentary Office of Science and Technology (September 2016) *Designing a circular economy.*

FOUR: STIMULATING MARKET DEMAND THOUGH PUBLIC PROCUREMENT

By tailoring its procurement policy, the government could send a strong market signal and boost demand for more resource efficient goods and services.

Government must lead by example

UK gross public procurement totalled £122bn in 2015–16[33]. This represents a significant lever with which to drive forward resource efficiency, by increasing demand for resource efficient goods and services in addition to enabling public authorities to meet today's most pressing environmental challenges and budget constraints. New procurement guidelines could see the leasing of public building furnishings, application of good quality secondary raw materials for national infrastructure projects and purchase of products with higher recycled content.

> One of the most important lessons we learned is to discuss your intentions with the market in advance. Engage them in early dialogue and involve your potential suppliers, giving them time to develop solutions that meet your requirements
>
> 
>
> **CUNO VAN GEET**
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The size – and therefore the huge potential for influence – of public sector procurement means government should adopt a leadership role in stimulating a critical mass for sustainable supply chain operations[34]. Considering that 75% of the government's total greenhouse gas emissions apply to supplier emissions[35], managing these impacts is particularly important in terms of the government's ability to deliver on its legally binding carbon budgets cost-effectively and stimulate resource efficiency across the economy, whilst still accessing the goods and services that it needs.

For instance, the Dutch Ministry of Defence expects to generate €750,000 in additional revenue and prevent over 14,500 tonnes of CO_2 annually through its strategy to recover textiles, in addition to creating jobs for people with occupational disabilities (see Box 4.1).

33 HM Treasury (July 2016) *Public expenditure: statistical analyses 2016:* http://bit.ly/2dqpaqi

34 Day (2005) *Buying green: the crucial role of public authorities.*

35 Defra (November 2015) *Greening government commitments: annual report April 2014 to March 2015:* http://bit.ly/1Ou2obk

BOX 4.1. DUTCH MINISTRY OF DEFENCE: TEXTILE RECOVERY

The Dutch Ministry of Defence (MoD) has approximately 42,000 military personnel in active service. Soldiers receive clothing and personal equipment on loan. At the end of active service, some of the clothing and equipment has to be returned.

In an assessment of their textile recovery, it was concluded that the MoD could collect nearly one million kilograms of additional material. The returned products are now sorted by the BIGA Groep, who classify 750,000 items annually, cutting out emblems and inspecting all pockets to ensure military property cannot end up in the wrong hands.

Around 35% of the sorted clothing gets a second life in the MoD. The remainder of items are used in new products mostly untraceable to defence clothing. Approximately 33% of items are unsuitable for re-use and get fiberised to become new products such as wall insulation and car door panels, as well as blankets for refugees, bags and wall decorations. The MoD has also set up a requirement that new products purchased must have recycled content, creating a revenue model.

It is expected this will lead to additional revenue of approximately €750,000. The extra costs associated with the services provided by the BIGA Groep are amply compensated by avoiding costs for confidential destruction and by additional revenue generated by the re-use of products and materials. It is anticipated that this revenue will increase further if the system put in place by the MoD is also taken on by other government agencies.

The re-use of materials is expected to deliver savings of over 14,500 tonnes of CO_2, 132,000 GJ of energy (equal to 4.25 million m^3 of natural gas) and almost 2.9 million m^3 of water. The project also contributes to the government pledge to create 125,000 additional jobs for people with occupational disabilities.

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The UK's green public procurement strategy

Current UK public contracts are guided by 'best value' mandates, specifically "the best mix of quality and effectiveness for the least outlay over the period of use of the goods or services bought"[36].

In 2011, the UK introduced the Greening Government Commitments (GGC)[37] that created a framework for improving the government's sustainable operations through to the 2014–15 parliamentary session against a 2009–10 baseline. One of the main tenets of these Commitments was to embed Official Government Buying Standards (GBS) within procurement contracts[38].

In December 2016, the government published its GGC for 2016 to 2020, which still recognises sustainable procurement as a key area as well as compliance with the GBS. Although the GBS includes consideration of resource use and end of life costs, these standards, from 2012, must be revisited in a way that makes clear the government's intention to move its procurement strategy away from the linear economy. Given that central government procurement is now centralised within Crown Commercial Services, this agency provides a ready vehicle for an early, coordinated and class-leading response.

The government must explore what standards can be put in place to help ensure that its procurement teams are making purchasing decisions that best decouple economic growth from the use of natural resources and reliance on ecosystems by using those resources more effectively.

A strategy should be developed to embed resource efficiency fully into central government procurement, with a well-defined timeline and targets established by sector. GBS currently identify mandatory and best practice criteria.

36 Read more: http://bit.ly/2juz0XH

37 The Greening Government Commitments are applicable to the office and non-office estate of central government departments as well as their Executive Agencies (EAs), Non-Ministerial Departments (NMDs) and executive Non-Departmental Public Bodies (NDPBs).

38 Cabinet Office (June 2011) *Greening government commitments: Guidance on measurement and reporting.*

A clear roadmap should be established whereby medium- and long-term resource efficiency goals are set, with timelines established for the transition of best practice requirements into mandatory requirements in order to give a clear signal to suppliers and allow them time to adapt. Such an approach would show leadership as well as drive financial efficiency; the outcomes should continue to be monitored and reported in order to encourage others to follow.

Of course, central government procurement is only a small part of total public sector procurement, so further policies should be developed to roll out the approach across all departmental budgets.

BOX 4.2. PRORAIL: PROCUREMENT OF FLOORING AND FURNITURE

The Dutch government has been working closely with rail infrastructure management company ProRail on furnishing their new traffic control centre.

The centre, officially opened in Utrecht in June 2015, was furnished with circular flooring and furniture. As part of their strategy, ProRail encouraged purchasers and suppliers alike to think about a business model based on value retention of the raw materials throughout the entire supply chain.

Rather than owning the flooring, ProRail entered a ten-year acquisition and maintenance contract with Desso for carpet tiles produced from environmentally friendly material. Desso ensures the quality of carpets for 10 years and that they are directly reused or recycled to a high enough standard that the material can be used again.

In terms of procuring office furniture, ProRail was unable to reach a long-term contract and instead purchased products through a one-off contract, opting for environmentally friendly materials and modular furniture. The company is now looking to set up a service to extend product lifetime.

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FIVE: USING FISCAL INCENTIVES TO BOOST RESOURCE EFFICIENCY

Fiscal incentives, such as reduced VAT rates for durable, repairable and resource-saving products and services should be promoted.

The transition to greater resource efficiency does not mean increasing the regulatory burden on industry. Instead, it means modifying the current fiscal approach, so that businesses are encouraged to innovate and are rewarded for doing so, whilst consumers are incentivised to repair their goods.

What is the UK taxing?

The UK's fiscal framework does not at present encourage resource efficiency and in some cases can discourage businesses from adopting more circular business models.

More than 40% of the UK's government budget is based on labour taxes, specifically income tax and national insurance contributions. Environmental levies are merely 1% of expected receipts[39], less than the EU average of 6%[40].

Such a model does not incentivise the transition to greater levels of resource efficiency. The move towards resource efficiency values the reuse and recycling of resources and can require more labour intensive business models, particularly in areas such as repair, innovation, services and product redesign.

Shifting the (dis)incentives

By increasing the proportion of taxes on natural resource use, businesses would be challenged to reduce their material consumption and incentivised to develop more resource efficient business models. A decrease in taxes on labour would see benefits for employment and skills. According to the OECD, this is especially true for low-income workers, single parents, second earners and older workers who get 'priced out' by taxes, minimum wage or a combination of the two[41].

On the current development path, greater resource efficiency in Britain could, according to a recent report from Green Alliance, create over 200,000 gross jobs and reduce unemployment by about 54,000 by 2030. It could also offset 7% of the expected decline in skilled employment to 2022[42]. As was the case with the successfully applied landfill tax system, such a transition in the balance of taxes should be signalled in advance and take the form of a ratchet or escalator to allow businesses to adapt and benefit from the new approach.

39 In the Budget delivered to Parliament in March 2016, the forecast for the 2016–2017 fiscal year indicated £182.1bn from income tax, £126.5bn from national insurance contributions and £7.4bn from environmental levies. Receipts totalled £716.5bn.

40 Eurostar (2014) *Taxation trends in the European Union.*

41 OECD (2011) *OECD tax policy studies: taxation and employment.*

42 Green Alliance (2015) *Employment and the circular economy: job creation in a more resource efficient Britain.*

A range of organisations have called for fiscal reforms that shift taxation from labour to natural resources, including the International Monetary Fund, the OECD, Eurogroup and the International Labour Organisation. An Ex'Tax study, which included Deloitte, EY, KPMG and PwC, found that such a tax shift could be worth €33.7bn and create hundreds of thousands of jobs[43].

VAT rates

The UK Parliament's Environmental Audit Committee suggested that the government should develop a range of VAT rates for products based on their environmental impact or recycled content. The Committee highlighted in particular that reused items should attract a zero rate of VAT since VAT will already have been paid on the new item[44].

> Globechain's reuse platform encourages businesses to reuse and redistribute items within retail, commercial and construction sectors. Within the REBus project, we recognised there was positive buy-in with corporates wanting to reuse certain materials/items; however legislation and policy limited the possibilities of this, in particular VAT within the construction industry. Changes within policy to encourage corporates to reuse more, which would save them money, would be a real game changer for the industry

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43 Ex'tax project (November 2014) *New era. New Plan. Fiscal reforms for an inclusive circular economy.*

44 Environmental Audit Committee (July 2014) *Growing a circular economy: ending the throwaway society.*

The current EU VAT Directive already allows Member States the discretion to apply reduced VAT rates to a specific range of goods and services. Sweden, for example, is already using this flexibility in the name of resource efficiency (see Box 5.1) and introducing tax breaks on minor repairs to household goods in an effort to reduce resource consumption. Though the EU VAT Directive does not contain specific provisions that allow Member States to vary VAT rates to encourage the use of recycled materials, it is currently reviewing this through its Action Plan on VAT[45]. When leaving the EU, the UK could be free to make amendments that support resource efficiency but can already act within the flexibility currently allowed by the directive.

BOX 5.1. SWEDEN INTRODUCES TAX BREAKS FOR REPAIRS

The Swedish government has recently introduced a 50% reduction on VAT on the repair of items like bicycles, leather goods and white goods as part of its 'Strategy for sustainable consumption'[46].

The government is also allowing citizens to reclaim up to 50% of labour costs for fixing home appliances from their income tax. As noted by Sweden's minister for financial markets and consumer affairs, Per Bolund, "this could substantially lower the cost and so make it more rational economic behaviour to repair your goods"[47]. It is hoped that the tax breaks will provide a huge boost to the home repairs services industry and trigger job creation in this area.

45 Read more: http://bit.ly/2jyVcUB

46 Read more: http://bit.ly/2iAl6mM

47 Guardian (September 2016) *Waste not want not: Sweden to give tax breaks for repairs.*

SIX: ENSURING ONLY 'WASTE' IS WASTE

Waste legislation must incentivise, rather than hinder, the re-use of secondary materials and treat disposal as a last report.

Waste generation in the UK

Approximately 200 million tonnes of waste is discarded in the UK each year[48]. Ensuring that this only consists of unviable material is essential to increasing resource efficiency. Together with implementation of the Landfill Directive, the UK executed its landfill tax in a bid to encourage alternative means of waste management, such as recycling. The amount of waste sent to landfill since its introduction in 1996 has halved, making the tax a core policy driver affecting change in the waste and recycling sector[49].

Whilst the landfill tax has prompted a shift away from disposal, more needs to be done. The government must make the landfill tax part of a suite of instruments, offering a balance of carrots and sticks, to ensure the value of materials can stay in the economy for as long as possible.

How to define waste

Any effective waste framework would prioritise the higher levels of the waste hierarchy and treat disposal as a last resort option. Specifically, only material that no longer has any utility should be treated as waste and sent to landfill.

If UK legislation fails to incorporate clear definitions and binding targets, it could impede progress towards resource efficiency with viable material classified as waste too early. This presents restrictions for businesses regarding what they can and cannot do with material.

Challenges of definitions

The EU's Waste Framework Directive shapes current UK waste legislation. It defines waste as "any substance or object, which the holder discards or intends or is required to discard" (Waste Framework Directive 2008/98/EC). The consequences of such a definition is threefold:

- The label of waste is often identified at a very early stage and before any secondary use/market can be applied.
- The holder effectively becomes a waste handler/producer and is subject to corresponding regulatory requirements.
- The regulatory burdens of holding waste means that it can become more complex and at times economically unviable to re-use materials.

48 Defra (March 2016) *Digest of waste and resource statistics.*

49 Defra and others, Joint written evidence on Circular Economy, April 2014 http://bit.ly/1zFhPJo

The European Commission is currently reviewing the definition of waste and by-products as part of the Circular Economy Package's Waste Directive. The proposed amendments[50,51] are a good improvement, in that they echo earlier definitions which referred to 'waste' as a substance or object that had fallen out of the cycle of utility. This should benefit businesses like REBus pilot UniGreenScheme, which coordinates asset resale services across fifteen UK universities and has faced large barriers up until now given the ambiguity of existing definitions of 'waste' (see Box 6.1).

Redirecting responsibility to the producer

Municipalities face challenges in managing a waste stream that is growing in both volume and complexity. The 'extended producer responsibility'[52] (EPR) concept provides a clear mechanism for the efficient recovery of materials used in products and aims to shift the burden of managing certain end-of-life products from local authorities and taxpayers to producers.

There are now 400 EPR schemes around the globe. While these schemes have contributed to increasing material recovery rates from certain waste streams, the economic and environmental performance of these systems are highly disparate. They also currently only cover a limited range of goods, with packaging, electronics, cars and tyres dominating the conversation. The list of goods that fall under these schemes should be extended.

50 Article 5: Substance or object resulting from a production process the primary aim of which is not the production of that substance or object is considered not to be waste, but to be a by-product if the following conditions are met:

51 Article 6: Member States shall ensure that waste which has undergone a recovery operation is considered to have ceased to be waste if it complies with the following conditions: (a) the substance or object can be used for specific purposes;

52 According to the OECD, extended producer responsibility is a "policy approach under which producers accept significant responsibility – financial and/or physical – for the treatment or disposal of post-consumer products". OECD (March 2001) *Extended Producer Responsibility: A Guidance Manual for Governments.*

BOX 6.1. UNIGREENSCHEME BRINGS ASSET RESALE SERVICE TO HIGHER EDUCATION INSTITUTIONS

Universities across the UK are regularly disposing of a high number of useable and valuable scientific instruments and other assets each year into waste skips as part of laboratory and facilities clear-outs. Staff are frustrated at having to dispose of useable equipment, but the need to urgently recoup space often means they have no other choice. Many of these clear-outs occur as a direct result of the absence of an easy access route to resale opportunities.

UniGreenScheme collects, stores and sells surplus equipment for universities and returns to them a share of the profits. They return the profits back to the research department within the university where the equipment came from – so it could be described as an incentivised re-use service. Fifteen universities across the UK currently use the service.

The legal definition of waste presented an issue, in that it was unclear whether the collected equipment was or was not classified as waste. Clients' views ran contrary to government guidance on the legal definition of waste, which in turn lengthened the collection process.

© UniGreenScheme

Elements of good governance – such as clear delineation of roles, systematic monitoring and data collection, transparency, enforcement, stakeholder consultation and adequate resources for oversight – are critical and lacking in many EPR systems[53]. It is important that these schemes are designed at least to ensure that the costs linked to the separate collection and the end-of-life treatment of products are fully covered[54]. They must also be developed in a way that is compatible with schemes that already exist in different localities to ensure that there are no unnecessary overlaps and added costs to business.

The introduction of 'fee modulation' practices within these schemes is very much welcome as those that develop products with increased durability, reusability and recyclability would have to pay lower waste management fees such as those levied through business rates. Clearing litter has high costs for UK local authorities annually; the ESA estimates that practicing EPR on the most intractable litter sources could save councils an estimated £300m per year[55].

> It's now nearly 20 years since the introduction of Producer Responsibility legislation on consumer goods in the UK. We're in a good position to evaluate the huge amount of progress that's been made and to identify where improvements are now required. We also need to expand our horizons beyond the scope of existing legislation to facilitate new areas of improvement
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> **MARKS & SPENCER**

53 OECD (September 2016) *Extended Producer Responsibility: Updated Guidance for Efficient Waste Management.*

54 DG Environment (2014) *Development of guidance on extended producer responsibility.*

55 ESA (October 2016) *The role of extended producer responsibility in tackling litter in the UK.*

SEVEN: PROVIDING BUSINESSES WITH THE INFORMATION THEY NEED

More data on resource flows as well as the impacts of the transition to a circular economy are needed to guide businesses wanting to improve their resource efficiency.

An information gap

Though the business case for resource efficiency is becoming more robust, uptake is still not happening at the speed or scale required. In a survey conducted by the Chartered Institution of Wastes Management, 80% of respondents agreed or strongly agreed that resource efficiency "represents an opportunity", yet only 27% of the same respondents claimed to be doing at least a "modest level of planning" for it[56]. This gap is in part due to the lack of practical and reliable information available to support businesses wanting to improve their resource efficiency.

Early surveys conducted by the REBus delivery team found a lack of quantitative data on companies' resource efficiency initiatives in both the public domain and within the companies themselves. This creates a disconnect between the high level analysis of the benefits of resource efficiency at national or international scale carried out by consultancies such as McKinsey[57] and the information available at the company level. The REBus project has added to this knowledge base, but more must be done to encourage others to follow.

More information, more market confidence

Whilst, for commercial confidentiality reasons, detailed company level information will remain difficult to access, the proposed drive to embed resource efficiency into public procurement could be used to provide further confidence to the market in general. The Office of National Statistics (ONS) already reports on the UK's overall resource consumption. It should also report how new public procurement criteria and practices are driving better resource efficiency, starting with central government procurement. This would provide a trusted means of measuring progress towards the procurement targets discussed in Chapter 4.

Government should make the electronic duty of care (e-doc) system, which is currently operated on a voluntary basis, mandatory across the UK. e-doc is an online system to track the collection, transport, treatment and disposal of non-hazardous waste. A regulatory impact assessment conducted as part of Scotland's 'Making Things Last' circular economy strategy[58], concluded that making e-doc mandatory in Scotland would bring with it a 10 year net present value of £21.1m through administrative savings and reductions in waste crime alone[59]. This is without even factoring in the benefits associated with better and more readily accessible information leading to greater recovery of valuable resources.

56 CIWM (2014) *The circular economy: What does it mean for the waste and resource management sector?*

57 McKinsey (September 2015) *Growth within: A circular economy vision for a competitive Europe.*

58 Scottish Government (February 2016) *Making Things Last – A Circular Economy Strategy for Scotland.*

59 Scottish Government (February 2016) *Partial business and regulatory impact assessment (BRIA) – Making Things Last – A Circular Economy Strategy for Scotland.*

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