

Smart business

sustainable solutions
for changing times



The UK Government's Business Taskforce on
Sustainable Consumption and Production

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This booklet is for people in business and those working with business who want to grasp the opportunity that sustainable consumption and production offers.

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Toolbox

When you see this symbol, turn to page 20 where you will find a toolbox: simple steps to help you get started. The tools will take you towards new models for sustainable business practices.



Business opportunities

When you see this symbol, turn to page 21 where business opportunities are outlined: areas where concepts for sustainable production offer new avenues for business.

Foreword

by Neil Carson

Business has got the message: sustainability has strategic implications for future competitiveness and success. And smart businesses are looking to sustainability to help transform products and services and unlock new opportunities for growth and profitability.

Over the past two years, the Business Taskforce on Sustainable Consumption and Production (SCP) has investigated the potential for change coming from action on environmental sustainability. We have talked to people across industry, from CEOs of FTSE 100 companies to small business entrepreneurs carving a position in new low-carbon markets. They see environmental sustainability as an essential component of business success and believe that business holds the key to the sustainable solutions that society needs. This will count more and more as business and consumers start to bear the costs of climate change and feel the growing pressures on resources.

In this period climate change has risen to dominate the global agenda. Many in business see sustainability, resource efficiency and carbon reduction as broadly equivalent and look at the challenge of sustainable consumption and production in terms of cutting CO₂ emissions. On this platform, business has shown how it can take a lead – pressing for ambitious targets that provide the clarity and consistency needed to drive change.


But this is only the start of the journey. Over time we will have to address growing water stress, loss of biodiversity and depletion of finite resources with the same unity of purpose now accorded to climate change. Through its action on carbon, however, business is developing practical tools and experience that

will equip it to make more of the step changes needed in other areas.

Practical steps for business

That practical outlook informs this short review of the findings and proposals coming from the work of the Taskforce. A follow-up to our *Business Primer on Sustainable Consumption and Production*, this second primer provides insight into different approaches to energy and resource efficiency. It explores strategic opportunities for companies interested in new ways of offering products and services, and considers global markets – how we can source more responsibly in developing countries, which in turn provide markets for environmental technologies.

Approaches to change

Businesses can do an enormous amount on their own and through partnerships which support collaboration across sectors or help low-impact solutions to be scaled up rapidly. Companies should embed sustainability throughout their operations by linking sustainability targets with financial performance and by **engaging their own people** . As I have seen in my own company, sustainability is a powerful motivating force that delivers cost savings as well.

Government can make a difference, too, by strengthening the economic case for change, setting sustainability benchmarks, creating level playing fields and accelerating market take-up of environmental technologies. There are no simple answers, but there are many ways we can work together to achieve economic growth and environmental sustainability.

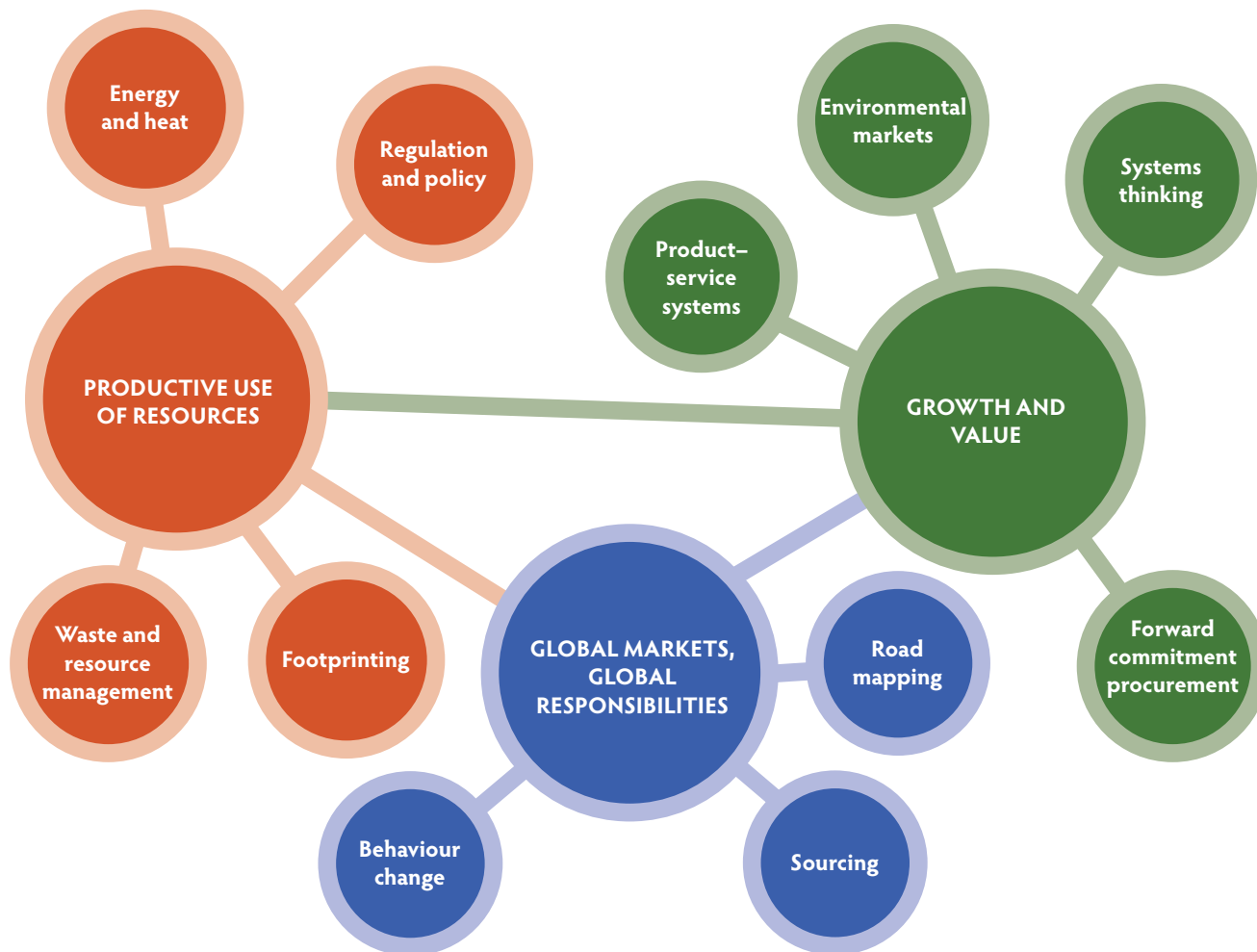
This primer aims to challenge thinking and stimulate ideas. It also shows that sustainable solutions are already here, with real-world examples drawn from across industry. Success can breed success, and we provide tools for action. I hope the primer prompts you to take a new look at the opportunities that sustainable consumption and production have for your business, set more ambitious goals and act boldly. After all, not to do so is the high-risk strategy.

Neil Carson

Business Taskforce Chairman
June 2008



Introduction



Business innovates to stay ahead – it looks for opportunities to create value and applies know-how to find new solutions that meet customer needs in better and better ways.

Sustainable consumption and production (SCP) provides a major platform for innovation that reaches into all corners of business activity. Its emphasis on finding ways to achieve more with less opens new avenues to improved performance, competitive advantage and stronger reputation.

So sustainable practices should, in theory, be a strategic priority for any business. But there are many barriers to exploiting their full potential. The way business organises itself, and the regulatory frameworks that govern it, can hold back progress. The agenda is vast and there is no simple formula for action.

Drawing on the work of the Business Taskforce on SCP, this primer offers a template for exploring where the opportunities lie and devising approaches that can be rapidly scaled up. Much of the information will be familiar. What may be new is the emphasis on taking an integrated, collaborative and even local approach.

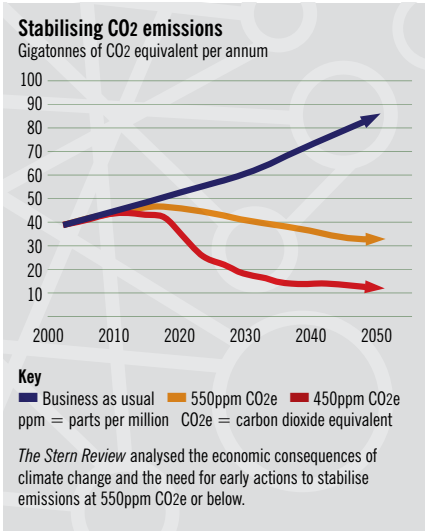
The primer is all about opportunity. It encourages business to look outside its natural boundaries and probe wider markets for better ways of meeting customer needs. Customers, of course, will need to change their behaviour. Through its relationship with customers business can encourage change by offering and incentivising uptake of more sustainable choices. But for business the greatest barrier may be changing its own mindset and accepting new business models.

Environmental drivers

In 2006 a report from HM Treasury, *The Stern Review on the Economics of Climate Change*, set out the need for early action to reduce carbon emissions. Speaking at the London School of Economics in April 2008, the report's author Sir Nicholas Stern noted that European emissions are around 10 tonnes per capita a year (the US stands at around 20, India at 2). To achieve the goal of a world average of 2–3 tonnes by 2050, Europe will have to cut per capita emissions by 80% by taking more action – and sooner.

Business is aware of the problems of energy, emissions and waste. A CBI report of 2007, *Climate Change: Everyone's Business*, warns that “failing to act now will mean that the costs of climate change in the future will be far higher”.

But it's not just climate change that needs urgent and sustained attention. The pressures on natural resources from developed, and now also developing,



economies are growing inexorably. Commodity prices have started to reflect the high demand. Water scarcity is a growing problem. In China, over-extraction is leading to water shortages in urban areas.

In 2007, the Global Environment Outlook, a project within the UN Environment Programme, published its fourth report. The report estimated that demand for resources is now close to 22 hectares per person, while the Earth's biological capacity is between 15 and 16 hectares per person.

We need to accelerate our efforts towards sustainability across a wide range of environmental issues: energy, resources, emissions and waste, at home and in global markets.

Over the following pages, you will find a range of examples of how business is now responding successfully to these challenges.

Business leadership

Solutions for sustainable business, by their nature, call for concerted action by many players – within an industry sector or across sectors. Catalysing action depends on businesses taking leadership among their peers. This primer provides examples of individual companies that have stepped out boldly from the crowd and set new standards for their markets.

Looking systematically up and down their supply chains, from production of raw materials to final product use and disposal, these companies have understood where they have most impact and how they can best influence behaviour to achieve a shift towards more sustainable performance.

Collaboration between businesses also plays an important role: the Prince of Wales's Corporate Leaders Group on Climate Change, the Food and Drink Federation and the British Retail Consortium all provide examples of businesses working together to set ambitious goals for progress on environmental sustainability.

Platforms for action

Many entry points to sustainable consumption and production will open up in the future. The Business Taskforce concentrated its work in three areas: productive use of resources; creating growth and value; and global markets and responsibilities. These themes are used here to show the diverse approaches and tools that business is already using.

In practice there is much common experience across the themes. Tools that are becoming the hallmark of sustainability action are in evidence right along supply chains, building on the insight gained through thorough **product life-cycle assessment** . They include closed-loop manufacture which harnesses waste to create new products; assessing the carbon footprint of business and supply chains; roadmapping to create sustainable products; systems thinking or analysing issues holistically; forward commitment procurement; standards; and certification.

Together the three themes offer insight into steps that business can take on its own and with business and other partners. The primer outlines the part that government policy can play and highlights the influential role of



CASE STUDY: SCENARIOS FOR RESOURCE PLANNING Water shortages in China

The over-extraction of water for industry and agriculture, together with high levels of pollution, is leading to water shortages in China's cities. Rural migration into the cities has only worsened the problem. The water supply in China is 348 cubic metres per person a year – and the UN declares that water stress starts at anything under 1,000 cubic metres per person.

Three water scenarios were developed by the World Business Council for Sustainable Development between 2004 and 2006. The scenarios, or stories, present three different worlds, called Hydro (efficient usage), Rivers (security of supply) and Ocean (equitable, holistic management).

The scenarios allow complex issues to be understood and provide a guide to concepts such as efficient use of water, 'embedded' water (the hidden or virtual water in products) and water security. The scenarios show how approaches can be customised to meet varying needs and offer a platform for business to move towards sustainable solutions with stakeholders and partners.

customers and consumers. Its aim is to help initiate action and provide links to further resources on how to make sustainable consumption and production a way of doing business.

Sustainability – the bigger picture

This primer looks at environmental sustainability and the challenge of decoupling economic growth from environmental impact. It follows the sustainable consumption and production agenda set out in the Government's 2005 sustainable development strategy: *Securing the Future*. This strategy also explains the social and economic dimensions of sustainability and what needs to be done. Many companies are putting this into practice today. And Defra's work on sustainable products is starting to define methodologies that bridge the three pillars of sustainability. The Business Taskforce has made a strong contribution to that work.

A more productive use of resources

The energy revolution

Energy use is often the first point of engagement with sustainability because of the opportunity for cost savings. But it has much more to offer – it is the key to understanding how resources are managed and making step changes towards efficiency.

One lesson is that sourcing locally can offer greener ways of procuring the materials and products we need. Energy is a good example: both business and private households stand to benefit from this promising opportunity. The technologies are there and improving all the time.

Most of our electricity is generated in large power stations, but delivering that energy to end-users is relatively inefficient: 9% of the power is lost in transmission. And even the best power stations only achieve an energy efficiency of 50%. There is room for a decentralised energy system, operating alongside the present centralised electricity power stations and the transmission system provided by the national grid.

What is decentralised energy?

Decentralised energy (DE) – also known as distributed energy – is the production of energy at or near the point of use. It may be large or small scale and use any one of a number of technologies.

DE currently accounts for less than 10% of the UK's energy supply. Up to now business has preferred the economies of scale and secure supplies offered by a centralised system of generation. But as it starts to factor in higher feedstock prices and the environmental cost of carbon, DE will gain in popularity.

Technologies

Decentralised energy is not by definition low carbon but strong interest has been created through its low-emission potential. The main technologies

are solar and photovoltaic panels; wind turbines, both freestanding and roof-mounted; micro-hydro to capture the power of flowing water; biomass installations; and combined heat and power (CHP).

The SCP Taskforce looked in particular at opportunities arising from biomass and CHP. The lessons learnt offer insight for uptake of other DE technologies and systems.

Combined heat and power (CHP)

CHP – or cogeneration – produces thermal energy and electricity in the same unit. As CHP plants produce electricity they capture the heat produced as a by-product. Most plant in use today is gas fired or uses a combination of fuels. Technologies using biomass and other feedstocks are available. In the case of fuel cells, fuels are not burned directly but are re-formed and then produce energy by a more efficient electrochemical reaction. **CHP** can be used on a small domestic scale, a community scale or a large industrial scale. The beauty of it is that the 'waste heat' is not lost: it is captured and used in the locality.

Our neighbours in Europe...

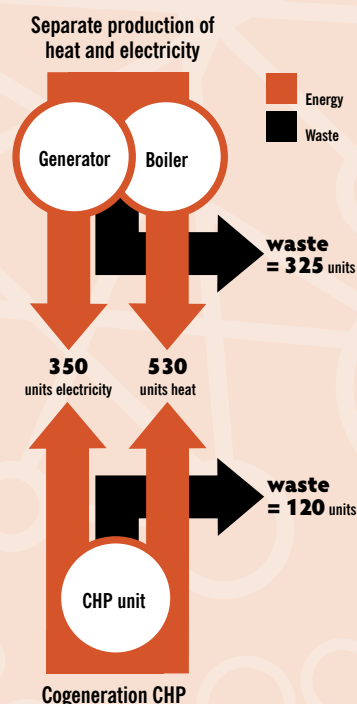
Decentralised energy has entered the mainstream in many European countries, including Sweden, Germany, Austria, Finland, Italy and Spain. Two countries have an outstanding record. In Denmark, half the electricity supply is generated by decentralised energy, and improved efficiencies in housing mean that energy consumption for space heating has fallen by 15% – even though the actual floor space heated has increased by 20%. And in the Netherlands, CHP became the biggest single source of generation in the period 1985–95 and has significantly reduced CO₂ emissions.

... and progress at home

London and Edinburgh have both looked at the potential of decentralised energy to help meet future energy

Combined heat and power

When heat and electricity are generated separately, the waste heat cannot be reused. With cogeneration, or CHP, the heat created when fuel is burned to produce electricity can be used locally for heating. The heat can be used for both domestic and industrial purposes.



demand and cut carbon emissions. Research conducted by PB Power in 2006 suggested that London could cut its CO₂ emissions by as much as 27% by 2025 compared with 2005 and Edinburgh by over 28% through the use of DE. Reductions like this would put both cities on track to meet 2050 targets for CO₂ emissions.

Going forward, the government has proposed that all new homes should be zero-carbon by 2016. Combined with the ongoing need for new housing, there will be a call for DE sources of energy as part of the energy mix.

To improve energy and resource efficiency, **local solutions** will have to be deployed.

A more productive use of resources The energy revolution continued



CASE STUDY: CHP (COMMERCIAL, RESIDENTIAL)

Nottingham Green Energy

Rising energy costs and the need to cut CO₂ emissions are driving renewed interest in district heating schemes and associated investment in infrastructure and efficient technologies. One of the largest schemes in the UK is run by Nottingham City Council using electricity and hot water supplied by EnviroEnergy, a company wholly owned by the Council. Steam produced from incineration of domestic and commercial waste is converted into electricity and hot water. Electricity is distributed to major customers via dedicated cabling. An extensive pipe network covering much of the city centre delivers hot water for heating and domestic use. Customers include a variety of commercial and academic premises and 4,600 homes.



CASE STUDY: CHP (INDUSTRY)

Immingham, UK

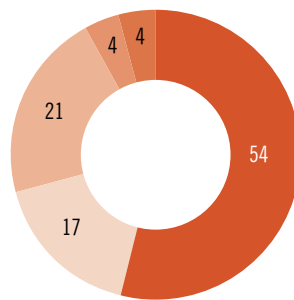
The ConocoPhillips industrial site at Immingham on the Humber estuary processes crude oil supplied mainly from the North Sea. This is one of the most complex refineries in the US company's portfolio, and in 2004 a 730MW CHP plant started operating, supplying steam and electricity to several refineries and electricity to the National Grid. This energy-efficient plant, which also uses surplus fuel gas from a neighbouring refinery, has been so successful that an expansion is due to come online in 2009.

The big heat

Around half the energy we consume is used to generate heat, and most of that heat is used in our homes – to provide heating and hot water. The domestic sector is the primary user of heating, more than the commercial and public sectors. Industrial use of heat is not the big culprit. Domestic and office demand is mainly supplied by gas; industry uses a mix of heating fuels.

Heat accounts for 47% of our UK carbon emissions. It offers the biggest opportunity for reducing our emissions and using our resources more efficiently, which makes it a strong focus of interest. There are serious gains to be made, commercially and environmentally, from a shift to efficient use of heat generated.

How heat is used



- 54% Space heating
- 17% Water heating
- 21% Process use in industry
- 4% Drying/separation in industry
- 4% Cooking/catering

Source: *Meeting the Energy Challenge* (DTI, 2007)

From waste to energy

The raw material for energy – or feedstock – need not be fossil fuels or carbon-heavy. Biomass – organic material made from plants and animals – allows carbon-neutral energy production. In particular, biogenic waste, primarily food waste, could make a greater contribution to energy production. One important technology is anaerobic digestion: organic matter is broken down and methane gas recovered and used to generate energy. Food waste and animal manure can both be used, and together agricultural waste and food waste make good feedstock for anaerobic digestion.

Two reports, from Biffaward (*Food and Drink Processing Mass Balance*, 2004) and WRAP (*The food we waste*, 2008), have identified substantial food waste streams from business and households which could be diverted from landfill to energy production.

Barriers to uptake

Decentralised energy needs to be financially attractive to technology providers, customers and end-users. To provide the right incentive, prices for selling surplus energy back to the grid will need to be closer to commercial tariffs, as in other European markets. Comparison of whole-life costing across all energy technologies is needed to show how operating costs balance against capital costs and where DE systems could have a commercial advantage. Fiscal incentives and confidence among suppliers that a long-term market is there are essential if DE is to take off in the UK.

Business and government will also need to swing public opinion behind a move towards decentralised energy. The public will have to be informed and engaged, as a more collective energy provision, with a different infrastructure, emerges.



CASE STUDY: ENERGY FROM WASTE

Pig slurry producing our electricity

Bedfordia Farms in Bedfordshire have installed an anaerobic digestion plant, producing gas which is used to generate electricity. Pig slurry and food waste are blended, heated and pumped to an anaerobic digester. The mix degrades to a nutrient-rich liquid waste that makes a good fertiliser (and is less pungent than ordinary slurry), while the gas produced is burned in CHP (combined heat and power) engine generators and exported to the grid.


A more productive use of resources

Waste reclaimed

Our typical model of consumption is a linear one, extending from sourcing raw materials to final product disposal – often to landfill. Under a cyclic model, materials and resources can be recovered, recycled and reused.

Our economy is built on the transformation of raw materials into goods and services, until recently with scant concern for the waste produced along the way or at the end of the product's life. Pressures on resources, brought about by economic growth around the world, together with the mounting problem of waste disposal, have led to a reappraisal of the way we consume resources. What are we going to do about our waste?

Resource efficiency

Resource efficiency  entails breaking the link between economic growth and environmental degradation. We need to consume fewer resources and produce less waste while achieving the same living standards. This needs to be tackled both at an individual company level and at a strategic level.

Research by the Department for Environment, Agriculture and Rural Affairs (Defra), published in 2007, quantified the business benefits of resource efficiency, with 50% of the waste-saving opportunities identified in the manufacture of food and drink and in retail. Areas where large savings can be made include purchasing raw materials in bulk, improved production efficiency and increased packaging recovery. We can do more with less, and the estimated savings opportunity is impressive: the report gives a figure of £6.4 billion a year.

Closing the loop

One person's waste is another person's resource: this is what is called a closed-loop system and means that materials are kept circulating around the economy.


'Closing the loop'  is more common in less developed countries which need to use every resource available, but its application in the developed world is not anti-progress or anti-technology. It requires a new approach and new technologies. The applications are wide-ranging right across industry on a large, small or even micro scale.

A closed-loop (or partly closed) system in the construction industry would arguably save clients time and money. Agricultural waste can be used to produce energy. In the mobile phone sector, recycling company Foneback prevented 1,800 tonnes of electrical waste from 18 million old mobile phones going to landfill in its first three years of operation. And the Eden Project in Cornwall collects used bottles from its bars, has them made into glasses and tumblers, and then sells them in its own shop.

The food and drink industry is the fourth-largest industrial user of energy in Britain, but it is also responsible for massive waste, from its processes and from consumers further down the chain. There is potential for reducing and reusing the waste in closed-loop enterprises.

Closing the loop by reclaiming resources not only reduces pressure on virgin resources and on landfill, it also offers business opportunities. Some countries have seen advantages in developing product and resource flows that reflect closed-loop principles.

Collaboration

Collaborative approaches are needed if resources are to be used efficiently and waste diverted from landfill. In recovering energy from food waste, for example, innovative partnerships are needed to bring together technology specialists, food companies, other waste producers and potential energy users. **Partnerships**  along the supply chain, within or even across industry sectors, may hold the key to a more productive use, and reuse, of resources.



CASE STUDY: RESOURCE EFFICIENCY **Sustainable solutions at Sun Microsystems**

There are a billion computers on the planet already, and manufacturing just one of them requires about 75 times its weight in raw materials and water. Green computing involves a raft of measures, such as energy and space efficiency or a shared network. Sun has been running a Sustainable Computing programme since 2005. In one example of a shared network – for the Strategic Health Authority in London – it replaced 400 traditional 100-watt PCs with 4-watt Sun Rays, which have achieved energy and air-conditioning savings of around 75% and are designed to last 15–20 years, meaning there is less hardware going to waste.



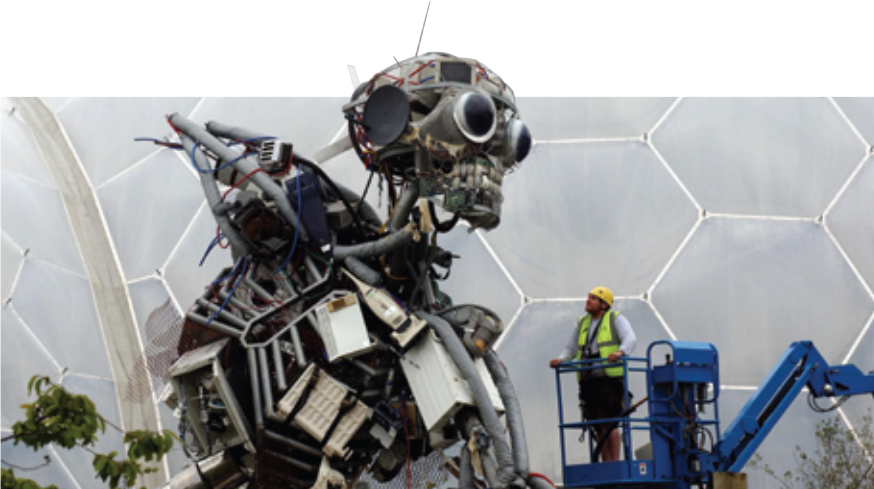
Emission control catalysts being tested at Johnson Matthey's technology centre in Royston

CASE STUDY: CLOSED-LOOP SYSTEMS **Car catalysts at Johnson Matthey**

Johnson Matthey is a speciality chemicals company with core skills in catalysts, precious metals and fine chemicals. Some of its products play an important role for the environment; automotive catalysts reduce exhaust emissions and contain valuable recyclable material. Johnson Matthey offers a full recycling service for some of its catalyst products. It sees closed-loop systems as the way forward but wants to see a long-term strategic framework from government that rewards closed-loop approaches.

A more productive use of resources

Regulation and policy



Public policy is key to controlling emissions and waste as well as stimulating new technology. Self-regulation will also help in the drive towards sustainable consumption and production.

UK target reductions for greenhouse gas emissions are 26% by 2020; 60% by 2050 (compared with 1990). This is a stiff challenge and business as usual is not an option. Governments, both at EU and UK level, are serious about reducing waste and emissions.

One important piece of European legislation on waste is the Waste Electrical and Electronic Equipment Directive (2002/96). Now in force in the UK, WEEE is an example of how producer responsibility for waste is becoming normal practice.

Other legislation includes the EU Landfill Directive (1999/31), which sets targets for the reduction of biodegradable waste sent to landfill: 50% of the 1995 level by 2013 and a further 35% by 2020. The UK Government's Waste Strategy 2007 provides a framework for improving waste management.

Measuring emissions

Growing customer interest in sustainable products and services is driving development of labelling and other information schemes. In particular, individuals and company procurement departments want to understand the contribution products and services make to climate change and they are looking for reliable information about embedded carbon emissions.

Recognising the need for a standardised and consistent approach, Defra and the Carbon Trust have asked the British Standards Institution (BSI) to develop a robust methodology for measuring greenhouse gas (GHG) emissions embedded in goods and services. The forthcoming Publicly Available Standard, PAS 2050, will consider all life-cycle stages along the supply/value chain of a good or service, from raw materials to end of life. It will cover all GHGs and can be used by all sizes and types of organisation. This common basis for measurement is intended to allow comparability between different goods and services with the results easily communicated.

Role of R&D

To achieve a lower-carbon, less resource-intensive future, new technologies are needed. The CBI believes that "technology has a vital part to play in

How much electronic waste will you throw away over your lifetime? The average person in the UK will produce 3 tonnes of waste from electrical and electronic equipment (WEEE). In 2005, Canon Europe and RSA commissioned designer Paul Bonomini to create the WEEE Man – which weighs 3 tonnes – to highlight the growing problem of waste from e-products. (On display at the Eden Project.)

opening up sustainable solutions". And this offers positive options: "The UK has a unique opportunity to prosper in key markets of the future by taking a lead in the development of low carbon technologies and services". Public funding and progressive procurement policies are crucial here: much more needs to be done.

CASE STUDY: CARBON FOOTPRINTING

Energy saving at Walkers



Low water content potatoes = Energy savings for Walkers crisps & farmers

Walkers is the largest manufacturer of snack foods in the UK. As part of its work on energy efficiency and carbon management with the Carbon Trust, it decided to participate in a pilot supply-chain study. Three Walkers products were analysed: Crisps, Quavers and Doritos. Companies up and down the supply chain agree to provide data, and the full product life-cycle was analysed. The study yielded precise information on emissions and energy use, and identified potential CO₂ savings of 18,000 tonnes a year.

One key opportunity lay in the water content of potatoes. Potatoes are stored in artificially humidified conditions to increase weight and value – but Walkers need to fry or bake off the moisture content. Lower water in potatoes means energy savings for both farmers and Walkers – a double win.

Carbon emissions occur all along the supply chain



Growth and value

Meeting customer needs


Sustainable consumption and production are not constraints on growth and value creation, as companies working towards sustainability already know. Looking at whole systems can help find profitable new ways to meet customers needs.

Customer behaviour is complex. Physical need is only a small part of the decision to purchase: cost, status, fashion, emotional need and ethical views are other factors that influence the decision.

In an economic climate where companies are concentrating on core business, products are being improved all the time. Better engineering, better formulation, better functionality. But could the needs that are being met by well-engineered cars, high-quality home care products and the latest generation of computers actually be met in other ways?

Concern for core business and a reluctance to diversify may be preventing businesses from identifying growth opportunities.

Systems thinking

One way round the tendency to view the company's product or service offerings in isolation is to adopt a holistic approach. **Systems thinking**  is exactly that: it takes the components of a system and views them in a wider conceptual framework. It looks at how the constituents interrelate, how they balance out or jeopardise the balance.

Applications

Numerous tools and models for systems thinking are available. Understanding how the interoperable parts of a system work sounds formidable, but in practice it is rewarding and even fun.

The Business Taskforce on SCP took personal mobility, or travel, as a focus for part of its work during 2006–08.



The outcome, called Mobility 2020, was a map of the way forward to more sustainable travel.

In workshops and forums, consumers' needs and motivations were explored. Understanding complex behavioural factors was a key part of the research. This removed the focus from the usual areas of cars (enhancing performance, greener technologies) and infrastructure (improving our roads and railways) to reveal a more holistic picture of how and why travel is chosen.

A consumer forum, held in Birmingham in May 2007, explored personal mobility from the user's perspective. Research and debate, live meetings and webinars, with involvement from a range of stakeholders, all contributed to the thinking around systems of travel that will shape the future.

A range of business opportunities – some already being exploited – emerged during the process. Novel insurance products ('pay as you drive'), car clubs, solutions for journey planning, and automotive technologies for carbon-efficient cars point to a wealth of product and service offers, actual and prospective. Systems thinking helps uncover many more opportunities from this holistic perspective.

Consumer preferences and environmental awareness were explored in a forum in Birmingham in 2007, leading to insights that were fed into the systems thinking on personal mobility.

CASE STUDY: SYSTEMS THINKING

BuildingSMART

Twelve years ago, a group of progressive companies and organisations came together to define how the design, construction and facilities management industries could work together more collaboratively. BuildingSMART – an international alliance with chapters around the world – has created a standard for data exchange (called Industry Foundation Classes) that allows sophisticated information sharing through a building information model (BIM) – a kind of virtual building. Early adopters of this radical new approach, like Senate Properties in Finland, are reporting design flexibility and time/cost efficiencies. BIM takes into account the site, design, impact on running costs, end of life and recycling of a building project in a holistic way.



Growth and value

Forward commitment procurement


If companies are to develop new technologies, they need to be sure the market is there. Forward commitment procurement provides this certainty.

Lack of market certainty is a major barrier to companies who are looking to develop low-impact products. If they invest time and money in developing innovative technologies, can they be sure to find buyers in the market? This uncertainty is holding back prospective innovators.

Companies often find that the costs are too great or the rewards too uncertain to take the technology beyond the prototype stage. For example they may fear a resistance to change among customers: what is the good of developing an innovative environmental technology if customers are afraid to be early adopters? So a promising technology remains on the shelf.

Creating market pull

Those involved in procurement have a unique role to play in stimulating innovation by giving advance warning of future requirements. Retailers and other private sector companies are already asking their suppliers for higher environmental performance. Through the scale of its spending power, public procurement is also in a powerful position to create market pull and be an early adopter of innovative technologies.

Forward commitment procurement or **FCP**  is an undertaking to purchase, at a specified date in the future, a product that does not yet exist. The procurement party explains the function of the product and level of performance it wants but not how the supplier should achieve it. This gives innovative suppliers a firm prospect of future sales, provided performance and cost are right.

The process of giving advance warning of future needs and engaging with potential suppliers at an early stage sends a positive signal to the supply chain. It says that there will be a market for improved products and provides an incentive to develop improved products. It stimulates new ideas and innovations and enables ideas to become products.

Stimulating innovation

The Environmental Innovations Advisory Group (EIAG), a business-led group set up by the government in 2003, pioneered the FCP model in a series of demonstration projects. They set out to show how the power of public sector procurement could be harnessed to create much-needed innovative solutions for pressing environmental problems. In 2007 the Government's Commission on Environmental Markets and Economic Performance (CEMEP) recommended further action to scale up FCP in public procurement and generate new markets for innovative solutions to environmental challenges.

FCP in practice

In the private sector FCP techniques have stimulated a number of product innovations. Starbucks worked with its suppliers to develop a paper coffee cup that contains 10% post-consumer recycled paper; the cup is now also available to other companies. Canadian developer Tridel, which promotes sustainable building and ways of living, worked with its supplier BASF to develop a spray foam insulation to reduce heat loss from walls in its new-build condominiums. And when Unilever decided to phase out HFC freezer cabinets for retailer use, it gave its suppliers advance warning of its future need for HC (hydrocarbon) freezers.

FCP initiatives are starting to come through in the public sector. HM Prison Service is well advanced in the procurement of a zero waste prison mattress service to replace those that went to landfill or clinical waste,

while the Health Service is embarking on a project to use FCP to speed up the introduction of ultra-efficient solid state lighting.

The government's Zero Waste Places initiative invites towns and cities to become pathfinders and identify new solutions to serve as models for other communities. Used in conjunction with FCP, this could stimulate innovative technologies for waste management.

CASE STUDY: FORWARD COMMITMENT PROCUREMENT

Procuring mattresses for the Prison Service

HM Prison Service buys around 60,000 flame-retardant foam mattresses and pillows a year and disposes of around 40,000. Although the present mattresses are well produced, rough treatment means they have a short life span. By 2012 the Prison Service wants all of its mattresses and pillows (except for a tiny minority classified as hazardous waste) to be recycled or reused. It is taking market soundings to explore innovative solutions, such as alternative materials, whole-life arrangements and fire-proofing that facilitates sustainable disposal/recycling. It will consider 'forward commitment' to procure the next generation of mattresses.

As part of the Refrigerants Naturally alliance, Unilever is rolling out hydrocarbon freezer cabinets as part of its non-HFC purchasing policy. By the end of 2007, 200,000 cabinets had been installed throughout Europe. The refrigerant doesn't harm the ozone layer and the cabinets use up to 15% less energy compared with other models.



Growth and value

Developing a product-service system

Companies can improve their strategic positioning by rethinking their offer to customers and consumers. A new product-service mix can give an edge in the market – and reduce pressure on natural resources.

Consumers are reluctant to compromise their lifestyle and expect high performance in the goods they buy and the services they use. It is not in the interest of business to propose a pared-down lifestyle. New ways of delivering products and services should maintain quality of life and reduce the impact of consumption, while offering growth opportunities for companies.


What are product-service systems?

A product-service system or PSS is a combination of product and service that, offered together, meets a consumer need. For the customer, it might involve using a product instead of buying it or using an electronic service instead of a physical process. For a company, it might entail providing consultancy alongside its traditional product offer or a product extension with maintenance or after-sale service.

By using a service to meet some needs rather than a physical product, more needs can be met with lower material and energy requirements.

Over successive decades, a range of services has emerged to meet the needs of the times, so that consumers do not have to buy the product: radio rentals in the 1930s, launderettes from the 1950s and, more recently, internet cafés to get online, music websites for MP3 downloads and online movie sites.

Driving growth

Product-service systems  are not recent, but a new urgency is creating momentum. Three factors are driving change. One is the rise and rise of the service economy in developed countries, as boundaries between manufacturing and services become increasingly blurred. Many manufacturers already have a service component and have adopted a service-oriented model of growth. Developed economies are good at services and product-service systems have an exciting potential.

The second factor is technology progress: more complex offers can now be developed. And the third factor is concern for the environment: consumer awareness is growing and conscience consumers have entered the mainstream. Consumers are looking for evidence of corporate responsibility behind the brands they buy, and more and more investors expect it. So product-service mixes that are less resource-intensive but give the same level of performance are good for business and provide sustainable solutions.

Markets for new mixes

Product-service offers are emerging all around the world – in response to economic change in developed countries, and to serve consumers and smaller enterprises that can't afford to buy the products they need in developing countries. Examples include a toy library in Johannesburg, a solar heat company in Palermo, a Dutch company leasing office furniture and providing linked facility management. There are car clubs, subscription services for organic vegetables and virtual offices.

Italian detergents producer Allegrini has developed a home delivery service, Casa Quick, supplying families with home-care products. Consumers receive a kit of plastic flasks which are refilled from mobile vans. This service is suitable for urban areas and reduces packaging and waste.

Klüber, a German supplier of lubricants, added a client service to monitor the performance of equipment using its lubricants, with a mobile chemical laboratory. The service leads to improved plant performance and enhances environmental protection.

And Xerox, a company noted for its sustainability initiatives, offers a range of services – software, consulting and outsourcing – that complements its office products.

Evolution of product-service systems (1950–2005)

Sector	Traditional product offer	PSS first enters market (approx)	Product-service offer
Consumer goods	Consumer buys washing machine; uses, maintains and disposes of it	1950/1999	Consumer pays per wash at launderette (1950s onwards) or at home (1999, see box, page 13)
Office furnishing	Company buys carpeting for its office	1995	Supplier leases carpets to company, offers cleaning and maintenance and recycles old carpets
Automotive/mobility	Consumer buys a car; maintains, taxes and insures it over its life of 10 years	2005	Car sharing: a car club maintains a fleet of cars, parked around the city, which are hired for a chosen period



CASE STUDY: PSS BUSINESS TO BUSINESS


Specialist engineering leasing adds value

Refractories are heat-resistant linings used in furnaces and vessels in steel manufacturing and need to be replaced frequently. In a product–service offer, Cookson – a materials science company which supplies customers around the world – rents refractory furnace liners to the steel company and retrieves the used liners when they need to be

replaced. Cookson can then reuse the recovered material in non-critical parts or well-controlled mixes – part of the company’s integrated materials management. And this product–service system adds value to the customer, who does not need to keep new refractories in stock or dispose of old ones.

Overcoming the barriers

Product–service systems are not intrinsically of environmental benefit: there is always the chance of rebound effects, such as increased consumer demand (hence waste) or a greater need for transportation (hence pollution). But, well managed, they lend themselves to sustainable performance.

The barriers to developing these systems lie partly with consumers and the need for a cultural shift away from ownership. Cultural shifts are needed in companies, too, if they are to innovate and create more service-oriented business. **New partnerships**  may be needed between producers and other suppliers to deliver the services. And making profits from service offers may take longer than the more immediate gains from product sales.

But for innovative companies who grasp the nettle, there are powerful attractions: a growth strategy for mature markets, closer consumer relationships, market differentiation and diversification.

Personal mobility: unlocking solutions

Access to mobility through a new product–service system, which joins up smart card technology, mobile phones, travel products and information systems, is a central part of Mobility 2020. Building on the work of the Business Taskforce on SCP, the initiative aims to achieve a 60% cut in car-related carbon emissions by 2020. A business leadership group, convened by the Sustainable Development Commission and the SCP Taskforce Business Network partners, will guide business and government on implementation.



CASE STUDY: PSS BUSINESS TO CONSUMER

Pay per wash in Sweden

Electrolux ran a pilot project in on Gotland island in Sweden to charge customers simply for the function of washing. In a new twist on the launderette service (known as functional sales), Electrolux installs a new energy-efficient washing machine in the customer’s home for a small upfront fee. Intelligent metering was the enabler: 7,000 households in Gotland have intelligent meters. Electrolux installed washing machines in 50 homes, connecting the machine to the meter and in turn, via the internet, to a central database that tracks consumption. So customers pay only for the service, not the machine.



CASE STUDY: PSS BUSINESS TO BUSINESS

Dishwashing service saves plastic waste

Berlin-based company Spülmobil – the name means ‘mobile dishwasher’ – has developed a service to provide china, cutlery and glasses for use at outdoor festivals and events. Consumers pay a deposit to borrow the dishware; once returned, it is washed in mobile dishwashing units using environmentally friendly cleaning products. The service stops plastic waste from catering at these events from going to landfill and has been used by the German Federation for Environment and Nature Protection since 1992.


Global markets, global responsibilities

Responsible sourcing

Action across global markets will determine the success of UK business in making a shift to sustainable consumption and production in the next decade.

Many of the raw materials and manufactured goods that we consume in the UK are sourced abroad – and continued efforts are needed to understand the impact we are making and manage it. UK businesses also need to use the advantage provided by government leadership on carbon to take a strong position in global markets for environmental technologies and services.

The UK's main trading partners are OECD countries with environmental and social standards that are similar to our own. But by 2015 China and India will account for more than 25% of global output and our trading patterns will change. More and more UK businesses will be seeking supply and export opportunities in these countries.

As production moves further offshore, companies will want to maintain their reputation as responsible customers who are concerned about the environment and their impact on it – their **environmental footprint** . A number of retailers and consumer brands are leading the way in establishing sustainable supply-chain systems. This is important not just to suppliers but also to end-consumers, who care about how goods are produced, and most companies understand the need for reputational risk management.


Measure and report

The starting point for managing and reducing the environmental footprint of a business is measurement and reporting. This clarifies where a company's priorities lie and how it should frame its key performance indicators (KPIs).

Sustainable sourcing in global markets



Changes to the UK Companies Act 2006 come into force in 2008 and require quoted companies to include analysis of environmental matters in their business review, using key performance indicators. Company directors may decide what KPIs to report against, but the intention is to help companies manage and communicate the links between environmental and financial performance.

If this information is to be of value to investors, governments and other stakeholders, it needs to be comparable across companies and sectors. So standards are becoming an important factor in **accounting and reporting**  of environmental information. Carbon accounting leads the field. The Carbon Disclosure Project, an independent not-for-profit organisation, is setting the pace. Its questionnaire will go out to over 3,000 companies in 2008, including the UK FTSE 350 and China's 100 largest companies.

In 2007, an international body, the Climate Disclosure Standards Board, was set up (funded in part by Defra) to develop a definition of carbon

accounting and disclosure requirements across different reporting schemes. A methodological framework for reporting carbon emissions across global operations will be published in 2009.

Source against recognised standards

KPIs help companies to **set targets**  and drive action to improve performance. Businesses need to demonstrate that growth is not inevitably linked to adverse impacts: the two can be separated or decoupled. But decoupling requires goals of sustainable consumption and production that go beyond the traditional boundaries of business activity. Businesses can do a lot through their own supply-chain relationships. But collaboration on sourcing standards can help achieve a competitive level playing field which rewards those who adopt best practice.

Sourcing standards have been developed to counter the potentially irreversible loss of high-value renewable resources and the impact of natural resource extraction. B&Q (timber), Unilever (fish, palm oil) and Rio Tinto (mining and metals) are

examples of companies that have taken action in areas where their operations have a large footprint and championed the development of standards.

Global accreditation and certification schemes, along with sector codes of practice, provide the framework for action on **sustainable sourcing** and supply-chain operations. The lesson from leading practitioners is to set ambitious but realistic medium- to long-term targets, agree milestones to track progress and allow for mid-course adjustments when external conditions change.

Shift global supply chains

If a step change in global supply-chain sustainability is to be realised, the problems of scale and complexity need to be tackled. Initiatives from individual sectors or collaboration across business boundaries will help to achieve change.

Flexible approaches that can adapt to different business structures and operating models are essential.

A 'clothing roadmap' has been developed by Defra in collaboration with the clothing and fashion industry. It seeks to promote practical and effective actions on the environmental and social impacts occurring across the clothing life-cycle. An output of the roadmap process will be an action plan agreed with the industry. When companies act alone, there is a risk that the wider sustainability priorities will get fragmented: by aligning diverse initiatives on sustainability and supply-chain ethics behind a clear vision, as with the 'clothing roadmap', much more can be achieved.

And breakthrough can come when industry leaders step up and set the benchmark for action, as Marks & Spencer has done through its Plan A.

Water is becoming a serious issue, as critical as climate change. The World Business Council on Sustainable Development (WBCSD) has been working on water scenarios to tackle these complex problems (see page 5). The challenge is to reconcile the needs of agriculture, industry and consumers in sustainable ways, and cross-sector collaboration is the way forward for many global, regional and national water initiatives.

Another model of business collaboration for sustainability is offered by the Global e-Sustainability Initiative. Set up in 2001, GeSI works across the ICT sector with manufacturers, suppliers, network operators and service providers to further collaborative action on supply-chain sustainability.



CASE STUDY: CARBON REPORTING **Carbon Disclosure Project**

Launched in 2000, the Carbon Disclosure Project is a global, standardised mechanism by which companies report to investors on their greenhouse gas emissions and their assessment of climate change risk. A collaboration of 385 institutional investors, who manage assets worth \$57 trillion, the CDP now hosts the world's largest registry of corporate greenhouse gas data.

The momentum behind the CDP system shows how climate change has become a mainstream issue for investors and corporations. Investors recognise that corporate engagement with climate change issues is an important indicator of good quality corporate management.

In 2007 CDP formed the Supply Chain Leadership Collaboration which provides companies with a unified methodology to measure supply-chain emissions using data collected directly from suppliers.

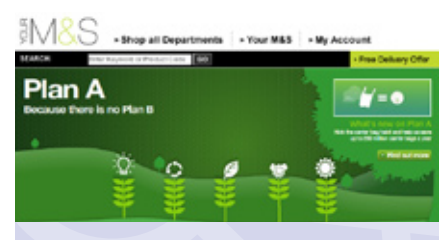


CASE STUDY: GLOBAL STANDARDS **Forests, fish, mining and metals**

The use of global standards plays an important part in raising supply-chain performance around the world. International companies that procure against certified standards and conduct verification of codes of practice can help drive improvement.

Certification schemes can have different goals. The Forest Stewardship Council and the Marine Stewardship Council promote the sustainable supply of raw materials. Organic and Fairtrade schemes look at general processes. In mining and metals, 16 members of the International Council on Mining and Metals (ICMM) are measuring their performance against the Council's ten principles, as part of the ICMM sustainable development framework.

These standards and labels need to be targeted at those who can make a difference: supply chains – retailers, manufacturers and other businesses – as well as individual consumers.



CASE STUDY: RESPONSIBLE SOURCING **Plan A at M&S... because there's no plan B**

Marks & Spencer is taking wide-ranging action to improve conditions for its global supply chains and to source sustainably. Its five-year plan, known as Plan A, has 100 action points. Two key areas are safeguarding natural resources and trading ethically.

One tool for sustainable sourcing is the use of independent standards and certification schemes. For wood-based products (including sandwich packaging), Forest Stewardship Council certification is used; for fish, Marine Stewardship Council certification. Equivalent schemes are used where necessary.


M&S has captured public support with its use of Fairtrade cotton, with 3.2 million products sold in 12 months. It buys around a third of the world's Fairtrade cotton, guaranteeing income and community investment for its suppliers.

Global markets, global responsibilities

Environmental markets

The UK government has set mandatory targets for tackling climate change. The good news is that this provides business with the certainty it needs to invest in R&D and innovation, and bring low-carbon technologies to market.

With experience in the home market, UK industry is in a strong position to do well overseas. The government also supports the drive to secure overseas markets for environmental technologies and establish a strong position for UK business in them.

China and India are investing heavily to reduce the impact of their rapid economic growth and are importing solutions. In engineering and construction, Arup's partnership with the Shanghai Industrial Investment Corporation in the development of Dongtan – the world's first eco-city – exemplifies the opportunity to **deliver new solutions**  that combine a range of skills and technologies.

As business looks for new opportunities in environmental markets, the scope to break new ground increases. BT's success in cutting its environmental footprint in the UK gives it a platform to build its presence in global ICT markets – transferring environmental know-how through the services it offers its customers.

And investors are showing a growing interest in the potential of carbon markets to generate returns. This has created opportunities for carbon entrepreneurs such as Camco, a company which generates carbon credits for its clients by helping them develop projects that reduce greenhouse emissions. Demand for carbon credits is rapidly increasing, creating funds for low or zero carbon projects in developing countries and expanding opportunities for companies that can provide technology and service solutions.



The Jiaozishan landfill in China recovers methane to generate heat (project facilitated by Camco).

CASE STUDY: CARBON ACCOUNTING

Reducing the footprint at BT

BT is a global company providing ICT products and services. As a major energy user, reducing its carbon footprint is a priority. Since 1996, it has reduced UK CO₂ emissions by 58% and aims to cut its emissions by 80% by 2016. It is investing in a next-generation network, the 21st Century Network, to deliver major energy savings. And in the UK BT buys nearly all its electricity from low-carbon services, including renewables and combined heat and power.

In 2008, BT set tougher carbon targets and published a new model for measuring and tracking carbon emissions. BT intends to cut its carbon emissions intensity – the Climate Stabilisation Intensity (CSI) target – by 80% globally by 2020. This creates a relationship between CO₂ emissions and financial performance which BT sees as a powerful tool for embedding sustainability and for effecting change. BT has also added targets on carbon accounting for its products and services and made a £250m investment in wind farms aimed at generating 25% of its existing electricity requirements.



CASE STUDY: ENVIRONMENTAL INVESTMENT

Investors seek sustainable assets

In 2007 the UN Environment Programme estimated that carbon credits generated through the Kyoto mechanisms could trigger large flows of finance – amounting to \$100bn – from North to South into low-carbon technologies, alternative fuels and forestry projects. Anticipating this scale of expenditure, Germany has forecast that jobs in renewable energy will outstrip those in the car industry by 2020.

Investors are also developing climate change investment strategies for their own portfolios. There is growing evidence of mainstream climate change funds investing in industries and companies that are involved in cleaner technologies, energy efficiency, environmental management and damage limitation. As these strategies deliver stronger returns, environmental industry sectors will have access to growing investment funds.




Global markets, global responsibilities

Roadmapping for sustainability

The product roadmap is a traditional tool to help companies develop new products. Sustainable roadmapping is a new twist on an old technique, offering positive business outcomes.

Product roadmaps capture the vision for a product: how it will be developed and resourced, how it sits with corporate strategy. The goal of roadmapping has been primarily to formulate tasks and timelines for developing and launching products. But over time it has evolved into a more wide-ranging tool. It can provide a method for managing stakeholders and pulling people together to enhance efficiency.

The long timeline and wide reach of the **product roadmap**  make it a suitable tool for sustainable production and consumption and for building in sustainability at the front end of project or product design.

Designing in sustainability

Product design has far-reaching potential. Its implications extend far beyond the product itself: how it will be manufactured (what are the impacts?), how it will be used (does it harm the environment or use excessive resources?), how it will be disposed of (can it be recycled?). This is why sustainability has to be designed in from the start.

Road maps for sustainable products

Producing a roadmap for sustainability entails six stages according to the Sustainable Development Commission. The starting point, it suggests, is to understand the impacts of the product, through life-cycle analysis or gathering evidence pragmatically.

The next stages are to bring together stakeholders all along the supply chain, from sourcing to disposal, and agree on priorities and an overall vision – reducing negative impacts, cutting emissions or water use, for example.

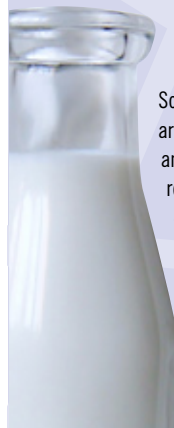


Conventional cotton growing: production and use of fertilisers, and irrigation practices, have a major environmental impact.

CASE STUDY: PRODUCT ROADMAPMING

Roadmaps of high-impact sectors

An EU study showed that four sectors – food and drink, passenger transport, buildings and clothing/textiles – account for 70–80% of all environmental impacts. So Defra has taken ten product areas within these sectors and is developing product roadmaps. Clothing is one area – we consume high volumes of clothes and fast fashion doubled its growth in 1999–2006. Other products being roadmapped include milk, fish, cars, TVs and domestic lighting.



Tools for the job have to be chosen and might include voluntary targets, innovation or fiscal incentives. Both government and business may need to be involved to develop interventions that will bite. Finally, as in a traditional roadmap, timelines must be agreed.

Roadmapping in practice

Can roadmapping work in the real world? Defra is developing roadmaps for products from sectors known to have significant environmental impacts. The sectors include food, building components (such as windows) and clothing (see box and page 15). Clear, far-sighted vision is in evidence in some areas – leaded petrol has been phased out, low-energy light bulbs are being phased in – but a roadmap approach could yield more information and trigger greater action.

Starting the process

Companies embarking on sustainability roadmapping will need to work collaboratively with suppliers, customers and probably government. Yet they can start by asking themselves key questions. Could the product be designed in a more sustainable way? Are there present (or future) pressures on material resources? Is manufacture energy and resource efficient? What about packaging and transport? Is the product wasteful in use? Is disposal environmentally friendly?

Designing for sustainability and roadmapping to enable sustainable whole-life consumption offer companies a powerful tool. At the same time, companies might consider changes in the way they reach consumers (as in new ‘mixed’ consumer offers, part product, part service). A mapping exercise will guide the company along the road to sustainable products with the opportunity to save money while improving its brand and reputation.

The recycled content of newspapers in the UK rose from 27% to 75% over a 15-year period following a series of voluntary targets.



Global markets, global responsibilities

Changing behaviour



Behaviour change is the key to a sustainable future. Is this the responsibility of individuals, business or government? Who will be leading change?

We are consuming at a level that far outstrips the capacity of our planet to sustain us. Our accelerating consumption can only increase the rate of degradation. We know about the dangers of emissions and waste, so why don't we do more to curtail them?

One reason is that we don't see the consequences of our actions. Global supply chains are complex and far-reaching, concealing the impact of our behaviour. Our framework of values is generally more local than global, connected to our own everyday lives, not the lives of those on the other side of the world. And modern society is built on economic orthodoxy: growth is good and sophisticated consumer societies offer a better standard of living.

Consumer society

Material consumption is at the heart of modern life. Academics have argued that material possessions have symbolic meanings. The role of goods as symbols goes way back – think of exchange rituals in earlier societies – but has gathered pace with our ability to make and distribute

goods. The products we consume embody our identity and are part of the 'social conversations' or interactions we have with others.

This chimes with personal experience. Cars, clothes and consumer goods express our identity and say what social circle we belong to. Our identity is bound up with what we consume and these symbolic meanings play a vital part in the way we function as social beings.

So changing the way we consume brings us up against entrenched interests: the economic status quo, reluctance to understand global impact, our very identity. Yet, as the case studies in this primer show, much is already being done so that we function more sustainably.

Triggering change

A promising way of initiating change is **government intervention**.

The question is where to intervene: is a broad approach or a highly specified intervention more effective? Inducing pro-environmental behaviour is not easy, as public resistance to fortnightly waste collection shows. A Defra paper on behaviour change argues that government should intervene on multiple levels to maximise the probability of behaviour change.

Initiatives involving peer groups, local communities and social processes may

provide a useful way of effecting change. But even if identity is socially constructed, most people have a sense of personal freedom and that we, as individuals, can make a difference.

If behaviour is to change, a raft of measures is needed: information, incentives and access to sustainable products. EU Directives on Ecodesign of Energy-using Products and Energy Efficiency Labelling lead the way. In the future, more progress will come from connecting up voluntary and regulatory instruments to send clear signals to the market that change will bring environmental and economic gains.

Business is a powerful force and many companies already recognise their role as corporate citizens. Their influence in shaping behaviour change cannot be underestimated. And smart business, which **informs and educates its market**, stands to do well in a more sustainable world.

Behaviour change is essential as we forge sustainable ways of producing and consuming. It is down to all of us – individuals, business and government – to ensure that we leave the planet functioning well for generations of the future, so that they too can enjoy this wondrous place.

Read more

General

Business Taskforce on Sustainable Consumption and Production: A business primer – sustainable consumption and production (2007) www.cpi.cam.ac.uk/scptaskforce

Behaviour change

Tim Jackson: Consuming paradise? Unsustainable consumption in cultural and social-psychological context, in K. Hubacek, A. Inaba, and S. Stagl (eds), Driving forces of and barriers to sustainable consumption (Leeds: University of Leeds, 2004)

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Climate change

HM Treasury: Stern review on the economics of climate change (2006)

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CBI: Climate change: Everyone's business (2007)

<http://www.cbi.org.uk/pdf/climatereport2007full.pdf>

Carbon Trust: Carbon footprints in the supply chain: the next step for business (2006)

<http://www.carbontrust.co.uk/default.ct>

Carbon Trust: The carbon emissions generated in all that we consume (2006) <http://co.cuk/default.ct>

Carbon Disclosure Project: Supply Chain Leadership Collaboration <http://www.cdproject.net/>

BITC: Business leadership towards a low carbon economy <http://www.bitc.org.uk/document.rm?id=5771>

Energy

Green Alliance: Grid 2.0: The next generation (2006) <http://www.ashdentrust.org.uk/PDFs/The%20Next%20Generation.pdf>

Conversion of food waste to energy <http://www.resource-efficiency.org>
www.foodprocessingktn.com

World Alliance for Decentralised Energy www.localpower.org

World Business Council for Sustainable Development: Facts and Trends to 2050: Energy and Climate Change www.wbcsd.org

Business Taskforce on Sustainable Consumption

and Production: Decentralised energy: business opportunity in resource efficiency (2008) www.cpi.cam.ac.uk/scptaskforce

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Defra: Commission on Environmental Markets and Economic Performance 2007 Report (2007)

<http://www.defra.gov.uk/environment/business/commission/pdf/cemep-report.pdf>

Mobility

Business Taskforce on Sustainable Consumption and Production: Mobility 2020 – A rapid shift to low-carbon mobility with in-reach technologies (2008)

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Product-services systems

UNEP, Product-Services Systems and Sustainability <http://www.unep.fr/scp/design/pss/htm>

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Product roadmapping

Defra: Mapping of evidence on sustainable development impacts that occur in the life cycles of clothing (2007)

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Sustainable Development Commission: You are what you sell – Product roadmapping: driving sustainability (2007)

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Resource efficiency

Waste & Resources Action Programme (WRAP): The food we waste (2008)

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Standards and indicators

Defra: Environmental Key Performance Indicators: Reporting Guidelines for UK Business <http://www.defra.gov.uk/environment/business/envrp/pdf/envkpi-guidelines.pdf>

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Getting started



Toolbox

Life-cycle assessment (p5)

Building a picture of the impacts of your products and services on the environment and society using life-cycle assessment is the cornerstone of many other sustainability activities. It also helps ensure that steps taken to improve performance in one area do not lead to higher impacts elsewhere. Find out more at

<http://lca.jrc.ec.europa.eu/lcainfohub/introduction.vm>.

Forum for the Future has a streamlined tool to get you started quickly – see

<http://www.forumforthefuture.org.uk/node/1452>

Resource efficiency (p8)

Find out what it would take to decouple growth in your business from the materials and energy it uses. Look for ways to eliminate all waste from the supply chain you operate in. Can you make effective use of the heat as well as the electricity you generate? Talk to Envirowise

www.envirowise.gov.uk. Ask the National Industrial

Symbiosis Programme for advice www.NISP.org.uk

For an overview of government advice on resource efficiency visit

<http://www.defra.gov.uk/ENVIRONMENT/WASTE/brew/factsheets.htm> or find out more about materials

resource efficiency from WRAP

http://www.wrap.org.uk/construction/achieving_resource_efficiency/index.html and the Carbon Trust

www.carbontrust.co.uk

Systems thinking (p10)

Find out how your products and services fit into consumers' lives and how other factors influence the way they use them. Consider how changes in other parts of the economic system might impact on your value chain. Could you use this to shift to a more sustainable business model? Explore with systems thinking tools, such as 'Shifting the Burden', ways to unlock more sustainable solutions. Visit www.fieldbook.com for

more information.

Footprinting (p14)

Find out how you can use product life-cycle assessment to help you measure the footprint of your direct and indirect business operations on the environment: visit www.businesslink.gov.uk, talk to Envirowise and ask the Carbon Trust www.carbontrust.co.uk. Use your footprint to identify priorities for action, set targets and avoid unintended consequences.

Targets, accounting and reporting (p14)

Engage with business stakeholders and industry leaders in setting relevant and ambitious targets. These will embed sustainability throughout business operations and drive internal and external change. Find out about environmental KPIs from Envirowise

<http://www.envirowise.gov.uk/kpi>

and Defra <http://www.defra.gov.uk/environment/business/envrp/pdf/envkpi-guidelines.pdf> and read more about environmental accounting and reporting from the Sigma Project at www.projectsigma.com. Find out more about climate stabilisation intensity targets at

<http://www.btplc.com/news/articles/showarticle.cfm?articleid=5bbd383f-e732-43a1-b11f-2744feaaa09b>

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Product roadmaps (p17)

Find out how managing the social and environmental impact of your products throughout their life-cycle can improve competitive edge and benefit people and the planet. Learn more about Defra's product roadmaps at

<http://www.defra.gov.uk/environment/consumerprod/products/index.htm> and use the SDC product roadmapping model to build your own. More information at

<http://www.sd-commission.org.uk/publications.php?id=624>

<http://www.sd-commission.org.uk/publications.php?id=624>

<http://www.sd-commission.org.uk/publications.php?id=624>

<http://www.sd-commission.org.uk/publications.php?id=624>

Partnerships (p8/13)

Investigate how working in partnership along your supply chain, across business sectors or with stakeholder organisations could unlock innovation and resource productivity. Visit <http://thepartneringinitiative.org/> and

www.cpi.cam.ac.uk/pccp/ for guidance on building effective partnerships for sustainability.

www.cpi.cam.ac.uk/pccp/ for guidance on building effective partnerships for sustainability.

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Government intervention (p18)

Think about ways in which regulations and policy can be strengthened to incentivise behaviour change among corporations as well as consumers. Find out about policy priorities from the SDC www.sd-commission.org.uk. Talk to industry associations such as the CBI www.cbi.org.uk, British Retail Consortium www.brc.org.uk and the Food and Drink Federation www.fdf.org.uk about business initiatives. Learn more about environmental regulation at www.netregs.gov.uk

www.netregs.gov.uk

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www.netregs.gov.uk

www.netregs.gov.uk

Engage employees (p3)

Your employees could have the best ideas on making your business more sustainable. Find out how to start from Envirowise

<http://www.envirowise.gov.uk/page.aspx?o=Ref011>

and read more about other companies from BITC

<http://www.bitc.org.uk/#story1>

Getting started



Business opportunities

Local solutions (p6)

Learn about the priorities for resource management in your area. What are other businesses doing? Which companies and organisations are looking for local partners? Could you be a supplier or customer for local energy? Talk to Envirowise www.envirowise.gov.uk and the Carbon Trust www.carbontrust.co.uk.

Combined heat and power (p6)

Find out if CHP could play a part in meeting the energy (heat and electricity) needs of your business. Can you use resources within your own operations or are there opportunities to collaborate locally? Get more information from the Combined Heat and Power Association www.chpa.co.uk or the Carbon Trust www.carbontrust.co.uk. Ask your Regional Development Agency or local authority about local plans for renewables and CHP.

Closing the loop (p8)

Explore how waste in your sector could be turned into raw materials and inputs for other businesses – talk to NISP www.NISP.org.uk. Or think about how to change the design and composition of your products so that they are of use to someone else at end of life. Find out more about closed-loop opportunities from the Resource Efficiency Knowledge Transfer Network www.resource-efficiency.org/. Find funding for recycling and closed-loop projects from Biffaward www.biffaward.org and the Waste & Resources Action Programme www.wrap.org.uk

Forward commitment procurement (p11)

Read about FCP at http://www.en.wikipedia.org/wiki/Forward_Commitment_Procurement Look up and down your value chain for opportunities to collaborate with suppliers and customers using FCP to bring forward sustainable technologies and accelerate behaviour change. Get support from Action Sustainability <http://www.actionsustainability.com/>. Promote FCP to your public sector customers and talk to the Office of Government Commerce www.ogc.gov.uk about securing long-term commitments to procure sustainable goods and services.

Product-service systems (p12)

Investigate the potential to transform the products you sell to your customers into a service system that delivers value with much lower resource intensity. Could you work with others to shift your value chain and generate more profit from sustainable business activities? Find out more about PSS opportunities through SCORE

<http://www.score-network.org/> and about market transformation from Defra at <http://www.mtprog.com/>

Sustainable sourcing (p15)

Find out about existing standards for materials you source and products you sell. Talk to your industry association or ask Forum for the Future www.forumforthefuture.org.uk and Envirowise www.envirowise.gov.uk how they can help. Ask BITC about their Marketplace and supply-chain initiatives www.BITC.org.uk

Deliver new solutions (p16)

Find out if your company's technology and know-how could provide new answers to environmental challenges at home and abroad. Visit <http://www.berr.gov.uk/sectors/environmental/index.html> for information about government-supported initiatives. Talk to NISP www.NISP.org.uk and the Environmental Industries Commission <http://www.eic-uk.co.uk/> about regional initiatives and export services.

Inform and educate the market (p18)

What steps can you take to change customer and consumer behaviour and unlock opportunities to bring forward sustainable products and services? How can you make it easy to make the green choice? Visit <http://www.defra.gov.uk/Environment/consumerprod/glc/index.htm> for guidance on labelling schemes. Learn more about EU policy on energy-using product design and energy efficiency labelling at http://www.netregs.gov.uk/netregs/legislation/380525/1216740/?lang=_e. Talk to the Carbon Trust about carbon footprinting <http://www.carbontrust.co.uk> and the Centre for Sustainable Design about approaches to innovation <http://www.cfsd.org.uk/>. Get fresh ideas from Forum for the Future <http://www.forumforthefuture.org.uk/>

Acknowledgements

The Business Taskforce on Sustainable Consumption and Production was convened by Defra and DTI (now BERR) to bring forward proposals on how to help companies adopt more sustainable patterns of consumption and production (SCP) in ways that boost competitiveness and contribute to economic growth.

The Taskforce approached this by:

- looking at how government policy can shape the context in which a move to more sustainable production and consumption can be made
- examining evidence from business of the most effective ways to deliver SCP
- identifying tools and skills that will enable business to implement SCP initiatives.

It was led by a Steering Group whose members were:

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The main activities of the Taskforce were undertaken by informal working groups that brought together cross-sectoral business representation to address a theme and come forward with practical recommendations on steps that can be taken by business, government and consumers. It canvassed a large panel of UK-based businesses across diverse sectors of the economy working through three leading business networks: The Prince of Wales's Business & the Environment Programme, Business in the Community and Business Council for Sustainable Development United Kingdom.

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www.weeeman.org
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