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August 2013

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Carbon (GHG) Accounting and Management

An IEMA-Approved 2-Day Training Course

CRA Europe is pleased to announce new dates for its IEMA-approved Carbon and Greenhouse Gas (GHG) Accounting and Management course. This two-day course is aimed at professionals responsible for measuring, reporting, and managing carbon dioxide and other GHG emissions for their organisation. The course modules will equip you with:

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- An understanding of the key standards and protocols for GHG measurement and reporting
- The skills to develop a carbon (GHG) accounting system and to capture your organisation's footprint
- An understanding of techniques to reduce carbon and GHG emissions



The next course in the UK is planned for 17th-18th September in London. For more details, please visit www.cra.co.uk or contact us on 0115 965 6700 or training@cra.co.uk.

Progress towards a revised ISO 14001

The ISO working group revising ISO 14001 met at the end of June, with the objective of developing a new draft for consultation. Unfortunately, the group did not have enough time to review all comments from the previous consultation, and so the next draft will not be issued until after another meeting in the autumn. However, the comments on many of the clauses were addressed, with some clauses being substantially re-written. Areas of development include:

- The relationship between environmental risks (aspects) and business risks;
- The need for documenting management system processes;
- Addressing the value chain in its upstream and downstream phases;
- Emergency preparedness and response plans; and
- Determining the criteria against which performance is measured.

CRA will be publishing a new series of articles on these and other developments, including the implications for auditing. If you would like to receive updates, please sign up to our newsletter at www.cra.co.uk.

CRA's Nigel Leehane is one of the UK's technical experts appointed to the ISO working group revising 14001. Please contact him on 0115 965 6700 or nleehane@cra.co.uk if you would like to know more about the changes to ISO 14001 and the implications for your organisation.

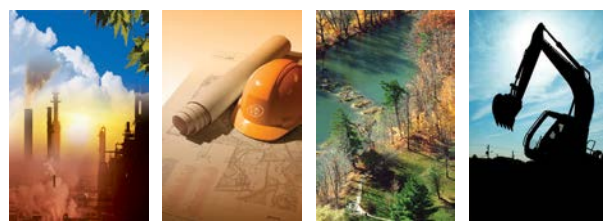
CRA's latest articles on the ISO 14001 revision can be found on the news page of our website: www.cra.co.uk



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Make the penalty fit

The “polluter pays” principle underpins most of the regulation of pollution affecting land, water and air. It acknowledges that those responsible should pay for any damage. Too often the financial penalties levied on polluters are insufficient, however. The *Observer* recently revealed that since 2005 water companies have been persistent and frequent polluters of England’s rivers and beaches, and have been punished for more than 1,000 incidents. Just one-third of the incidents led to a financial penalty – with fines totalling only £3.5 million, £10,800 on average – and the rest resulted in a caution. At the same time, environmental regulators have urged the courts to impose tougher fines for pollution offences.

In 2009, Paul Leinster, chief executive of the Environment Agency, said: “We want to see higher fines to provide a greater deterrent. There are still an average of two serious pollution incidents a day and this is too many.” The agency was critical of the penalty given to Thames Water that year for accidentally releasing industrial chlorine into the River Wandle in London during a sewage plant cleanup operation. It claimed the £125,000 fine was “not sufficient” to alter behaviour, and criticised the guidelines that restricted Croydon crown court to levy a penalty that, at the time, was less than 0.1% of the company’s annual turnover. The Scottish Environment Protection Agency (Sepa) has also asked for bigger penalties. In 2010, the regulator warned that its plans for “simpler, proportionate regulation” needed to be accompanied by strong measures to tackle the poorest performers. “This includes significantly more robust penalties, including fines that better reflect the costs avoided by poor practice, that cover the cost of the environmental damage caused, and that cover the regulator’s costs in investigating the permit breach or crime,” said Sepa.

Proposed new guidelines from the Sentencing Council recommend a major increase in fines for environmental offences in England and Wales. If adopted, fines could reach £2 million for the most significant environmental offences by the biggest companies – those with a turnover of more than £25.9 million. Under the plans, penalties imposed on large firms found to have “recklessly” harmed the environment, for example, would start at £335,000.

That may be sufficient to alter behaviour and ensure the polluter really does pay, but MPs on the justice committee have criticised the proposals (p.4). They are concerned that magistrates following the guidelines will impose higher fines on companies guilty of environment offences than for breaches of health and safety legislation committed during the same incident, such as the Buncefield explosion in 2005. This could leave health and safety offences looking less serious to the public, says the committee.

This is a legitimate concern. Of course, fines for breaching environmental legislation should not be higher than those imposed for health and safety offences, particularly where they involve serious injury or death, but the answer is to also raise the level of penalties imposed for activities that put workers at risk. The MPs are also fearful that some magistrates will impose the tougher penalties on a wider range of offences than those covered by the guidelines, including health and safety offences. But if that is the outcome and it helps prevent damage to people and the environment, is that not a good thing?

Ultimately, sentencing should act as a deterrent. Let’s hope the final guidelines result in sentences that deter as much illegal activity as possible. Unless the polluter or poor employer pays substantially more than the sum he profits from his crime little will change.

Too often the financial penalties levied on polluters are insufficient. Ultimately, unless the polluter pays a lot more than the sum he profits from the crime little will change



Paul Suff, editor

Short cuts

Waste inspections

The European Commission is proposing to strengthen legislation on the transfer of waste across international borders. It wants to revise the EU waste shipment regulation (1013/2006/EC – as amended) to require all member states to introduce a risk-based system of inspections. Such a system, combined with greater cooperation between national authorities and better training of inspectors, would help regulators to focus on routes, times and vehicles that are most frequently involved in illegal shipping, says the commission. A key feature of the proposal is the introduction of on-the-spot inspections. It also claims the changes would help prevent the “leakage” of valuable raw materials contained in waste and will eventually lead to improvements in waste treatment processes across the EU. The current waste regulation does not contain specific provisions on inspection planning or how inspections should be carried out.

Adapting to change

Defra has published its first national adaptation programme (NAP), outlining what it believes are the key risks and opportunities of climate change, and the actions that need to be taken by businesses, communities and policymakers in England. The NAP draws heavily on the findings of the UK climate change risk assessment, published last year. It urges the private sector to do more to incorporate adaptation into business models, highlighting in particular the risk of disruption to international supply chains. The 184-page document outlines 31 government objectives on climate change adaptation, covering infrastructure, buildings, business, local government and the natural environment. The government pledges to ensure new infrastructure projects are designed to cope with extreme weather and offers to help businesses, particularly small firms, to understand the impact of climate change and build the business case for adaptation (see p.26).

MPs query proposals for higher fines

Proposed new sentencing guidelines that would dramatically increase fines for many environment offences may have unintended impacts on the penalties for health and safety breaches, say MPs.

The House of Commons justice committee was responding to the consultation on draft sentencing guidelines for magistrates on certain waste management, permit and nuisance offences. The MPs outlined their concerns that the tougher penalties will be applied to a broader range of environment crimes than intended and could cause discrepancies in fines for serious health and safety offences.

The new guidelines – which cover offences under sections 33 and 34 of the Environmental Protection Act 1990; regulations 12 and 38 of the Environmental Permitting Regulations 2010; and section 1 of the Control of Pollution Act 1989 – include a framework for setting fines in accordance with the seriousness of the harm caused, the intent behind the offence and the size of the organisation involved.

Under the proposals large firms could be fined up to £2 million for the most serious environment offences, a penalty larger than



Fines for dumping waste could rise dramatically

those imposed generally for health and safety breaches connected with fatalities.

The committee cites the 2005 explosion at the Buncefield oil depot as an example of where both environment and health and safety offences arise from the same incident, but where the penalties could differ. In such cases, the new guidelines could result in larger penalties for the environment breaches and they would be “difficult to explain to the public”, warned Alan Beith, the committee’s chairman.

The committee is also concerned over plans to link the size of the penalty to the organisation’s turnover. This could unfairly penalise firms with high turnovers and small profit margins, say MPs. The proposal that individuals who deliberately offend receive at least a 12-week prison sentence is also criticised as “disproportionately high”.

Investors want better reports

European investors are increasingly using sustainability reports for information on companies’ non-financial performance, but most believe the current level of disclosure is inadequate and the majority would like integrated reporting to become the norm. These are the headline findings from a survey by investment analysts Eurosif and accountancy body ACCA.

The research reveals that 89% of the 94 investors polled regard reports detailing firms’ environmental and social performance as “essential” or of “high importance” when it comes to taking investment decisions, with 67% saying they always examine sustainability or corporate social responsibility (CSR) reports.

However, more than three-quarters (78%) of respondents claim that current disclosure levels are not adequate, while 73% believe that sustainability and CSR reports do not sufficiently reflect

business strategy or risk. More than 90% criticise the level of comparability between reports and 84% agree that more companies should use established standardised reporting frameworks for non-financial disclosure.

Overall, 92% of those polled want better integration between financial and non-financial information.

François Passant, executive director at Eurosif, said: “Looking at non-financial aspects of a company is becoming the new norm for investors. However, a disconnect exists between a company’s non-financial reporting and investors’ expectations.”

In April, the European Commission put forward proposals for mandatory disclosure of non-financial information by all large companies in the EU. The plans would require firms to disclose information on environmental issues, social/employee matters, human rights issues and anti-corruption activities.

Improving efficiency can net manufacturers £10bn

Overhauling resource practices will cut CO₂ emissions and increase productivity

UK manufacturing could increase annual profits by £10 billion and reduce carbon emissions by 27 million tonnes a year if companies adopted widely proven resource efficiency measures, say researchers at Next Manufacturing Revolution (NMR).

According to NMR, a not-for-profit initiative run by Cambridge University's Institute for Manufacturing, the online sustainability network 2degrees and consultancy firm Lavery Pennell, manufacturers could add billions to their bottom line through greater energy efficiency, better collaboration with suppliers, cutting operational waste and adopting circular-economy business models.

After a 12-month study of the sector, the researchers concluded that, although manufacturers in the UK had improved resource efficiency by 10%–15% over the past 10 years, leading firms had achieved a 50% improvement.

According to the report, if all UK manufacturers reduced their energy intensity by 4% a year, in line with best practice in the chemical and automotive companies, the sector could save £1.9 billion and cut annual greenhouse-gas emissions by 19 million tonnes.

However, the greatest opportunities for increased profits and productivity lie in a circular-economy approach to materials, concludes the report. "While recycling rates are high in the UK, there is minimal activity in higher value circular resource flows. For example, remanufacturing accounts for just 1% of the UK manufacturing sector's turnover," it states. NMR estimates that remanufacturing could generate an additional £5.6–£8 billion of value each year for companies making electronics, machinery and transport equipment. But it warns that a lack of skills and infrastructure, as well as difficulties in gaining senior executive buy-in and collaboration along supply chains, is hampering such efforts.

The report was supported by business secretary Vince Cable, who said: "In recent years we have seen increasing volatility in global commodity prices and concerns



Remanufacturing products could be worth £8 billion

about security of supply. A greater focus on efficiency in manufacturing processes looking at use of materials, energy and water, as well as a greater focus on recycling in production and at the end of product life, will help firms reduce costs and increase resilience."

In a separate report, the Circular Economy Taskforce warns that companies wanting to switch to more resource-efficient business models need more support from the government.

In its first report, the taskforce, whose members include BASF, Boots and Unilever, urges ministers to clarify competition laws to enable firms to work together to retrieve materials and to implement the Ecodesign Directive more rigorously to ensure that products are designed with resource recovery in mind.

"Requiring products and materials to be manufactured so they are easier to reuse, remanufacture and recycle rewards innovation in design [and] creates the opportunity for businesses to develop new, circular business models without telling them how to do so," states the report. The taskforce recommends establishing a "feebate" system, which would financially penalise products less able to be circular, and use the income to reward products that are more able to be circular.

Meanwhile, the latest government figures confirmed that the UK's low-carbon and environmental goods sector continued to outperform the rest of the economy in 2011/12, with sales up 4.8% year on year.

Short cuts

Retail best practice

A new report from the Joint Research Centre highlights best environmental management practices in the retail sector. It describes a number of techniques, measures and actions aimed at improving the management of areas like energy performance, the sustainability of the supply chain, transport and logistics, and waste and water management. The centre, the in-house science service at the European Commission, has established what it calls a "benchmark of excellence" for each practice. One example is for retailers to aim for annual heat consumption of zero kWh/m² by recovering the waste heat from the refrigeration cycle and maximising its use. The report (lexisurl.com/iema16152) contains information on the economic viability and technical feasibility of each benchmark, so retailers have a clear picture of the investment and operational costs involved.

€3.45bn for LIFE

European authorities have given the green light for €3.45 billion to be spent on environment projects in the next phase of the LIFE programme. Launched in 1992, LIFE is the EU's key funding instrument to support environment initiatives and provides cash for pilot and demonstration projects for technologies aimed at halting biodiversity loss, for example. The next phase of the scheme, which runs from 2014 to 2020, places greater emphasis on funding projects for climate change mitigation and adaptation, and resource efficiency. EU commissioner Connie Hedegaard said the new programme would triple the amount being spent on climate action. Under the commission's plans, €864 million will be dedicated to climate change and €2.6 billion to the environment. Meanwhile, the European Investment Bank has adopted new lending guidelines that will prevent it financing the most polluting fossil-fuel power plants. Coal- or gas-powered stations applying for funds from the bank must now produce less than 550g of carbon dioxide per kWh of electricity.

In Parliament

Setting the UK
'free' from Europe

When asked what effect leaving the EU would have on the environment in the UK, my mind turns immediately to the host of EU laws that have raised environmental standards. Legislation that has reduced pollution, enhanced air and water quality or promoted the safer use of chemicals is one example. Not to mention the steps taken to help the UK meet its international obligations to curb CO₂ emissions or eliminate ozone-depleting substances.

Most people appreciate that pollution pays no respect to national boundaries and understand the need for multilateral action. True, the UK would have acted in any case on many environment issues, but probably more slowly and certainly with less effect. It's harder to resist the call for money to be spent on environmental improvements when there is a legally enforceable EU agreement that applies also to our economic competitors in neighbouring countries. Yet, if the UK were to pull out of the EU, the environmental impact would be minimal. That's not because the EU makes no difference, but because we would continue to sign up to virtually every environmental law that came out of Brussels.

"Independent" Norway, for example, has added 250 EU environmental laws to its statute book – everything, in fact, except laws on nature protection. That's the price it must pay for belonging to the European economic area and the EU single market. Eurosceptics usually insist that the UK remains in the EU single market even if it withdraws from the decision-making structure. Like Norway we could then expect to be consulted on drafts of new laws, but our representatives would have no place at the tables where the final decisions are made.

According to Eurosceptics, like Norway, we could chart our own future. Only we couldn't. Someone must explain the logic of leaving the EU to me. I just don't get it.

Chris Davies is Liberal Democrat environment spokesperson in the European parliament

UK ecosystems services under threat

Demand for water from the agricultural sector in the UK could reach double the available supply by 2020 as a result of rising temperatures and changes to rainfall patterns unless urgent action is taken now, says the independent committee on climate change (CCC).

In its latest report, the committee warns that access to vital ecosystems services, including water supply, carbon sequestration and flood protection, is at risk if the value of such services continues to be ignored in land-use decisions.

The CCC concludes that without policies to incentivise more efficient abstraction, storage and irrigation, water demand from UK farms will far outstrip supply by the end of the decade.

It also warns that 75% of coastal habitats providing natural flood defences are at risk from sea-level rise and that action being taken to protect these habitats is falling far short of what is needed to meet the target of realigning 10% of the UK's coastline by 2030.

"The rate of realignment would have to



Urgent action is needed to protect ecosystems services

increase five fold," confirms the report. Achieving the 10% goal will cost £10–£15 million, but the extra 60km² of coastal habitat that would be created as a result will cut flood defence costs by £180–£380 million in the long term.

The report also warns that the majority of the UK's peatlands are in a "degraded condition", with dried-out areas releasing carbon into the atmosphere and no longer providing water filtration. According to the committee, the government could triple the amount of upland peat being restored by enforcing regulation more effectively and by putting a price on the services it provides. Such restoration of peatlands would help to secure carbon stores worth billions of pounds, it says.

New building standards to cut non-domestic CO₂ by 9%

Revised energy standards for new non-domestic buildings will reduce carbon emissions by 9% and reduce annual fuel bills for large businesses by more than £60,000. The planned changes to Part L of the Building Regulations, to come into force in April 2014, will also cut carbon from new build homes by 6%.

Announcing the revisions, which take account of the recast EU Directive on the Energy Performance of Buildings (2010/31/EU), communities minister Don Foster said: "[The] measures mean businesses and householders will not only benefit from reduced energy bills but they will also know they are doing their bit to tackle climate change."

The government estimates that 6.4 million tonnes of CO₂ should be saved as a result of the changes, which include requirements for better fabric insulation and more efficient heating and lighting.

Although the building industry largely welcomed the changes, many

were critical of the three-month delay in the announcement and the plan's lack of ambition. "There can be no excuses for the length of time this has taken, but finally the industry has the clarity on Part L that it craves," commented John Alker, director of policy and communications at the UK Green Building Council. He pointed out, however, that the planned tightening of the standards, particularly for non-domestic buildings, were less than government's previous "preferred options".

Foster also confirmed that the government had no plans to alter the rules for existing buildings, a decision criticised by Jeremy Blackburn, head of policy at RICS. "The massive issue of existing properties energy efficiency and embodied carbon remains unanswered. The government simply cannot afford to take its eye off the ball when it comes to carbon, given the overall climate targets we need to hit."

Buildings account for about half of the UK's carbon emissions.



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Fracking and offshore wind given boost

Tax incentives to exploit unconventional sources of oil and gas largely through hydraulic fracturing, or “fracking”, have been unveiled by the chancellor. At the same time, the government has outlined its strategy to support the growth of the UK offshore wind industry.

The Treasury says its tax proposals for shale gas will encourage early investment in the exploration and development of sites in the UK, bringing significant economic benefits. The draft tax regime (lexisurl.com/iema16154) includes establishing a “pad allowance”, which would in effect cut the tax rate on some of the income from extracting the gas from 62% to 30%. A “pad” is the term used in the industry to describe the drilling and extraction site. The government has also confirmed that communities hosting operations will receive £100,000 per shale gas site, and up to 1% of all production revenues.

In a further move to encourage the shale gas industry, the local government department has published new guidance for councils in England on hydraulic

fracturing. It makes local authorities responsible for determining shale gas planning applications and sets out the environmental, health and safety issues that need to be considered. The Environment Agency has also produced a plan for streamlining the permitting process for shale gas projects.

The government’s offshore wind strategy, meanwhile, has the potential to unlock £7 billion in the economy by 2020, claim ministers. Measures announced by the business department to support the industry include investing £20 million to improve the UK supply chain for wind technologies, and £46 million to support innovation between the industry and academia. “I would hope to see something



Communities hosting shale gas sites will receive £100,000

approaching what we already see in the oil and gas sector where 70% of the supply chain is made in Britain,” commented business secretary Vince Cable.

Government support for fracking and offshore wind comes as analysis by the Green Alliance reveals that investment in low-carbon infrastructure projects are worth significantly more to the economy than high-carbon ones. Offshore wind projects alone are worth more than four times planned gas power spending, it says.

From environmentalisonline.com...

Energy audits

Forcing large companies to assess their energy efficiency will save £1.9 billion over 15 years, according to Decc estimates. To meet the requirements of the EU’s Energy Efficiency Directive (2012/27/EU), all large companies – those with more than 250 employees and an annual turnover exceeding €50 million – will have to complete an assessment of their energy consumption every four years. The energy audit, the first of which must be completed by December 2015, must be conducted by an “approved assessor” and produce a list of “cost-effective efficiency measures” that the firm can implement. According to the energy department, if UK companies implement just 6% of the measures identified by the assessments they will save a cumulative £1.9 billion over 2015-2030. Decc is now consulting on its proposals for a mandatory energy savings opportunity scheme to meet the requirements of the Directive.

environmentalisonline.com/EAudits

Saving water

Bernard Matthews, Nestlé and Warburtons are among 71 UK food and drink manufacturers that saved a total of £2.2 million last year after signing a voluntary agreement to cut water use. According to the latest data from Wrap, firms that signed up to the Federation House Commitment cut their water use by 1.5 million cubic metres in 2012. Since the initiative’s launch in 2008, the signatories, which now represent around 25% of the food and drink sector in the UK, have reduced the amount of water consumed by their operations by 16.1%. At the same time, production levels have risen by more than 6%, resulting in an overall reduction in water intensity of 20.9% per tonne of product over the five years. “The actions of signatories are making a considerable contribution towards meeting the whole industry target of a 20% reduction in water use by 2020,” said Richard Swannell, director of Wrap.

environmentalisonline.com/FHC

Bag charges

The number of plastic carrier bags given to shoppers in Wales has fallen 80% after the introduction of a 5p charge. More than 8 billion single-use carrier bags were issued to supermarket customers in the UK during 2012, 1.3% more than in 2011, according to figures collated by Wrap. Shoppers across the country used 10.7 carriers each month on average, up from 10.5 in 2011 and 10.1 in 2010. However, in Wales shoppers used just 1.8 bags a month during 2012. Overall they were given 70 million bags last year, compared with 270 million in 2010 before the introduction of a mandatory 5p charge for single-use bags in October 2011. Alun Davis, Welsh minister for natural resources, said the data confirm that charging for bags does change shopper behaviour. Northern Ireland introduced a 5p charge for carrier bags on 8 April 2013 and Scotland plans to bring in a charge in October 2014.

environmentalisonline.com/5pBags

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Defra's streamlined SDIs show slow progress

Although the UK has cut greenhouse-gas (GHG) emissions and improved the sustainability of water abstraction since 1990, there has been no change in the amount of natural resources the country is consuming and a number of native species, such as farmland and woodland birds, continue to decline, confirms Defra.

The environment department has published its first report on progress against a new set of 35 sustainable development indicators (SDIs) covering the economy, the environment and society. The new SDIs were agreed earlier this year to replace the previous set of 68 indicators and align the figures more closely with the government's new wellbeing measures.

In its report, Defra reveals that, since 1990, there has been an improvement in only four of the 12 headline SDIs for environmental sustainability. According to analysis by the department, GHG emissions associated with consumption have increased over the long-term at the same time as the UK's overall carbon footprint has been cut. Meanwhile, populations



Woodland bird species like the willow tit have declined

of the UK's wild birds have continued to decline or shown no improvements, and the amount of raw materials being used in the country has not changed. Of the 18 secondary measures to assess the state of the environment, there is insufficient long-term data in more than half to monitor progress effectively, including SDIs on river water quality and land use.

There are also no long-term figures for the number of priority species or habitats that are stable, although more recent data indicate that both have seen improvements in the past five years.

Potočník welcomes 'weaker' rules on water pollution

New European legislation to tackle water pollution will offer greater protection for the environment despite being "substantially weakened" during negotiations with member states, according to environment commissioner Janez Potočník. Member states and EU authorities agreed the final text of the new Directive on Priority Substances for Water at its first reading in July.

Potočník described the agreement as a "much needed" update to existing legislation, but conceded that the commission's original proposal had been considerably diminished. "I remain convinced the final result will make a significant contribution to improving water quality," he argued.

In September 2012, the European Commission outlined its proposals to update the list of 41 substances contained in the 2008 Priority Substances Directive (2008/105/EC), which member states have to control by 2015. The plans

included 15 new substances that by 2027 should no longer enter watercourses. After negotiations, however, only 12 of the substances have been included in the legislation, with the remaining three – all pharmaceutical materials – placed on a new "watch list", which has been created to improve the evidence base for adding new priority substances.

Other changes to the Directive include making data on water pollution easier for the public to understand.

Meanwhile, the European Environment Agency has concluded that, although the EU has successfully agreed a wide range of policies to protect the environment and support the transition to a green economy, long-term implementation remains a challenge. In a new report, the agency outlines how European legislation has introduced 130 environmental goals that have to be met during 2010–50. However, of the 63 that are legally-binding, only one has been made for post-2020.

Short cuts

Coca-Cola's 2020 goals

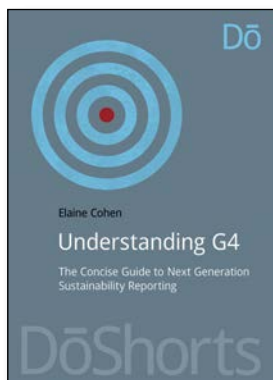
By 2020 Coca-Cola will have improved the water efficiency of its drinks by 25% per litre, under new sustainability targets. The company also aims to reduce the carbon emissions associated with its products by 25%. The firm's new goals have been developed in partnership with conservation charity WWF and will apply not only to its own operations but those of its close to 300 bottling companies in 200 countries. Coca-Cola will also continue to work with WWF to ensure it is sourcing the main ingredients for its products – such as palm oil, sugar cane and soy – from sustainable sources. The drinks maker has also reaffirmed its pledge to replenish all the water used in its industrial processes by 2020 – currently it has achieved 52% in 468 projects. Plans to recover 75% of the cans and bottles containing its drinks by the end of the decade were also announced. "As we face a resource-stressed world with growing global demands on food and water, we must seek solutions that drive mutual benefit for business, communities and nature," said Coca-Cola's chief executive, Muhtar Kent.

Woodland carbon code

The woodland carbon code (WCC) has been launched on the Markit environmental registry, the platform that enables account holders to manage all their environmental credits. Launching on the registry will enhance the transparency and accountability of UK woodland carbon units, says the Forestry Commission, which administers the code. Carbon dioxide – either sequestered or absorbed – by WCC-validated woodlands in the UK can be traded, and the codes presence on the registry will allow changes of ownership to be tracked, and disclose when carbon units have been "used" by a company in its carbon account. By the end of June 2013, 133 projects were registered under the code. In total the projects cover an area of 142km² and are predicted to sequester 5.2 million tonnes of carbon.

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Recent Prosecutions



Inaccurate CERT data cost E.ON £3 million

A breach of its reporting obligations under the government's carbon emissions reduction target (CERT) programme has cost E.ON UK £3 million, with the energy company fined £500,000 and agreeing to spend £2.5 million to reduce the 2013–14 winter fuel bills of 18,500 of its most vulnerable customers by £135 each.

The CERT programme, which ended on 31 December 2012, required large energy suppliers to deliver energy-efficiency measures to consumers in Britain, by, for example, distributing energy-saving light bulbs at no cost. After an investigation, Ofgem, the energy regulator, discovered that E.ON had included in its 2010 CERT report light bulbs sold in stores in the Republic of Ireland rather than distributed free in Britain. The German-owned business also included data for light bulbs without providing evidence that they had actually been distributed. In total, the inaccurate information covered 3.4 million energy-saving light bulbs – equivalent to 1% of E.ON's carbon emission reduction obligations in 2010.

E.ON blamed the discrepancy on inadequate management systems that failed accurately report the distribution of light bulbs. The company said it took action to ensure it met its overall CERT obligations by installing extra energy-saving measures.

Ofgem, which agreed the financial package with E.ON, said the case should act as a warning to other energy companies that it takes reporting failures seriously. "Accurate company reporting is essential to Ofgem's effective administration of the government's environmental schemes," said Sarah Harrison, senior partner in charge of enforcement at the regulator. Commenting on the penalty and settlement agreed with Ofgem, Tony Cocker, chief executive at E.ON UK, said: "We're sorry that these mistakes were made in 2010 and Ofgem has received a board-level assurance that the necessary changes have been made. Our controls should have been stronger and our processes more robust."

Toxic compound pollutes SSSI

Allowing toxic paint sludge to pollute the Fal estuary in Cornwall has resulted in Falmouth-based ship-repair company, A&P being fined £10,000 and ordered to pay £14,300 costs.

The estuary, a site of special scientific interest (SSSI) and a special area of conservation, was found to be polluted on 29 September 2011. The source was traced by the Environment Agency to Falmouth Docks where A&P was refurbishing a ship. The company was using high-pressure jets to remove antifouling paint from the vessel's hull. Although special hoppers collected most of the paint flakes and sludge from the process, some escaped, eventually entering a drain linked to the estuary.

Samples of the discharge were found to contain tributyltin (TBT), which, until 2008 when it was banned, was widely used in antifouling paint to prevent marine organisms attaching themselves to the hulls of ships. TBT is highly toxic and does not easily break down in the environment.

A&P pleaded guilty to causing a polluting discharge to enter tidal waters

and being in breach of its local authority permit. Since the incident, the company has used hessian filters to capture potentially harmful substances from its paint removal operations.

Rentokil firm fails to note waste

Failure by Initial Washroom Services (IWS), a subsidiary of Rentokil, to submit consignment notes to the Environment Agency for hazardous waste arriving at its Okehampton waste transfer station in accordance with the site's environmental permit has cost it £4,000.

IWS said it did not submit consignment notes to the agency for the canisters, which were subject to the Hazardous Waste Regulations 2005, because they had come from its customers' premises and remained the property of the company. IWS also said it did not consider the cans to be waste until they were disposed of.

The agency criticised the company for adopting its own interpretation of the law. "It chose to ignore our advice and continued to receive hazardous waste without recording its transfer and movement," said Matthew O'Brien.

CaseLaw

Scottish liquidators can abandon CAR licences

In England and Wales, company liquidators can disclaim an environmental licence held by the firm as "onerous property" under section 178 of the Insolvency Act 1986. In Scotland that provision has no effect, as the Court of Session observed in *Nimmo & Friar, Petitioners* [2013] CSOH 124, and there is no precedent for disowning such a licence. In the case, the liquidators of Scottish Coal asked whether they could abandon opencast mines and licences under the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR). The Scottish Environmental Protection Agency (Sepa) argued that they could not.

The CAR gives Sepa control over what the person holding a licence must do before accepting its surrender. If that person becomes insolvent, this obligation falls to the insolvency practitioner. For this reason the judge, Lord Hodge, would have decided that the petitioners should apply to surrender the licences in the normal way. However, the CAR is delegated legislation, so the Scotland Act 1998 required him to read its provisions as narrowly as required to be within the competence of the Scottish parliament. The corporate insolvency regime is a matter reserved to Westminster, and Lord Hodge concluded that the liquidators could abandon the sites and CAR licences, using powers under the Insolvency Act.

This sets a worrying precedent for sites where a CAR licence requires post-closure remediation. Sepa will wish to ensure that the Regulatory Reform Bill going through the Scottish parliament closes this loophole.

Ian Cowan

Ian Cowan
highland environmental law



New Regulations

In force	Subject	Details
8 Apr 2013 	Waste	The Single-Use Carrier Bags Charge Regulations (Northern Ireland) 2013 implement a requirement for retailers to charge customers at least 5p for single-use carrier bags. lexisurl.com/iema14391
9 Apr 2013 	Water	Water Resources (Scotland) Act 2013 makes a number of provisions related to water resources, including bringing large-scale water abstraction under ministerial control; extending Scottish Water's functions; and enabling the creation of water shortage orders. lexisurl.com/iema15201
15 Apr 2013 	Environmental justice	The Costs Protection (Aarhus Convention) Regulations (Northern Ireland) 2013 introduce costs protection orders limiting the amount recoverable from those applying for judicial reviews and statutory reviews on environmental grounds in accordance with the requirements of the Aarhus Convention. lexisurl.com/iema15197
15 Apr 2013 	Transport fuel	The Renewable Transport Fuel Obligations (Amendment) Order 2013 amend the 2007 Regulations to expand the obligation to cover suppliers of fuel for additional uses, such as non-road mobile machinery and agricultural or forestry tractors. lexisurl.com/iema15202
19 Apr 2013 	Built environment	The Building Regulations &c (Amendment) (Wales) Regulations 2013 amend the Building Regulations 2010 and the Building (Approved Inspectors etc) Regulations 2010. The regulations transpose articles 2, 6, 7, 9 and 11 of the EU Directive 2010/31/EU on the energy performance of buildings. Two provisions came into force on 9 July 2013, while others will come into force on 1 October 2013; 1 January 2019; and 31 December 2020. lexisurl.com/iema15205
26 Apr 2013   	Environment protection	The Environmental Permitting (England and Wales) (Amendment) (No. 2) Regulations 2013 implement EU Directive 2011/97/EU, which amends Directive 1999/31/EC on the landfill of waste with regards storing waste mercury. Regulation 2(2) amends the Environmental Permitting (England and Wales) Regulations 2010 to replace the definition of the Landfill Directive and applies only in England and Wales. Regulation 3, meanwhile, amends the Control of Major Accident Hazards Regulations 1999 (COMAH) and applies across England, Wales and Scotland, bringing sites used for the storage of metallic mercury within the scope of the COMAH Regulations. lexisurl.com/iema15199
26 Apr 2013 	Environment protection	The Nitrate Pollution Prevention (Amendment) and Water Resources (Control of Pollution) (Silage, Slurry and Agricultural Fuel Oil) (England) (Amendment) Regulations 2013 amend the 2008 Regulations and give statutory effect to the revised designations of nitrate vulnerable zones in England. lexisurl.com/iema15523
30 Apr 2013   	Energy	The Renewable Heat Incentive Scheme (Amendment) Regulations 2013 amend the 2011 Regulations by introducing a new mechanism for setting tariffs for accredited plants and producers of biomethane for injection into the national grid. lexisurl.com/iema15524
7 May 2013 	Emissions	European Commission Regulation 396/2013 and Regulation 397/2013 amend existing regulations on the monitoring of CO ₂ emissions from new passenger cars. lexisurl.com/iema15540 ; lexisurl.com/iema15541
15 May 2013 	Environment protection	The Action Programme for Nitrate Vulnerable Zones (Scotland) Amendment Regulations 2013 amend the 2008 Regulations. EU Directive 1991/676/EEC on protecting waters against pollution caused by nitrates from agricultural sources requires member states to review and, if necessary, revise action programmes for designated nitrate vulnerable zones. The 2013 Regulations revise the action programme established by the 2008 Regulations. lexisurl.com/iema15200

To find new regulations by jurisdiction visit environmentalisonline.com/search and enter your search criteria

Latest Consultations



30 Aug/6 Sep 2013

Air quality



Defra and the Scottish government are consulting on plans to review local air quality management (LAQM). Defra says its consultation, which covers England, aims to address shortcomings, such as difficulty in quantifying the impacts and effectiveness of measures introduced to improve air quality. LAQM has been in place since 1997 and the environment department says it needs reinvigorating and refocusing to help meet EU air quality standards. Defra's consultation ends on 30 August; the Scottish government's ends on 6 September.

lexisurl.com/iema16024;
lexisurl.com/iema16040

30 Aug 2013

Energy-intensive industries



Proposals to exempt energy-intensive industries from the costs of contracts for difference (CfDs) – a key feature of the government's electricity market reform designed to support investment in low-carbon generation – have been put out for consultation by Decc and the business department. The consultation focuses on eligibility for exemption and arrangements to compensate industries whose global competitive position could be eroded if they incurred the full, indirect costs of the proposed CfDs.

lexisurl.com/iema16028

5 Sep 2013

Marine licensing



Defra is seeking views on proposals to extend the ability of the Marine Management Organisation (MMO) to recover the costs it incurs in dealing with licence applications under part 4 of the Marine and Coastal Access Act 2009 (MCAA). Unlike the previous licensing system – part 2 of the Food and Environment Protection Act 1985 (FEPA) – the MCAA does not allow the MMO to recover costs incurred in monitoring sites, reviewing monitoring reports or varying existing licences. The government proposes to make an order under the Public Bodies Act to change the MMO's charging powers and deal with the problems caused by the differences between the FEPA and the MCAA.

lexisurl.com/iema16020

13 Sep 2013

REACH and nanomaterials



Draft plans to modify the annexes of REACH to ensure greater clarity on how nanomaterials are addressed in registration dossiers have been put forward by the European Commission. The commission says the aim of the proposals is to provide clearer requirements to ensure that industry demonstrates safe use of nanomaterials in accordance with article 1 of REACH, ensuring a "high level of protection of human health and the environment". The consultation asks for opinions on how nanomaterials are currently treated in the

annexes and on the impacts of potential clarifying measures. The commission expects to outline any proposals to amend the annexes before the end of the year.
lexisurl.com/iema16037

23 Sep 2013

Access to justice



The European Commission is seeking views on improving access to justice on environmental matters across the bloc. Specifically it is asking whether legislative action at EU level would ensure effective and non-discriminatory access to such justice – described as a "subsidiarity test". It also asks where targeted EU legislative action is needed to ensure citizens have access to national courts on environmental matters ("proportionality test").
lexisurl.com/iema16039

27 Sep 2013

Corporate responsibility



The business department is seeking views on aspects of corporate responsibility (CR), particularly what the government and businesses can do to realise the economic and social benefits that CR can bring. Themes covered by the consultation include: voluntary reporting and disclosure of non-financial information; responsible supply-chain management; and CR in small and medium-sized enterprises. The department aims to publish a CR framework by the end of 2013.
lexisurl.com/iema16029

New Guidance

Permitting

The Environment Agency has updated its guidance on complying with an environmental permit (lexisurl.com/iema16042). The sixth edition describes the standards and measures that permit holders must use to control the most common risks of pollution from their activities and how to comply with the conditions of the permit.

Pollution prevention

The pollution prevention guidelines (PPG1) have been updated (lexisurl.com/iema16046) by the Environment Agency, Scottish Environment Protection Agency and the Northern Ireland Environment Agency. The regulators say the guidelines will help organisations to manage their environmental responsibilities to prevent pollution and comply with the law. The latest version of PPG1 contains sections on drainage and discharges; treatment facilities; storage of hazardous substances; secondary containment for stored materials; waste; emergency planning; and understanding whether your premises are at risk of fire or flooding.

CRC

UK environment regulators have further revised guidance for participants in phase 1 of the carbon reduction commitment (CRC) energy efficiency scheme. Version 2.2 of the guidance (lexisurl.com/iema16045) includes changes to clarify the rules for claiming electricity-generating credits and explain how electricity supplies covered by the EU emissions trading scheme are dealt with under the CRC.



Laying down the law

A legal obstacle course

Stephen Tromans argues that two recent court judgments have created a conundrum for planning authorities



The recent High Court decision in *R (Champion) v North Norfolk District Council* [2013] EWHC 1065 (Admin) illustrates something of a trap for both developers and planning authorities.

The circumstances were quite mundane – a proposal for an agricultural store for barley and associated lorry park. The site was, however, 500 metres away from the River Wensum, which is designated as a site of special scientific interest and a European special area of conservation (SAC). There were concerns about the risk of polluted runoff entering the river via land drains, during the construction and operation of the facility. Mitigation measures were included and adapted during the consultation. However, no environmental assessment was required and no “appropriate” assessment of the nature conservation implications was carried out.

The nub of the successful challenge to planning permission for the development was that the approach adopted by the council to assess the planning application was inconsistent and irrational. Although it maintained there was no significant risk that pollutants would enter the river, the council had imposed a number of conditions in the planning permission requiring river water quality to be monitored and, if necessary, steps to be taken to improve water quality if it deteriorated as a result of activities from the proposed development. The judge quashed the planning decision because it was not rationally possible to impose conditions which pointed to a risk of contamination but, at the same time, adopt the view that there was no relevant risk of pollution.

Logical as it is, the decision feels wrong in practical terms. Conditions of the sort

imposed by the council in this case are a useful fallback in the event that a risk, which, while unlikely, comes about. The fact that I insure my house against being struck by lightning does not necessarily imply that I think this is likely.

In *Feeney v Secretary of state for transport* [2013] EWHC 1238, however, the court took a different attitude from the court in *Champion*. The case concerned a challenge to an order authorising a new length of railway line, which passed near a lowland hay meadow SAC. Objectors argued there was a risk of nitrogen oxides from the project affecting that habitat. On the advice of Natural England, a condition was imposed requiring further survey work, and then implementation of mitigating measures if necessary.

The inspector and secretary of state both concluded that there would be no likely significant effect on the SAC. That decision was challenged on the ground that the existence of the condition showed that the secretary of state could not have been certain there would be no possible significant adverse effects.

Justice Ouseley found that the decision-maker was obliged to take account of such mitigation measures as part of the screening process, and that the purpose of the condition was to deal with the range of uncertainty between no harm at all and harm that was unlikely. In other words, it was not irrational to conclude on the basis of baseline predictive data that there was no likelihood of significant effects, but to continue to monitor the actual operation to ascertain whether it gave rise to effects and, if necessary, implement mitigation measures. The judge referred to the evidence by Natural England that there was no reason to believe that the tried and tested management measures proposed would not be effective.

There is obviously some element of tension between the two decisions. However, *Feeney* seems to align better with the realities of assessing projects. There can be a good degree of certainty

that proposed mitigation measures would work, but still a rationale for post-implementation monitoring and mitigation if necessary.

The fact is that, until a project is built and operational, there is going to be some degree of uncertainty about its effects. The conditions imposed in *Feeney* are a pragmatic solution, and one that accords with good practice. To place authorities in a dilemma of not being able to impose such conditions for fear of being held to have acted irrationally seems to turn the process into a “legal obstacle course” which the courts have said it should not be.

This is of course subject to the caveat that later surveys cannot legitimately be used as a means of circumventing genuine uncertainty as to the effects of a project.

R (Champion) v North Norfolk District Council

In granting permission for an agricultural storage facility close to a site of special scientific interest (SSSI), North Norfolk District Council, following advice from Natural England, concluded an environmental impact assessment and a “habitats appropriate assessment” were not required since there was no risk of contamination. The council, nonetheless, imposed a condition on the planning permission, requiring water quality at the SSSI to be monitored and measures for remediation implemented if the river became contaminated. The High Court quashed the planning permission, describing the council’s approach as “inconsistent” and “irrational”.

Feeney v Secretary of state for transport

Court ruled that the planning condition included in the consent for work on a railway line was sufficient to prevent future damage to a nearby special area of conservation. According to the ruling, the purpose of the condition was to assess and then eliminate any uncertainty surrounding the impact of the operation of the railway once the construction work was completed.

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Business models evolve

Paul Suff finds out how company strategies are changing to become more sustainable

A business model is simply how a company plans to generate revenue and make a profit from its operations. Essentially, the model is designed to deliver, create and capture value. Through its classic “bait and hook” business model, for example, Gillette sold its razor holder cheaply, making most of its money from customers’ subsequent purchases of new razor blades. It is an approach more recently copied by printer manufacturers, whose relatively cheap home printers require consumables that are generally at least as costly. Bait and hook is an example of the so-called “take, make, discard” linear approach to business, whereby raw materials are extracted to be turned into a product which, at the end of its life, is going to be sent to landfill or incinerated.

This kind of throwaway society and accompanying business model is no longer viable. As demand for goods and services escalates from a booming global population and as natural resources become ever scarcer, forcing up costs, many companies are searching for a new way of operating: one that is better for the environment, society and the company. Step forward the sustainable business model.

A change is going to come

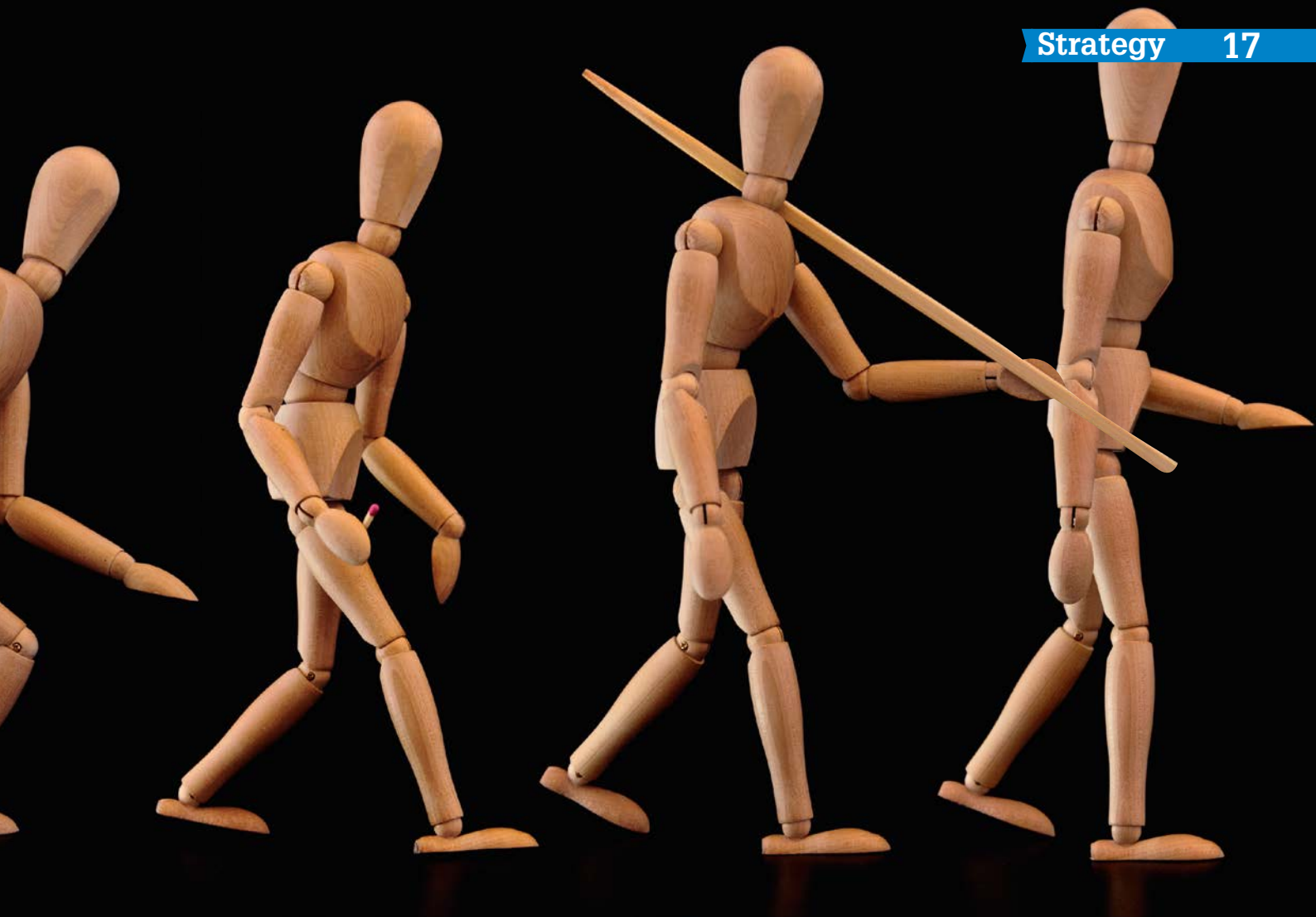
Plan A, the business model Marks & Spencer is pursuing to realise its goal to be the world’s most sustainable major retailer, is a high-profile example of a company changing how it operates to address new realities. In January 2007, when the high-street retailer launched

the 100 point plan (since expanded) setting 2012 targets for its carbon emissions, waste to landfill and supply chain, the then chief executive, Stuart Rose, proclaimed: “We believe a responsible business can be a profitable business. We are calling this ‘Plan A’ because there is no ‘plan b’. Marks & Spencer will change beyond recognition the way it operates over the next five years.”

Plan A is the retailer’s response to growing pressure on finite resources brought about by the rising global population and expanding consumption-based middle class in countries like Brazil, China and India.

M&S says other factors, including the impact of climate change, greater scrutiny of business behaviour through social media and customers’ desire for options that help them become more sustainable, will exacerbate the strain on natural resources. Climate change, for example, is likely to reduce the availability of raw materials, as extreme weather events affect international supply chains.

According to M&S, these pressures pose both risks and opportunities, and will mean existing business models are disrupted by sustainability for the first time. “Our use of the word ‘disruption’ highlights just how crucial we believe the business case for sustainability will become. In the short term, the business case will be about insulating business from short-term cost pressures; in the longer term, a more sophisticated business case is likely to emerge, predicated on opportunity, innovation and new revenue streams,” stated a 2012 report from M&S entitled *The key lessons from the Plan A business case*.



Commercial carpet tile manufacturer Interface has been on a journey towards sustainability for a number of years. The company's founder, Ray Anderson, developed a new business model in the mid-1990s, which he described as being "for the prototypical company of the 21st century". It places sustainability at its heart and takes nature as its inspiration.

According to the Interface model, nature has some fundamental operating principles: it runs on sunlight and other renewable-energy sources; fits form to function; recycles everything and is extremely efficient – never creating excess or wasting; and rewards cooperation. Anderson translated these principles into his business model. Nigel Stansfield, vice president and chief innovation officer at Interface, explains that the firm is working towards becoming the first fully sustainable company by 2020. "Our Mission Zero is about having zero negative impact," he says. "That's about ensuring there are no negative effects from our people, process or products. It's also about going further, to be restorative, putting back more than we take out from the environment and the community."

In June, BT, another firm with a tradition of embracing sustainability earlier than most, unveiled its "Net Good" strategy, which is focused on helping society live within the constraints of Earth's resources through the telecom company's products and services. "A growing global population means greater demand for the world's resources, some of which are finite. Doing less harm to the environment is no longer good enough. We want to be a force for 'net good'," states BT.

Net Good is part of BT's "Our better future" programme, which, according to chief sustainability officer Niall Dunne, signals the firm's evolution to a new business model. It is a model, says Dunne, requiring every part of the business and every employee to play a part in realising BT's vision and achieving its goals to create a better business with a better future.

Under its Net Good model, BT has set itself a 2020 goal to assist its customers in reducing their total carbon footprint by at least three times the "end-to-end" CO₂ impact of its business. "End-to-end emissions encompass not only our operational emissions, but those from our entire supply chain, as well as those from the equipment we supply to our customers," explains Kevin Moss, programme director for Net Good. "We design and install the equipment, and we believe you can't provide a solution without taking responsibility for its carbon footprint." Overall, BT's operations account for 8% of its end-to-end emissions, with suppliers contributing 64% and customers 28%. The firm plans to work with its customers to reduce their emissions through greater use of video conferencing technology and more flexible working arrangements. BT will also roll out less resource-intensive products.

Dax Lovegrove, head of business and industry at WWF UK, identifies BT as a good example of a firm trying to be "net positive", which he defines as generating new social and environmental benefits across the value chain that far outweigh the company's entire footprint. "BT's Net Good is about being climate positive. Others, such as Kingfisher, which owns DIY chains B&Q and Castorama,

Doing less harm to the environment is no longer good enough. We want to be a force for 'net good'.

What makes a sustainable business model?

According to David Bent at Forum for the Future, a business model can only be sustainable if it meets the following criteria:

- **Commercial success** – The proposition must be valuable to the customer and deliver a profit to the company.
- **Future ready** – It must be able to succeed in a world of rising, volatile energy and commodity prices.
- **A sustainable society** – It is not possible to be a sustainable business in an unsustainable economy. All business models rely on particular external conditions; to be called sustainable, those conditions must match with a thriving economy that is delivering social progress within environmental limits. Businesses should ask, for example, if their business model enables absolute decoupling of economic growth from environmental damage? Does it rely on nature providing materials or services for free? And does it rely on unfair terms of trade?

Business models can be executed in different ways, so business strategy matters too. Companies need to know how they will be competitive and how they will create the required conditions to be part of a sustainable society.

are pursuing a net positive model that includes being 'forest positive' – not just preventing deforestation but working towards reforestation," he says.

Less resource hungry

Net positive is one example of an emerging sustainable business model, but Lovegrove also highlights others, including the sharing economy, which unlocks the value of idle goods and reduces the need to actually

own things, and the circular economy, which focuses on eliminating waste by maximising reusability and minimising value destruction of products and natural resources.

Both approaches aim to tackle head on the depletion of natural resources, which WWF's

2012 *Living planet* report revealed was accelerating. The study found that humans were using 50% more resources than the Earth could provide and that by 2030 even two planets will not be sufficient to satisfy demand.

"An increasing number of companies are experimenting with hiring and leasing their products, rather than customers having outright ownership," says Lovegrove. He cites BMW's "DriveNow" carsharing venture and Philips' "pay per lux" rental lighting option to illustrate how manufacturers are exploring new ways to enable customers to access their products.

DriveNow is available in four German cities and San Francisco and allows drivers to rent BMWi and Mini vehicles by the minute. "BMW is not

simply an automobile manufacturer. There is a growing demand for flexible mobility products in urban areas," said board member Ian Robertson at the launch of the service in 2011. BMW is now planning to expand the DriveNow operation to more European cities and other countries. Pay per lux is a new greener business model created by Philips, which the company has trialled in Dutch firms, such as Amsterdam-based architects RAU. It provides energy-saving, state-of-the-art lighting systems without any capital expenditure. Philips retains ownership and maintenance of the lighting after installation, with the customer paying only for the amount of light emitted. This encourages the deployment of energy-efficient products and advanced lighting controls, says Philips.

Kingfisher chief executive Ian Cheshire believes more companies will adopt such models as the current linear system becomes increasingly unsustainable. In 2011, he told a conference that B&Q was examining how it might shift from selling items such as power drills to selling the use of a drill, perhaps through leasing or fractional ownership. "The other possibility is to redesign products in a cradle-to-cradle context, so we run the whole recycling loop, making our value-add from controlling the materials in the product rather than a one-time fire and forget sale."

Pay per lux is an example of such an approach, with Philips retaining control of the resources used in installed lighting equipment, raising the likelihood that they will be reused in its future products and helping to bring the circular economy into reality. According to chief executive Frans van Houten: "For a sustainable world, the transition from a linear to a circular economy is a necessary boundary condition. A circular economy requires innovation in the areas of material, component and product reuse, as well as related business models."

Other companies are similarly seeking to develop circular-economy solutions. Caterpillar, the manufacturer of earth-moving equipment, has established a remanufacturing programme – called Cat Reman – based on an exchange system whereby customers return a used component in return for a remanufactured one. Far fewer resources are consumed to remanufacture a component than to build a completely new one, confirms Caterpillar, adding that: "Through remanufacturing, we make one of the greatest contributions to sustainable development – keeping non-renewable resources in circulation for multiple lifetimes."

Shipping company Maersk has just taken delivery of the first of 20 Triple E vessels, the largest container ships in the world. Each ship comes with its own "cradle-to-cradle passport" containing details of the different types of steel and other metals used to build it. The passport will ensure that when a Triple E comes



to the end of its life, recycling its 60,000 tonnes of steel can be done in a way that preserves the quality of the material. "All 'old' ships are recycled but in most cases the different steels are often mixed in the process, which means the quality suffers and new iron ore has to be added when it is reused," says Jacob Sterling, head of environment and corporate social responsibility at Maersk. "The idea behind the passport, which mirrors a similar system used by automotive manufacturers, is that all the materials used to build the ship are documented for recycling purposes so we can better manage global resources."

Meanwhile, a key feature of Mission Zero at Interface is to eliminate the need to manufacture carpet tiles from new raw materials. Stansfield says achieving this objective rests on redesigning processes and products so that all the resources used can be recovered and reused.

"We aim for a 'cyclical' process, which we refer to as 'closing the loop'," says Stansfield, explaining that the process is two-pronged, returning material either to the Earth or to its operations to produce new carpet.

It is a business model that has seen an increasing amount of Interface products made from recycled or bio-based content – 49% of total raw materials in 2012 up from just 1% in 1996. The company's ReEntry programme, which collects any carpet being replaced by an Interface product, has been running since 1995 and has so far diverted 121,000 tonnes of carpet from landfill.

ReEntry has recently been upgraded following an innovation that separates yarn from carpet tile backing, ensuring each component retains its material value and can be more easily reused to manufacture new tiles.

Interface has not limited its recycling activities to carpet, however. "We are constantly expanding ReEntry to take in other waste streams than can provide us with raw materials," says Stansfield. For example, the carpet tile manufacturer has been working with one of its key suppliers, the Italian firm Aquafil, to collect unwanted fishing nets from around the world, as the nylon used in the nets is the same that Interface uses for its carpet tiles.

Stansfield says the project has numerous benefits aside from being a source of material for its products, including providing an additional income to fishing communities in developing countries, and stopping nets being discarded in the sea and posing a hazard to the marine environment. Aquafil has built a regeneration plant in Slovenia to turn the nets – plus fluff (the top of carpets and rugs), rigid textiles and pre-consumer waste, such as carpet scraps – into nylon 6.

Clothing retailers are also embracing the recycling of materials, albeit tentatively. Mike Barry, head of sustainable business at Marks & Spencer, describes the launch last year of its clothes recycling initiative, "shwopping", as a new business model for M&S. Donated or shwopped clothes are given to Oxfam to

resell. Unsold garments are recycled, with high-quality material made into new fabric and low-quality cloth used for things like loft insulation or car seat filling. "The aim of the initiative is to dramatically reduce the 1 billion items of clothing that get sent to landfill in the UK each year," he says. Recently, M&S launched a limited edition coat made entirely from recycled fabric. The "shwop coat" costs half the price it would have had it been made from virgin wool.

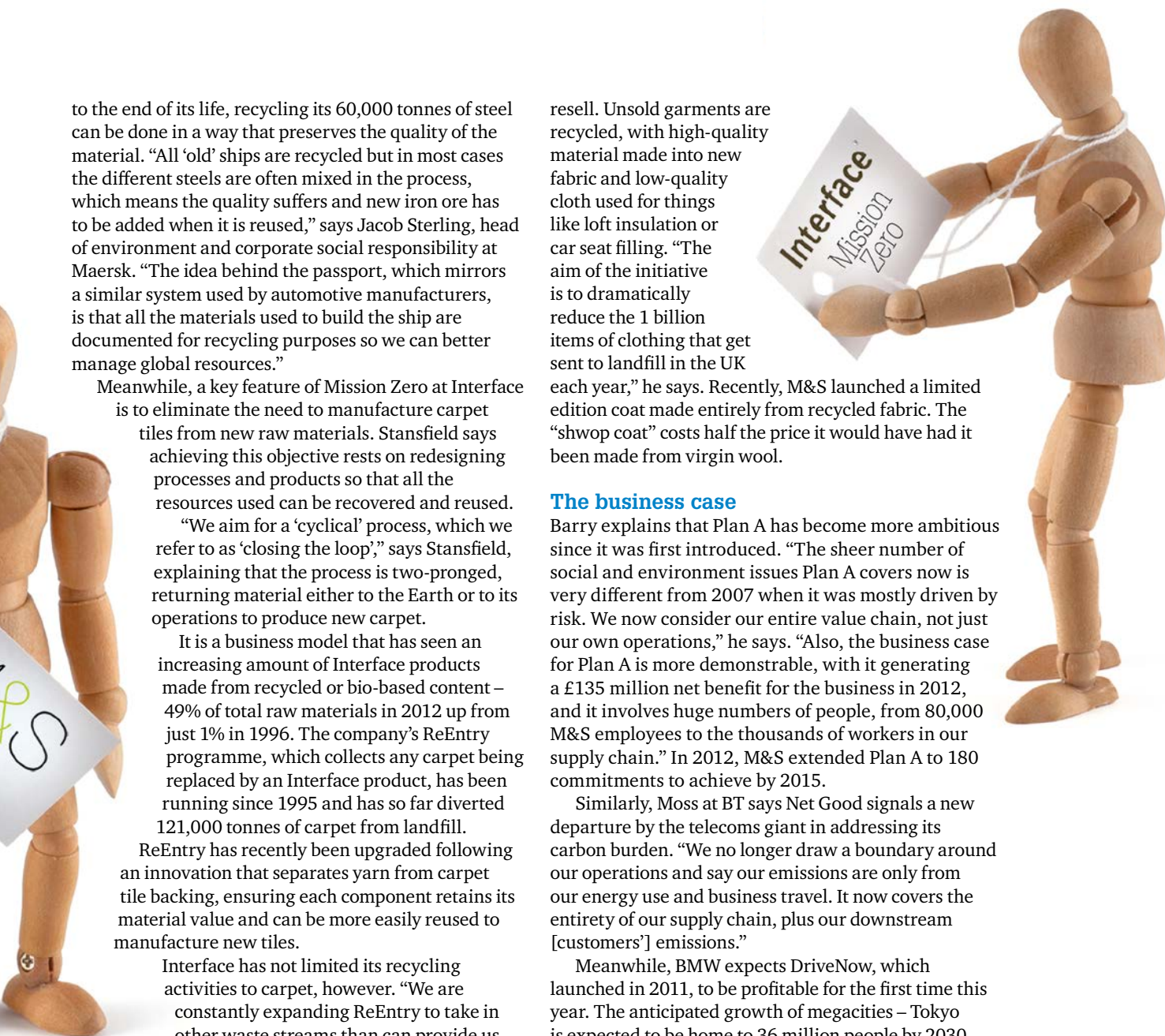
The business case

Barry explains that Plan A has become more ambitious since it was first introduced. "The sheer number of social and environment issues Plan A covers now is very different from 2007 when it was mostly driven by risk. We now consider our entire value chain, not just our own operations," he says. "Also, the business case for Plan A is more demonstrable, with it generating a £135 million net benefit for the business in 2012, and it involves huge numbers of people, from 80,000 M&S employees to the thousands of workers in our supply chain." In 2012, M&S extended Plan A to 180 commitments to achieve by 2015.

Similarly, Moss at BT says Net Good signals a new departure by the telecoms giant in addressing its carbon burden. "We no longer draw a boundary around our operations and say our emissions are only from our energy use and business travel. It now covers the entirety of our supply chain, plus our downstream [customers'] emissions."

Meanwhile, BMW expects DriveNow, which launched in 2011, to be profitable for the first time this year. The anticipated growth of megacities – Tokyo is expected to be home to 36 million people by 2030 – will make such alternative mobility solutions more attractive to conventional car companies. Analysts Frost & Sullivan have forecast a big expansion in carsharing, with three million people worldwide participating in 2013, rising to 26.2 million by 2020. Other major automotive manufacturers, including Daimler (Car2Go) and Peugeot (Mu), have already established similar carsharing business models.

As pressure grows to reduce resource use, more companies will have to follow the examples set by BT, BMW, Marks & Spencer and Interface, and adopt business models designed to use materials more effectively and change consumption patterns. Ultimately, such models must decouple growth from environmental impact if businesses are to survive and prosper. In the words of Unilever's chief executive, Paul Polman, as he launched the firm's sustainable living plan in 2010: "Growth at any price is not viable. We have to develop new ways of doing business which will ensure that our growth does not come at the expense of the world's diminishing natural resources."



Completing a virtuous circle

Turning packaging into building materials is helping the John Lewis Partnership close the loop on plastics

In the not too distant future, new John Lewis and Waitrose stores will be constructed in part from plastic planks and sheets made from packaging waste collected from across the group. This is the long-term aim of the John Lewis Partnership's (JLP) closed-loop strategy on plastic, which guarantees thousands of tonnes of waste from its supermarkets and shops are recycled into usable products.

JLP is working with Liverpool-based recycler Centriforce to implement this pioneering closed-loop plan, which is part of the retailer's strategy to streamline its waste contractors and keep complete control and responsibility for its waste flows – ensuring as much as possible is recycled.

As Mike Walters, recycling and waste operations manager for the partnership, says: "We're on a mission to have ownership of our waste streams; most of our recycling used to leave our stores and it was impossible to retain responsibility for it. JLP wants to know what happens to the business waste it generates and to recycle as much as possible for future use. We are committed to keeping ownership of our waste all the way to its final destination."

He also points out that the business case for reducing waste to landfill is getting stronger. "Commercially, there is a very straightforward way of thinking about this – every tonne of waste buried in landfill costs us more than £100, and this increases every year."

Streamlining waste

Each year, JLP generates more than 60,000 tonnes of waste from its operations – which include 39 John Lewis stores and 293 Waitrose outlets – and places 130,000 tonnes of packaging on the market. By the end of this year, the group aims to be diverting 95% of its operational waste from landfill, having achieved a diversion rate of 92% in 2012, and recycling 74% of all its operational waste.

Plastic is not the first waste stream for which the retailer has adopted a "closed-loop" recycling approach: it has been recycling paper and cardboard for years, and has developed an innovative way of

recycling problematic waste streams, such as the bulky polystyrene blocks used to protect electrical goods in transit. JLP uses the available space in its delivery trucks on their return journeys to distribution centres to backhaul the polystyrene. This tricky waste stream is then fed into briquette machines and recycled into polystyrene chippings for use as packaging protection.

Since 2012, the partnership has worked with just five key waste companies, having previously used a large number of waste contractors to manage its waste streams. Walters says this more rationalised procurement approach is an integral part of the partnership's commitment to retaining control over its waste streams. "We even want to keep responsibility for the non-recyclable contamination element of our waste," he says. "Working closely with a small number of UK-based contractors enables us to achieve real transparency over the waste and recycling process."

From start to finish

Centriforce (see panel, p.22) has the capacity to recycle more than 20,000 tonnes of plastic waste each year into plastic sheets, boards and other second-life products. It is one of the few UK recyclers to develop an in-house capability for sorting mixed plastics, recognising the need "to contribute to a more robust infrastructure for plastics recycling in the UK".

JLP has eight collection points, including its four distribution centres, from which the waste plastic is transferred to Centriforce. Each year, the partnership backhauls around 3,000 tonnes of plastic waste, primarily from product deliveries, offices and secondary





packaging, to these collection points from across the country. It has onsite bailers to crush the mixed plastic into bales before removal to Centriforce in 25-tonne batches on large, curtain-sided trailers.

"There is a high degree of transparency and I can visit the [Centriforce] plant in Liverpool and see our waste being sorted into soft and hard plastics recycling streams and know first hand that any contamination is being processed properly on the conveyor belt," says Walters. "This means that I can have a high degree of confidence in the sorting process."

"I can then watch the plastic waste drop into huge vats and come off the other end in the form of reusable products, such as plastic planks – that is a satisfying and sustainable end to the process."

Walters also has a high level of assurance in the transparency of the process when it comes to monitoring the recycling performance of Centriforce in relation to JLP's waste plastic. Walters receives a monthly breakdown of the plastics collected from JLP outlets and recycled by the waste contractor.

The datasheets provide detailed calculations for each collection point, including the types of plastic sorted and the level of contamination. For example, from one depot in April 2013, Centriforce received 155 tonnes of plastic waste, of which 81.3% comprised plastic film, with the remainder being other plastics and miscellaneous contamination.

Sitting comfortably

Although the retailer's closed-loop plastics recycling contract with Centriforce is relatively new, there

are already imaginative examples of how John Lewis stores and Waitrose supermarkets are reusing the second-life products manufactured from the waste. One example is a new walkway at an ancient woodland in the middle of a 74 acre industrial site that was discovered by workers at the Waitrose head office in Bracknell.

Staff from the supermarket business volunteered to lay the 1,750 plastic planks produced by Centriforce through the protected Wild Riding copse to erect a 268 metre boardwalk. The planks in the raised walkway were manufactured from 20 tonnes of high-density polyethylene post-consumer waste and now allow the site's 2,400 Waitrose workers to enjoy woodland walks all year round. Further work is planned to clear small parts of the woodland and build platform areas – using more recycled materials – with seating for picnics or meetings.

Another visible example of the closed-loop strategy can be seen outside many Waitrose stores across the country, in the form of the durable benches produced by Centriforce from the thousands of tonnes of plastics waste it recycles from JLP each year (pictured above). Having such a visible illustration of the partnership's commitment to reusing as much as possible of its own waste sends a strong signal to customers and staff that it is serious about implementing its environmental principles, according to Walters.

He also argues that because JLP staff are "partners" – they all have a stake in the business and share in its profits – the organisation is effectively pushing at an open door when it comes to gaining employee buy-in



Mike Walters (left), recycling and waste manager at JLP, with Simon Carroll, managing director at Centriforce

for implementing such schemes, as well as for its overall sustainability strategy.

Despite the support the organisation has for its environmental initiatives from its 84,700 strong workforce, JLP has introduced a straightforward recycling policy across all of its stores and offices, with five recycling bins for different waste streams, including just one bin for all plastics.

"We can't make it too onerous for the partners in JLP to recycle on a day-to-day basis or we risk a greater level of contamination at a later stage of the process," comments Walters. "But we do rely on the commitment of every partner to feed the recycling process as responsibly as possible."

JLP's aim to reuse its waste plastic as second-life products in its business is a long-term one. The partnership is currently exploring further potential ways it can use Centriforce products made from its recycled waste. For example, Walters recently accompanied the architects responsible for designing new John Lewis and Waitrose stores on field trips, to assess ways of integrating second-generation plastic materials, such as planks and sheeting, into the retailer's new store construction programmes.

The partnership's ultimate goal is to reuse every scrap of its waste plastic, and Walters believes that JLP has the determination and the correct strategy in place to achieve that target.

Plastics recycling at Centriforce

Centriforce is an independent producer of recycled plastic products, including sheeting and profiles. Established more than 35 years ago, the company has grown to become the UK's largest independent recycler of plastic waste, using the material to create sustainable, second-life products.

Operating from a six acre recycling plant in Liverpool, Centriforce can process more than 20,000 tonnes of material a year. Its "closed-loop" recycling solutions are helping the John Lewis Partnership and other firms, including Balfour Beatty Utility Solutions, to manage waste plastic more effectively.

Plastics are largely derived from oil and so it is important to treat the material as a precious resource rather than a nuisance in the waste stream, according to Centriforce. Plastics can normally be recycled several times. According to the British Plastics Federation, the UK uses more than 5 million tonnes of plastic each year, of which an estimated 24% is currently being recovered or recycled. Centriforce estimates that the UK currently exports an estimated 790,000 tonnes of plastics for recycling overseas. This equates to more than 70 containers of scrap plastic being shipped every day.

Some Centriforce recycled plastic products are used in the form they come off its production lines, while others are further processed or fabricated

into a variety of end-use products. Most Centriforce products can be put to use in a similar way to traditional materials such as plywood, timber, steel and even aluminium.

For example, Centriforce has supplied the agriculture market for 30 years with recycled plastic sheeting for use as chicken coops, cattle feeders, pig housing and stables.

Other varied applications for Centriforce's recycled plastic products include:

- **packaging** – vegetable boxes made from recycled high-density polyethylene planks and recycled plastic timber profiles, which are widely used as protection strips within boxes to protect goods;
- **construction** – recycled plastic sheeting is a durable alternative to plywood and timber and is widely used in the construction sector, for example as signage, ground protection boards and wall cladding;
- **utilities** – recycled plastic sheeting is used as cable protection covers; and
- **land management** – recycled plastic timber profiles are used extensively in land management projects, including by zoos and for river paths. Uses include recycled plastic decking and fencing and pond-dipping platforms.

centriforce.com

Bringing resources back

Stella Consonni reports on legislation that aims to create a circular economy in Brazil

Brazil is the largest country in South America, with a population of around 195 million. It has massive potential in terms of natural resources and is one of the fastest growing economies in the world. However, it has many national issues that need to be tackled and one of these is waste.

In 2011, Brazil generated about 62 million tonnes of solid waste and, while most European countries have reduced the quantity of residual waste through prevention and minimisation strategies, the Brazilian figures confirm an annual increase of 1.8%. More than two-thirds of waste originates from two regions, the South East and the North East, where much of the population is concentrated. Only 14% of the cities – 780 out of 5,565 – offer collection of dry recyclables.

The average cost of recyclable collections is £143 per tonne, around 4.5 times higher than that of standard waste collections. According to Silvano Silvério, director at the ministry of the environment, Brazil wastes at least 8 billion reais (R\$), £2.7 billion, each year through not having the appropriate infrastructure for recycling.

Legalising waste

Brazil's first national waste management legislation – Política Nacional de Resíduos Sólidos (PNRS) – came into force at the end of 2010. Its fundamental objective is to prioritise a national integrated waste management system under the principle of shared responsibility, with reverse logistics the key instrument to achieve that aim.

Meanwhile, states and municipalities are obliged to develop their own waste management plans. The PNRS also requires the inclusion of catadores (individuals who hand collect recyclables, such as paper, plastic and metal cans) and cooperatives (warehouses subsidised by local authorities where catadores bring their waste to separate the materials and sell them) in the reverse logistics systems, which are designed to return waste materials to manufacturers as secondary raw materials.

Brazil has an abundance of labour, but a large proportion has no qualifications, so waste picking provides an income for many. With the support of the

government, many catadores have been organising themselves into cooperatives and receiving training. As a result, they are now obtaining appropriate qualifications and bringing social benefits to the country, alongside economic and environmental benefits from the development of reverse logistics systems. These are the key reasons for the PNRS' requirement to include catadores in waste management strategies.

Rather than simply focusing on recycling, the PNRS goes further, aiming for a circular economy. Reverse logistics provide incentives to return waste materials to industry for reuse. When this is not feasible, waste must be disposed of appropriately. Soon after the PNRS came into force, the steering committee for the implementation of reverse logistics was established, which has since developed five technical working groups – made up of representatives from major retailers, waste producers and recyclers – to design sector agreements (see figure p.24). These set conditions, targets and obligations for retailers, manufacturers and importers to support the implementation of reverse logistics strategies in, for example, the packaging industry and for waste electrical and electronic equipment (WEEE).

Packing a punch

Total sales of domestically produced packaging were valued at approximately R\$47 billion (around £16 billion) in 2012; an increase of around 3% from 2011. Plastics represented the highest proportion, accounting for more than 37% of the total; followed by paper and card at around 34.5%; metals at 17%; and glass at 5%. The Brazilian packaging industry expects further growth this year, with overall production predicted to rise another 2%.

The Ciclossoft 2012 waste collection survey by Compromisso Empresarial Para Reciclagem (Cempre) revealed the average proportion of dry recyclables materials collected in 2011. The highest proportion was paper/cardboard (approximately 46%), plastic (16%, including polyethylene terephthalate – PET), glass (9%), ferrous metal (6%), cartons (3%), aluminium (1%) and

£2.7bn
is wasted each
year as a result
of Brazil's
poor recycling
infrastructure



electronics (0.5%). Rejected materials sent to landfill totalled about 17%. The report also breaks down the different types of plastic collected, showing that PET accounted for the highest proportion (more than 30%), followed by mixed plastics (over 20%), high-density polyethylene (16%), polypropylene (15%), low-density polyethylene (7.5%) and polystyrene (less than 3%).

The introduction of the PNRS followed a steady increase in recycling levels, particularly of post-consumer packaging materials. A recent study for Plativida (the socio-environmental institute for plastics) reported that more than 20% of post-consumer plastic waste (excluding PET) was recycled in 2011. This was an 8% increase on 2010 levels and brought the weight of post-consumer plastics being recycled up to 1 million tonnes.

With the PNRS demanding the implementation of reverse logistics systems for post-consumer packaging, Brazil's collection and recycling infrastructure can only improve. It is reasonable therefore to expect that the levels of packaging materials being recycled will increase. Space for growth and improvement to the collection and recycling infrastructure certainly exists. There are currently around 815 plastic recyclers in Brazil; however, the Plativida study found that only about 20% have appropriate registration/certification in place, and that more than one-third (37%) of capacity is idle.

Consumer packaging

The draft post-consumer packaging (non-hazardous) sector agreement – which the environment ministry issued for consultation last year and is expected

to finalise shortly – emphasises a progressive implementation of reverse logistic systems. It focuses on tackling the amount of dry recyclables being sent to landfill through legally-binding targets: a 22% reduction in recyclable waste sent to landfill in 2015 against a 2012 baseline, rising to a 45% cut in 2031.

The draft gives priority to urban areas and the 11 cities hosting next year's World Cup. In its response to the consultation, Cempre, whose 40 members include major organisations such as McDonald's, Nestlé, Philips, P&G and Unilever, went further and proposed the following minimum requirements:

- up to 2015 – increase the recovery rate of dry recyclable waste by 20% against 2012 levels; reduce the amount sent to landfill by 22%; and establish collection facilities covering 90% of the population in the World Cup host cities; and
- post 2015 – reduce the level of municipal solid waste going to landfill by 45%.

To improve Brazil's collection infrastructure and material separation processes, Cempre proposes the expansion of "bring banks", which are available throughout the country. Under the plans, all retailers with 4,000m² or more of shopfloor space and with at least 115 parking spaces must provide a minimum of 4m² of bring banks. "The expansion of bring banks is crucial to increase the levels of dry recyclables collected. The Ciclosort report found that around 53% of the population disposed of their packaging via bring banks in 2012," says Cempre president, Victor Bicca.

Cempre also wants responsibility for the collection and separation of many recyclable materials to be given to catadores and the cooperatives, with finance provided by local authorities or private firms to buy machinery, such as conveyor belts and balers, to optimise material separation processes.

Mandatory shared responsibility and reverse logistics for local authorities, retailers, producers and importers are the instruments Brazil is relying on to improve the existing recycling infrastructure. Raising awareness of the opportunities that a reverse logistic system can bring for all businesses is therefore key.

"To develop a reverse logistics operation, investment is required, but most organisations see it as prohibitively expensive. It is a continuous and difficult process to prove to them that the return of a product back into the manufacturing process is a benefit to their own industry and the country's economy," comments Chicko Souza at WasteWise, a Brazilian recycling organisation.

Wasted electronics

The manufacture in Brazil of electrical and electronic equipment (EEE) is a large and growing sector

PNRS system

PNRS

Reverse logistics working groups

WEEE	Packaging	Waste oils and packaging	Lamps	Medical waste
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Sector agreements

Objectives, requirements, targets, logistics, treatment and obligations are set for each sector

Retailers, wholesalers, waste producers, importers and local authorities are obligated to implement reverse logistics based on the relevant sector agreement (shared responsibility)



of the economy, and most goods are for domestic consumption. It is estimated that by 2014 there will be more than 1 million tonnes a year of WEEE (excluding lamps) in the country; over 50% of this will be large domestic appliances, including cooling equipment. This tonnage is forecast to increase by around 25% in the following three years, at which point it should reach its peak. It is then predicted to plateau and decline slightly by 2020.

A final sector agreement for WEEE is expected by September 2013, when obligations and targets for key players will be set. The first draft of the WEEE agreement has already established key minimum requirements for the reverse logistics strategies. These cover the first five years of the agreement and include:

- 17% (by weight) of the amount of EEE placed in the market the previous year must be collected and put back into the industry, or appropriately disposed of when reverse logistics is not possible;
- all cities with a population of more than 80,000 (around 350 cities in total) must provide permanent bring banks, with a ratio of at least 1:25,000 people. This equates to a minimum of 4,000 bring banks across the country; and
- all cities with fewer than 80,000 residents must establish collection campaigns.

The WEEE reverse logistics arrangements are to be implemented and operated by a partnership of local authorities and WEEE retailers, manufacturers and importers. Their specific share of responsibility will be determined by the final agreement. Funding will go towards creating bring banks and establishing WEEE collection and treatment facilities.

Currently, the biggest problem for implementing a WEEE reverse logistics system in Brazil is the collection infrastructure. This is largely due to the geography of the country, which makes the transport of such waste very expensive – around 50% of the total WEEE processing cost. The lack of WEEE treatment sites is a cause for concern, as is the fact that many existing facilities operate under capacity, due to a gap in the collection infrastructure which prevents materials available in the waste stream from reaching the sites.

“Existing facilities are not sufficient to cover the demand. Also, they are concentrated in the South East and the North East regions, making logistics complex and expensive,” states a representative of one Brazilian disassembling company.

Growing optimism

Although sector specific PNRS agreements are not yet in place, around 60% of the 100 largest companies in Brazil have already started investing in and setting

up reverse logistic processes. Also, the waste industry is enthusiastic and optimistic, believing that reverse logistics has certainly “kicked off” following the introduction of PNRS.

Nonetheless, success will depend on further investment. “Although the PNRS has brought some improvement on the collection and separation of dry recyclables, making available a higher proportion of waste materials, the recycling infrastructure remains much the same,” says Souza at WasteWise.

Stella Consonni is a senior consultant at Valpak.

Reverse logistics in action

Some successful examples of packaging reverse logistics initiatives in Brazil include:

- **Paper and card** – Grupo Pão de Açúcar, a major Brazilian retailer, has engaged a paper mill (Papyrus) and some cooperatives to implement a reverse logistics programme (called Ciclo Verde) for its own-brand paper and card packaging. The programme started in 2008 and allows consumers to discard packaging at the point of purchase. Grupo Pão de Açúcar has since collected 4.4 million tonnes of paper and plastic packaging, and the volume is steadily increasing. Catadores and cooperatives collect and sort both pre-consumer packaging and post-consumer packaging from bring banks placed outside the retailer’s shops. The paper mill recycles the baled paper and card to produce materials which are used by Grupo Pão de Açúcar to package new products.
- **Polypropylene** – consumer goods company P&G works with WiseWaste, a Brazilian recycling organisation, on a reverse logistics programme to recycle post-consumer packaging. The programme began in 2012, and involves 10 cooperatives. They collect and sell post-consumer plastics packaging to WiseWaste. The plastics collected are recycled into pellets. These polypropylene pellets – the material used to produce caps for most P&G products – are then used in the manufacturing of supermarket displays to promote P&G goods.
- **Biaxially-oriented polypropylene (BOPP)** – BOPP film is commonly used in crisps packaging and is difficult to recycle. It is lightweight and its complex recyclability makes the implementation of reverse logistics systems almost impossible, which is why catadores have not collected it in the past. However, WiseWaste has designed a process to recycle BOPP. It has also introduced a programme to incentivise catadores to collect BOPP and for it to be separated and baled by cooperatives. The incentive was financial, with the cooperatives paid the same price for collecting crisps bags as they would be for cardboard. WiseWaste operated a three-month pilot in 2011, collecting a total of 136 tonnes of crisps bags – around 45 million units. These were recycled and manufactured into 8,000 plastic pallets, which were used by crisps producers to transport and distribute their products.



Getting climate ready

Defra has published its first national adaptation plan. **Lucie Ponting** looks at its contents and gauges reaction

Businesses, local authorities and communities that address the risks from climate change early can avoid the worst outcomes, remain competitive and even reap the benefits from the opportunities it will present. This is the central message and call to action in the government's much anticipated first national adaptation programme (NAP).

In setting out the case for adaptation, the 184 page document quotes statistics showing that 64% of UK businesses have suffered supply chain disruption due to extreme weather and 70% of major businesses and their suppliers see significant risk from climate change. But, despite acknowledging the degree of risk, only 40% of large businesses are acting to ensure they are ready to deal with the impact of climate change.

All the evidence suggests that extreme weather events – such as the flooding in late 2012 across large parts of the UK or the severe drought earlier that year – are likely to become more frequent and more acute, potentially disrupting the economy. The cost to the UK of floods in 2007, for example, was estimated at £3.2 billion. Damage to communications, transport and roads totalled £230 million, while the overall bill for affected businesses was estimated at £740 million – on average this was about £100,000 per company, with some taking up to 27 weeks to return to normal operating capacity.

“Reacting to current climate or extreme weather events is often expensive,” says the report. At the same time, economists have estimated that every £1 spent on adaptation could be worth four times as much in potential damages avoided. As well as avoiding damage and costs, there are also opportunities for organisations that are climate ready. The government claims the UK is already leading the way in the international market for adaptation goods and services, such as flood defence and climate modelling. According to the business department, globally this growing sector is valued at around £65.8 billion.

A vision for society

The NAP – a legal commitment in the Climate Change Act 2008 – is largely based on the 2012 climate change risk assessment (CCRA), which revealed that unless the government, businesses and communities adapt, the UK could incur significant costs and miss important opportunities.

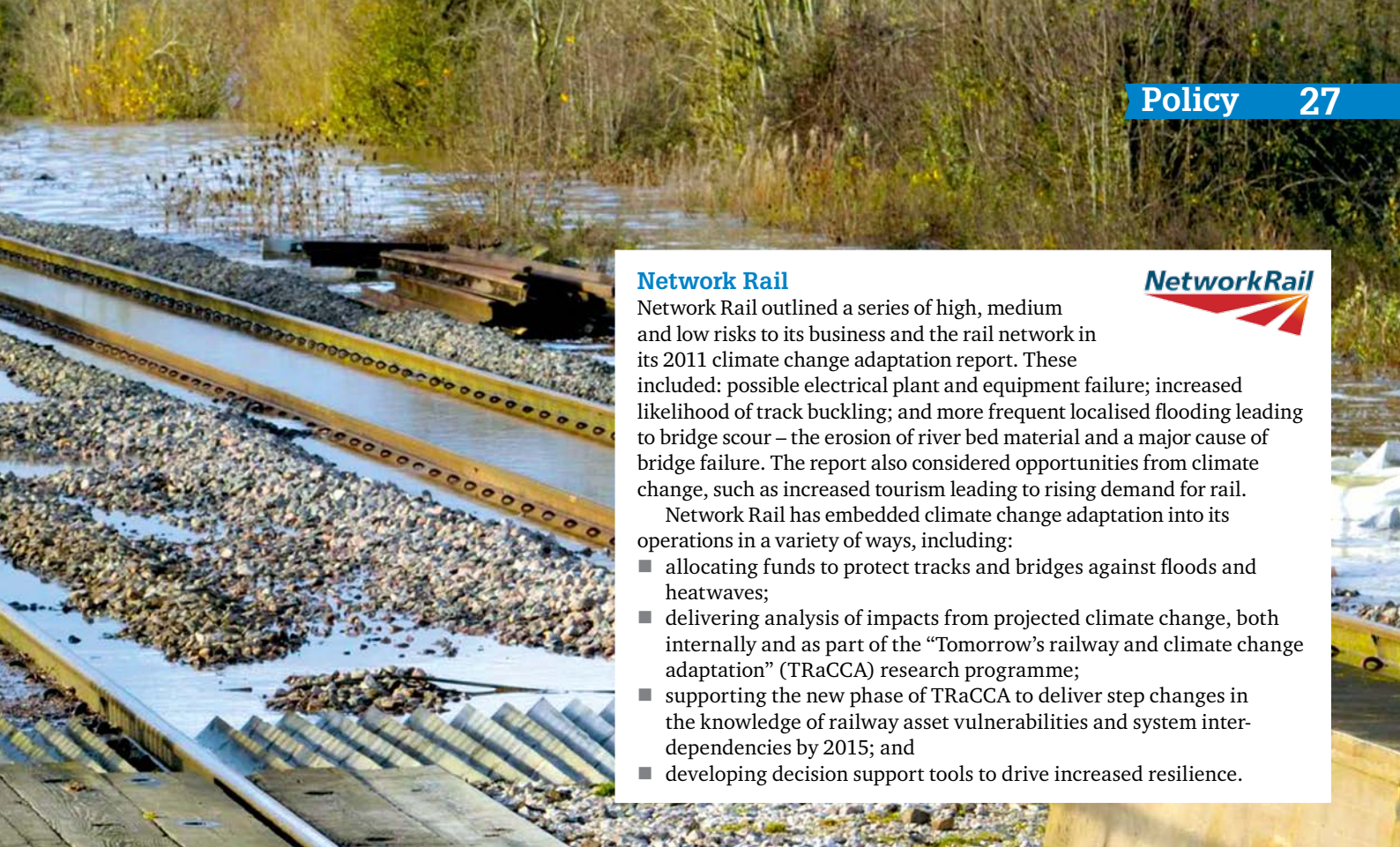
The programme's stated vision is: “A society which makes timely, far-sighted and well-informed decisions to address the risks and opportunities posed by a changing climate.” To achieve this, the report outlines 31 objectives across seven themes: built environment; infrastructure; healthy and resilient communities; agriculture and forestry; natural environment; business; and local government. The NAP mainly applies to England (the devolved administrations are developing their own plans – see panel, p.29), but also covers reserved, excepted and non-devolved matters.

Within the wider vision, each chapter sets out what is required to ensure a particular sector of the economy is sufficiently prepared, describing the risks highlighted by the CCRA and subsequent Defra consultations that require urgent attention. The 31 objectives cover four main areas: increasing awareness of current weather extremes; boosting the country's resilience to such events; taking timely action for long lead time measures; and addressing evidence gaps. As might be expected, the priority cross-cutting risks are generally associated with flooding, rising temperatures and increased pressure on water resources, as periods of intense rainfall alternate with drought.

Some measures, described as “low-regret actions” – increased water efficiency, business continuity plans, checking insurance policies and better understanding supply-chain risks – deliver benefits now and are feasible under virtually any future climate scenario. But other, long-term measures need to be flexible enough to respond to the changing nature of climate risks. For these, the report says, appraisal methods

64%

of UK firms have suffered supply chain disruption due to extreme weather



Network Rail



Network Rail outlined a series of high, medium and low risks to its business and the rail network in its 2011 climate change adaptation report. These included: possible electrical plant and equipment failure; increased likelihood of track buckling; and more frequent localised flooding leading to bridge scour – the erosion of river bed material and a major cause of bridge failure. The report also considered opportunities from climate change, such as increased tourism leading to rising demand for rail.

Network Rail has embedded climate change adaptation into its operations in a variety of ways, including:

- allocating funds to protect tracks and bridges against floods and heatwaves;
- delivering analysis of impacts from projected climate change, both internally and as part of the “Tomorrow’s railway and climate change adaptation” (TRaCCA) research programme;
- supporting the new phase of TRaCCA to deliver step changes in the knowledge of railway asset vulnerabilities and system inter-dependencies by 2015; and
- developing decision support tools to drive increased resilience.

such as real options analysis – a way of evaluating capital investment choices by taking the strategic decision-making process into consideration – can help decision makers weigh up long-term investment solutions when there is considerable uncertainty about the future. This helps to avoid the development of expensive facilities that later become inappropriate for the climactic conditions.

First steps

Throughout the NAP, the government sets out its role, recognising its critical contribution in providing support and advice. The NAP also says the government will ensure that the country’s infrastructure is designed and built to cope with extreme weather events and will seek to “build the resilience” of native species and habitats. However, the overall thrust of the programme, and its launch in particular, is to put the onus on the private and third sectors, local authorities and communities to act by recognising the risks and seizing opportunities.

This aspect has been criticised by some environment campaigners, who had hoped for a fuller line-up of well-funded initiatives. Guy Shrubsole at Friends of the Earth, for example, highlights that authority and responsibility for adaptation is being devolved to councils just as their budgets are being cut. The programme looks worryingly like the government is “washing its hands” of proper responsibility, he says, a view that was reinforced when Defra cut the headcount of its team working on climate adaptation from 38 in 2009/10 to just six people this year.

Shrubsole also notes that both the NAP and CCRA use the mid-level emissions scenario. “For a programme concerned with resilience and risk mitigation not to take serious account of higher emission scenarios seems to be a major oversight,” he says. “The job of adaptation here is also to look at the risks and what we need to plan for if we don’t actually achieve that level [of emissions reduction].”

Olly Watts, at the Royal Society for the Protection of Birds, focuses on the issue of resourcing. On the positive side, he believes the programme’s sections on the natural environment and agricultural and forestry set important principles, recognising the importance of biodiversity, landscapes and ecosystems to human wellbeing and economic prosperity.

He also welcomes the emphasis in the NAP on adaptation planning for nature, as well as the acknowledgment that there are significant opportunities for action in the natural environment to interact with benefits and actions in other sectors and vice versa – for example, using ecosystems-based adaptation to restore floodplains.

In Watts’ view, however, the NAP’s words are not backed up by new action or new funding – or even a commitment to review whether additional money might be needed – despite recent evidence of declining species and wildlife sites. “We’d hoped the NAP would highlight a bit more action and resources to support that action, but were disappointed,” he says.

With Defra also receiving one of the highest budget cuts (9.6%) in the recent government spending review, Watts says it is difficult to see how the department will be able to deliver the improvements called for in the NAP.

Living up to expectations

Roger Street, director of the UK climate impacts programme (UKCIP), acknowledges that some people may have hoped for more from the NAP. But he takes a longer-term view, pointing out that this is the first plan and part of a much broader five-year cycle of CCRA and further NAPs.

“There were a lot of high expectations of what was going to be in [the programme],” he says. “Does it do everything? No. But it was essential to get to the first step.” A lot of information has been put together for the first time, he adds, and although many people would have liked more, it was probably unrealistic to expect

£3.2bn
was the cost to
the UK economy
of the severe
floods during the
summer of 2007

Anglian Water

For Anglian Water, adaptation is about reducing the impact that changes in the climate will have on its business and the services it provides. The company states that adapting to a changing climate will involve altering its organisational systems and processes to take account of future risks and opportunities. Anglian Water has assessed the climate risks highlighted in the 2012 UK climate change risk assessment against its investment priorities, including topics such as:

- fluvial, pluvial and coastal flooding resilience and coastal erosion;
- supply demand (including water resources, metering and efficiency);
- integrated catchment management; and
- wastewater and water monitoring.

To embed adaptation across its business decisions, Anglian Water is specifically targeting its asset management processes so that adaptation considerations can be made in the whole asset planning, creation and maintenance cycle. In line with the NAP objectives on drainage and flood resilience, the company is working in partnership with local authorities on their growth plans, using tools such as water cycle studies (WCSs) and drainage plans to integrate water and spatial planning. More than 90% of councils in areas supplied by Anglian Water have carried out a WCS with support from the firm. The utilities company has also carried out extensive and detailed sewer modelling to inform the development of policy on sustainable flood risk reduction for the redevelopment of the centre of Northampton.



IEMA plays its part

IEMA has made a series of contributions to the development of the national adaptation programme, reports Nick Blyth, policy and practice lead at the Institute. These include:

Making the business case

IEMA has published new guidance on making the business case for climate change adaptation. The content is based on the views of members attending workshops or taking part in webinars, as well as interviews. Members contributed by sharing best practice and helping to build an overview of key decision-making opportunities, reports Blyth.

"Climate change adaptation is starting to feature across multiple business processes, from risk registers and organisational management systems, supply chains and procurement, through to sales, service delivery and product design," he says. "Environment and sustainability professionals are instrumental in helping organisations to understand and address varied climate change risks and opportunities. Our guidance has been directly informed by practitioners and will be an essential guide to others as they develop approaches to build resilient and sustainable organisations."

The guidance, which is supported by Defra, is available to download at lexisurl.com/iema16055.

Embedding adaptation

With more than 267,000 organisations certified already to ISO 14001, the current revision of the global standard for environment management systems is an opportunity to embed climate change adaptation into businesses, says

Blyth. IEMA is working to integrate climate change adaptation into 14001, seeking revisions that will clearly require organisations to address the impacts, risks and opportunities from a changing environment.

Environmental impact assessment

Although the revisions being made to the EU Environmental Impact Assessment (EIA) Directive are unlikely to come into force in the UK until 2016, IEMA has a programme of work that will ensure many of the UK's assessments consider climate change adaptation well before then. This work programme includes webinars on guidance from the European Commission on integrating climate change and biodiversity into EIAs and the strategic environmental assessment process, as well as publishing new climate change, biodiversity and EIA information pages and advice notes.

Adaptation and business resilience skills

IEMA is building adaptation and business resilience into the skills and competence requirements of environment and sustainability professionals. IEMA's environmental skills map, for example, includes reference to such areas, and the Institute is also incorporating requirements for these skills into its professional standards (Associate and Full membership).



an extensive, fully funded programme in the current economic and political context.

Street also points out that the NAP's approach is quite different to national plans in many other countries. "The way the programme is structured and looks to deliver adaptation is innovative, and seeing whether that is successful is very important," he says.

In 2015, the adaptation group at the independent committee on climate change is due to scrutinise the NAP. "We should get real insight into [the programme's] strengths and weaknesses," says Street. "If it's going in the wrong direction, there will be an opportunity to refocus it in future plans."

UKCIP is, however, concerned about the wording of programme's introduction, noting that it is "curious" that the NAP opens with a reference to "changeable weather", rather than the more robust assertion of the need to respond to the unavoidable impact of climate change. Street describes the choice of words as "questionable". Dealing with extreme weather events is only part of what the NAP needs to do. "That's not all climate change means," he stresses. "We need to build capability to deal with changes outside the extremes."

Up to you

The chapter devoted to business in the NAP is the least detailed in terms of government actions. Perhaps this is unsurprising given that the document notes clearly that: "It is up to businesses to decide individually what level of risk they can accept." Here, Defra is clearly focusing on raising awareness through developing and disseminating information and tools, rather than practical interventions.

"The government will encourage businesses to review their strategic frameworks and models, promote knowledge sharing in areas of good practice and target support for those sectors facing the highest risks or greatest barriers to adaptation," states the NAP. Help will be targeted at small and medium-sized enterprises (SMEs), so they better understand how climate change will impact their operations.

The Environment Agency's climate ready support service, which works in partnership with trade and professional bodies, is leading most of the government's work in this area. The programme notes also that the cabinet office has produced a guide for SMEs, *Business continuity for dummies*, and that work by IEMA (see panel, left) is helping to build capacity in businesses through increasing adaptation skills, professional competencies and the use of standards.

Andrew Brown, head of sustainability at Anglian Water, which is embedding adaptation across its business decisions and already acting in many of the areas specified in the programme, regards the NAP as an "important call to action", and an opportunity to raise the profile of the issues and challenges facing businesses and communities.

Like Street, he points out that while the NAP represents a snapshot at a point in time – a chance to look at what has and is being done, and the things to focus on in the future – it is also part of a rolling programme. "It's a live document that we all need to

Scotland adapts

The Scottish government is consulting on its draft climate change adaptation programme (lexisurl.com/iema16041), the development of which is required under section 53 of the Climate Change (Scotland) Act 2009. The consultation document points out that UK climate projections and the 2012 climate change risk assessment indicate that the climate trends observed over the last century in Scotland – which include the highest temperatures ever recorded and significant increases in rainfall – will continue and intensify over the coming decades.

"A rise in [average] temperatures of a few degrees would create conditions unlike anything experienced in Scotland today," it states. Fluctuating temperatures and more prolonged periods of high rainfall or drought, will lead to more extreme weather events, such as heatwaves and severe flooding. Such a change in climate will present a wide range of threats and opportunities to the Scottish environment, infrastructure, economy and people, says the devolved government. Its adaptation programme, which should be finalised by the end of the year, will replace the climate change adaptation framework, which was published in 2009, plus the accompanying 12 sector action plans.



engage with if we're to prepare the country," says Brown. He also cautions against reading the NAP in isolation, suggesting that organisations look carefully at the "really useful and digestible" CCRA sector summaries too.

Overall, Brown is hopeful the plan will help drive people to act, or those that are already acting to think about what more they need to do. "But the report won't do it on its own; it's how government, businesses and other stakeholders decide to take it on," he emphasises. "[We] can't say it's down to the government to make it happen, but it is its role to create a framework."

Brown highlights the importance of collaboration. "All of us have a part to play, and as a business we say to our suppliers and to others we have a relationship with: 'This is what we are doing; have you thought about what you need to do?'" Anglian Water has been working with the Environment Agency through the New Anglia Local Enterprise Partnership, for example, providing a workshop on climate change.

While the NAP report is by its nature focused on action at the UK level, it also highlights, though does not deal with in detail, the risks from climate change impacts overseas, quoting recent research by the business services company PwC. It concludes that the threats associated with climate change globally maybe larger than domestic threats, particularly for businesses with international supply chains and for food imports.

In terms of immediate next steps, the government is now considering how to approach the next CCRA, due in 2017, which will need to take account of new evidence on the nature of risks and impacts, and to reflect on the extent to which the risks have changed due to actions in and beyond the NAP.

Lucie Ponting is a freelance journalist specialising in health, safety and environment.

Polluting power

In the first of a new series on core professional knowledge, **Marek Bidwell** looks at how pollutants impact habitats and species

Despite developments in environment management and regulation, pollution incidents remain headline news. Singapore recently had particulate levels 10 times higher than the exposure guidelines set out by the World Health Organisation, due to smog caused by the burning of forests in Indonesia.

Pollution is defined in the Oxford dictionary as “the presence in or introduction into the environment of a substance which has harmful or poisonous effects” and can be categorised in different ways:

- **Planetary boundaries** – In 2009, a conference hosted by the Stockholm Resilience Centre defined nine significant environment issues as “planetary boundaries” and identified safe operating limits for humanity for each. Two of these are associated with direct pollution: atmospheric aerosol loading and chemical pollution, which includes radioactive compounds, heavy metals and organic compounds. Others are associated with indirect pollution: interference with nitrogen and phosphorus cycles; climate change; stratospheric ozone; and acidification of the oceans. The remaining three are largely tied to increasing population and consumption and are: freshwater use; land use; and biodiversity loss. There are many complex interactions between the nine boundaries and often disregard for one exacerbates the others.
- **Medium affected** – Pollution is frequently defined as affecting air, water or land, sometimes with the addition of noise and vibration, odour, solid waste and light. Categories may be subdivided, such as water into rivers, estuaries, sea and groundwater, for example. Many pollutants migrate from one medium to another through pathways and cycles and may also be taken up by crops into food chains.
- **Spatial impacts** – Different types of pollutants have an impact across different areas. Effects can be local, regional, transboundary or even global. Often those pollutants that have highly-localised impacts – such as noise, dust, and odour – are of greatest concern for residents and land users.
- **Harmful to habitats or organisms** – Pollutants can be divided into those that are directly toxic to organisms and those that primarily affect the physical environment.

Toxic effects

The renaissance physician Paracelsus coined the phrase “the dose makes the poison”, and it is worth remembering that even common substances, such as salt, can cause pollution in high concentrations.

Putting a population of an organism (such as the freshwater amphipod *Gammarus pulex*) into containers and increasing the dose of a toxic substance until half is dead is one way of testing its acute effects. This is known as the median lethal concentration (or “LC50”). The precise mechanism that causes death will vary depending on the substance and species.

Certain heavy metals, such as copper, are essential for invertebrates at very low levels, but in excess they alter the normal function of enzymes, damaging cells and disrupting the organism’s water balance. Toxic effects can depend on the organism’s size; surface area; stage in its life cycle; level of stress (such as oxygen levels or food availability); sex; the presence of other pollutants; and any evolved tolerance (such as bacteria’s resistance to antibiotics).

It is estimated that there are 80,000–100,000 chemicals in the global market, but that toxicity data exists only for several thousand. It is not surprising,



therefore, that some have unintended consequences.

A vivid example of the unanticipated toxic effects of a substance is provided by Tony Juniper in his book *What has nature ever done for us?* Juniper describes the collapse of vulture populations in India – which fell 97% between 1993 and 2002 – due to a drug called “diclofenac”.

The anti-inflammatory was widely used to treat livestock until it was banned in 2006.

Dead animals are eaten by vultures, providing a valuable environmental cleansing service in climates where they rapidly putrefy. However, diclofenac is highly poisonous to vultures, causing renal failure and death, and its veterinary use has devastated populations of the birds across Asia.

In her classic text *Silent spring*, Rachel Carson described how the spraying of the insecticide dichlorodiphenyltrichloroethane (DDT) in America not only killed pests, but other insects, birds and fish. Since then, a number of toxic substances (known as persistent organic compounds) have either been banned, or usage restricted – and alternatives found, such as narrower-spectrum insecticides. Unfortunately some of the replacements have also had unintended consequences. Neonicotinoids, for example, have been linked to declining bee populations.

The environmental and economic effects of major marine oil spills, such as Deepwater Horizon, are well reported. Oil physically smothers birds, freshwater and marine mammals, and also has a soluble element that is toxic to organisms. The toxic element bioaccumulates in species, and they can become dangerous for human consumption. The final impact of an oil spill is difficult to predict because, in addition to the size of the spill, the impact will vary, depending on the: oil type and fraction; degree of mixing in the water; weather conditions; proximity to shore; sensitivity of the ecosystem; and presence of bacteria that can breakdown the oil. Certain chemical dispersants may be more toxic than the oil itself, and make the oil more bioavailable to organisms.

While providing valuable quantitative data, the study of the lethal dose of pollutants does not consider

the long-term sublethal effects pollutants have on organisms’ reproductive success, behaviour, immune systems and, ultimately, life expectancy.

In this area, analysis of the environmental impact is more complex. Additional factors need to be considered, including: how the substance is used and disposed of; its tendency to disperse; its level of persistence; its level of interaction with other pollutants; and its sublethal modes of action.

Substances including polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs) and certain brominated flame retardants have been found at elevated levels in wildlife and human populations in remote areas of the planet; including the Arctic. These compounds are designed to be persistent and bioaccumulate within organisms over time because they are not readily broken down or excreted. This build-up of toxins is compounded when predators eat organisms containing the harmful substances. The concentration of these substances can then increase exponentially – a process known as biomagnification.

There is increasing concern over the endocrine-disrupting properties of ubiquitous chemicals, such as phthalates which are used in plastic bottles, medications and food packaging. Phthalates are readily released into air, water, food and drink, and academic studies have found people worldwide with multiple phthalates in their urine. While their use has been restricted in children’s toys in the EU, determining “safe” levels of exposure for such substances is difficult.

There is increasing concern over the endocrine disrupting properties of phthalates used in plastic bottles as they can be released into air and food

Levels of toxic substances like lead have been successfully reduced in developed countries, but still have a significant impact on human health in other countries – where lead is still used in petrol, and practices such as artisanal mining persist. The Blacksmith Institute, which helps to cleanup pollution hotspots around the world, estimates that pollution acutely affects the lives of 200 million people in developing countries. Pollution remediation, however, can be very cost effective in saving lives – relative to other types of public health interventions.

Air pollutants commonly emitted from factories and transport (such as particulates, nitrogen dioxide, solvents and ozone) have chronic effects on human health (such as respiratory diseases, asthma and cancer). The World Health Organisation publishes guideline levels for each pollutant, but these are frequently exceeded in cities around the world.

**The side effect of fertiliser runoff is the
nutrification of rivers, estuaries, lakes and seas,
substantially altering their ecological balance**

Ecosystems effects

Some substances – while they may be toxic at high concentrations – are better known for the physical or chemical changes that they cause in the environment. In this way they can have profound effects on whole ecosystems and can be thought of as indirect pollutants. Principal examples are: nutrients (causing eutrophication); acid gases (causing acid rain); greenhouse gases (causing climate change); and carbon dioxide (causing ocean acidification).

In his book *The god species*, Mark Lynas said: “Thanks to Fritz Haber [the German chemist who synthesized ammonia], humans are the only species on the planet, apart from *Rhizobium* bacteria, that

are able to fix their own nitrogen directly from the atmosphere.” It is something we do on a massive scale to fertilise crops, but the side effect of fertiliser runoff is the nutrification of rivers, lakes, estuaries and seas. The ecological balance of many water bodies around the world has been substantially altered.

An abundance of normally limited nutrients causes algae blooms and/or rapid growth of plants. In the first instance, the plants and algae shade out other species and when they die the amount of decomposing organic matter is significantly increased, removing vital oxygen from the water and killing other organisms, including invertebrates and fish. This process is known as eutrophication. Other organic pollutants, including sewage, paper mulch, milk and beer contribute to this process because they are nutrients and are consumed by aerobic bacteria in the water, which in turn consume oxygen. As oxygen levels drop, aerobic bacteria are replaced with anaerobic bacteria that continue to feed on the organic material, and produce toxic by-products such as methane and ammonia.

Anyone who has kept tropical fish in a tank, or even a goldfish, has conducted a real-life experiment on the toxic effects of ammonia on a freshwater ecosystem.

Another group of pollutants that affects whole ecosystems are acid gasses, such as oxides of sulphur and nitrogen, which are released during combustion of fossil fuels, dispersed in the air and deposited downwind through acid rain and dry deposition. Acid rain was a key environmental focus of the 1980s. Studies found that about 18,000 lakes in Norway had a pH of less than 5.5, reducing fish stocks substantially. Action was taken in Europe to curb the emission of such gases and studies have shown that lakes are recovering in Norway and other areas: water is slowly neutralising and populations of fish, such as brown trout, are rising again. This is a positive example of how environmental problems can be identified, analysed and reduced.

Reasons to be cheerful?

Despite continuing significant pollution events, such as the high particulate levels in Singapore, there are reasons to be optimistic that serious pollution problems have been identified and solved (or substantially reduced) in particular areas or regions. Success has been greatest in controlling point-source emissions, and where there are readily available technological fixes. Diffuse pollution is a growing problem, however.

There is an urgent need for proven pollution-prevention measures to be transferred to developing countries so that pollution is not “offshored” – either becoming someone else’s problem in the case of local or regional pollutants, or having no net benefit whatsoever for global pollutants. At the same time, although innovation and development can solve many problems and improve individuals’ quality of life, it must go hand in hand with careful assessment of the potential risks.

Key pollution terms and concepts

Source-pathway-receptor model – The impact of pollution is dependent on: its toxicity; how it disperses in the air, land, or water; and the sensitivity of the receptor. For example, two solvent spills from a factory would have different impacts if one was on to a permeable sandy soil, while the other was over impermeable soil that blocks percolation. If pollution reaches a receptor – such as a river or lake – the impact will depend not only on the nature and quantity of the pollutant, but also the capacity of the ecosystem to assimilate the pollution. In this respect enclosed bodies of water are particularly sensitive.

Containment v dilute and disperse – Until late 20th century, the focus was on dispersal of pollution away from the source, the hope being that sufficient dilution would render it harmless. This philosophy applied to the design of landfill sites and factory chimneys. As the background effects of pollution began to manifest – such as the transboundary effects of acid rain – efforts have moved towards pollution prevention and containment.

Point source v diffuse pollution – Pollution from chimneys and pipes in factories is referred to as “point source” and can be more easily monitored and regulated than nutrient runoff from fields or oily runoff from highways, which is described as “diffuse” pollution.

Abundance v diversity – A heavily-polluted environment will not necessarily be devoid of life, but it will favour particular species that are resilient to the pollution. Examples of such species include: blue-green algae that thrive in nutrient-rich water and tubificid worms, which are tolerant to a range of toxic substances, including lead and zinc. On the other hand, there are also “indicator” species, such as crayfish or mayfly, which can signify clean environments with a high diversity of species.

Vision 2020 roadshow update

As part of the development of IEMA's Vision 2020, chief executive Tim Balcon has spent much of the past four weeks travelling around the UK and Ireland to meet members and gather feedback on the proposed purpose, structure and objectives for the Institute over the coming years.

From Aberdeen to Southampton via Belfast, Balcon has presented members with a draft of IEMA's new purpose statement – entitled *Environmental skills transforming business globally* – as well as the new member proposition (pictured, right) and a proposed list of strategic objectives that will focus, guide and measure IEMA's performance until 2020. The hundreds of members who have attended the sessions – including those who contributed via webinars – were invited to discuss and question how Vision 2020 will help IEMA provide value for members into the next decade.

Initial feedback suggests that the draft purpose, proposition and objectives work

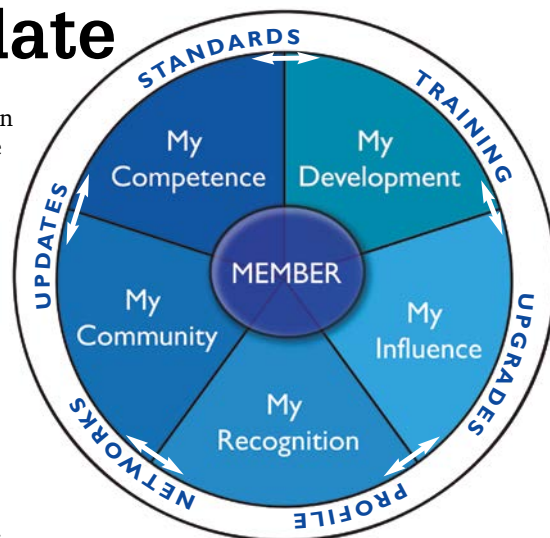
well, correctly represent IEMA's ambition and will help the Institute to achieve the right profile for itself as an organisation and for its members as valued professionals.

A debate common to most of the events centred on whether IEMA should move away from using terms related to the “environment” and make a shift towards “sustainability” to ensure future relevance.

The outcomes of such discussions and other suggested amendments will be fed back into the last stages of the development process during September.

A final version of Vision 2020 will be submitted to the IEMA board for approval in November. Subject to any changes, members can expect to see firm details of Vision 2020 in January 2014.

The Vision 2020 roadshow events and webinars continue into early September, so it is not too late to attend one of the remaining sessions and ensure that your voice is heard during this crucial



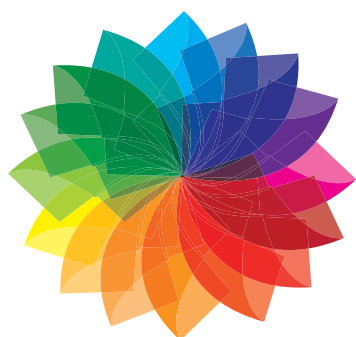
IEMA's proposed new member proposition

consultation period. To book your place and to find out more about Vision 2020 visit iema.net/vision2020.

IEMA members unable to attend an event or webinar can still submit comments on the proposed Vision 2020 by emailing them to: vision2020@iema.net.

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Policy update



Making footprints

The need to tackle the environmental impacts associated with consumption has led policymakers to focus on products. The European Commission's *Roadmap to a resource efficient Europe 2020* reinforces the importance of policies on sustainable consumption and production alongside integrated product policies in decoupling growth from environmental impacts.

The increasing focus on product-related impacts has led to the development of a range of tools aimed at helping businesses understand how their goods affect the environment, although it can be confusing to determine the most appropriate way forward. The life-cycle assessment standards in the ISO 14040 series provide a detailed methodology for evaluating products. While technically robust, this holistic approach is a time consuming and expensive process. Single-issue footprinting tools have also been developed, such as PAS 2050 for measuring the greenhouse-gas emissions associated with a product. At the international level, ISO/TS 14067 is a technical specification for carbon footprinting products, and work on a water footprint standard continues.

In support of its 2020 roadmap, the commission has also published organisational and product environmental footprinting methods and is seeking companies to pilot them. Given that the commission can issue mandates to the European standards body (CEN) to develop standards, it is odd that it decided to create its own tools outside the established process.

Examining products in this way inevitably leads to questions about access to data in supply chains and security of supply. The Environmental Sustainability Knowledge Transfer Network's new "resource dashboard" tool can assist firms in mapping "at risk" resources throughout a product's supply chain and identify areas of vulnerability (lexisurl.com/iema16131).

Martin Baxter is executive director of policy at IEMA.

Practitioner publications for sale

The complete library of practice guides has been made available to IEMA members at an exclusive discounted price.

IEMA's collection of *Practitioners* provides helpful guidance on 14 core areas of environment management and assessment techniques, and can be purchased for a short time at the special price of just £60+VAT.*

The titles are:

- Managing climate change emissions
- Environmental purchasing in practice
- Producer responsibility and the Packaging Regulations
- Energy management in buildings
- Environmental data management
- Managing risk with environmental law
- Risk management for the environmental practitioner
- Change management for sustainable development
- Corporate social responsibility
- The business of biodiversity
- Waste management
- Environmental management plans
- Adapting to climate change
- Climate change mitigation



Due to the breadth of topics covered and their easy-to-digest format, these books make ideal reading for those considering taking the IEMA Associate entry exam. The guides are first editions published between 2001 and 2009. Although some of the legislation referenced may not be up to date, all of the principles and practical guidance included within them remains valid and will help those undertaking self-directed study before completing the Associate exam.

All of the *Practitioners* books are available individually from iema.net/shop from £5 each. To buy a single title or to take advantage of the special offer for the complete series, contact IEMA on shop@iema.net or +44 (0)1522 540 069.

* VAT is payable only on CD-ROM editions of the *Practitioners*. Please note that some volumes are only available on CD-ROM.

1,000th Full member named

On 4 August, IEMA reached a milestone as its 1,000th current Full member achieved his MIEMA suffix.

Shing Fai "Johnny" Yip (pictured), a facilities and properties management professional based in Hong Kong, became the 1,000th IEMA Full member with an active membership. This landmark comes in the same year that the Institute revealed that, for the first time, more than 10,000 of its members – about two-thirds of IEMA's total membership – have achieved professional status by becoming an Associate, Full or Fellow.

Yip has been an IEMA member since 2009, after he achieved Associate status through a distance learning course on integrated environmental management operated by the University of Bath.

By continuing his learning and development in his focus areas of sustainability, energy management and

environmental law, Yip has now successfully achieved Full member status – the level of IEMA membership that demonstrates significant knowledge and experience.



"I have always focused on continuing my education and I take great pleasure in upgrading my membership and becoming IEMA's 1,000th Full member," said Yip, as he received news of his successful application. "I look forward to seeing the Institute continue to grow."

IEMA offers its congratulations to Yip on becoming a Full member.

If Yip's success has prompted you to consider upgrading your membership and ensure you are receiving the professional recognition you deserve, visit: iema.net/upgrading-your-membership.

IEMA launches 2013 graduate award

IEMA's annual search for the best of the profession's emerging talent is now open. The IEMA graduate award – sponsored by Land Securities and supported by edie and Sustainable Business – aims to recognise the most outstanding environmental graduate, achieving unrivalled success in his or her first role.

Now in its seventh year, the award scheme highlights the important contribution of environment professionals to the UK economy and helps businesses to understand the vital role that environmentalists, at all levels of experience, play in their organisation. IEMA, Land Securities, edie, Sustainable Business and the 2013 judges are now seeking nominations for this year's award.

Ideal candidates may have achieved significant financial savings by applying their recently acquired environmental knowledge to a particular project, for example, or have notably reduced their organisation's carbon emissions through an innovative approach. Others may have successfully engaged stakeholders with their organisation's environmental strategy. If you know a recent environmental graduate who is really making a difference in his or her first role, we want to hear about their achievements and how they are working to transform their organisation.

Over the years, winners of the graduate award have come from a broad range of organisations, industries and sectors. Shortlisted candidates have included graduates ranging from volunteers to career-changers. The common thread binding them is that they each demonstrated exceptional dedication and ability, using their environmental knowledge and talent to create sustainable solutions to their organisations' challenges.

Winning or being shortlisted for the IEMA graduate award provides a great CV boost for anyone embarking on their environment career. For employers it demonstrates that they recruit forward-thinking graduates and invest their time in innovative sustainability projects.

Last year's winner, Lorna Pilbin, environmental assistant at British Gypsum (pictured receiving her award), said: "Winning the IEMA graduate award was an amazing feeling. I was delighted to be shortlisted and attending the awards ceremony in London was a real honour.

"When my name was read out as the winner I really was in shock. I couldn't believe that my work had not only been recognised within British Gypsum, but also by the judging panel. The award made me realise that my choice of a career in the environment was the right one."

The judging panel is seeking nominations from managers, mentors and clients of graduate practitioners who have made cost savings, added value or successfully driven change in their role.

Candidates do not have to be an IEMA member, because they will receive a year's membership if they are successful, but they must be nominated for the award – they cannot enter themselves. So if you work with a new environmentalist who has made a difference in their first job and deserves some recognition for their achievements, why not nominate them for the 2013 IEMA graduate award?



The 2012 graduate award winner, Lorna Pilbin

Schedule for the 2013 award

Nominations deadline	5pm, 30 Sep
Judging period	1–11 Oct
Shortlist notified	14 Oct
Awards ceremony	21 Nov

Award prize package

A shortlist of three nominees will be invited to the Sustainability Leaders Awards* ceremony on 21 November. One will be named as the winner of the 2013 IEMA graduate award and will receive a £1,000 prize, a trophy and one year's free IEMA graduate membership. The two runners-up will receive one year's graduate membership.

** Nominees must be available to travel to London on 21 November to attend the ceremony. Provision towards overnight stay in London will be provided if required.*

Award ceremony

The Sustainability Leaders Awards, organised by edie.net and Sustainable Business, are the UK's premier awards for those demonstrating leadership in sustainability across the private and public sectors, with prizes for best practice in water, waste and energy management, as well as stakeholder engagement and product innovation.

This year the awards will be held at The Grand Connaught Rooms in London, on Thursday 21 November 2013. The winner in each category will be announced at the ceremony, with the IEMA graduate award being presented by IEMA's chief

executive, Tim Balcon, and Neil Pennell, head of sustainability and engineering at Land Securities.

The three shortlisted nominees will be welcomed with a champagne reception, a three-course meal and entertainment. The nominees will sit at the IEMA and Land Securities table with Balcon and Pennell.

To find out more about the Sustainability Leaders Awards, including how your organisation can book a table, visit awards.edie.net.

How to nominate

To be eligible for the IEMA graduate award, candidates must have completed a degree course in an environment-related topic within the past two academic years – ie they must have graduated on or since 1 July 2011 – and be nominated by a colleague, manager or client using the online forms.

Detailed evidence must be submitted in support of the nomination, and it is this documentation that will be used by the judges in deciding the shortlist of nominees and the award winner.

For more information, all the necessary documents, guidance, timings and submission details for the 2013 IEMA graduate award, visit iema.net/graduateaward.

More successful IEMA members

IEMA would like to pass on its congratulations to the following individuals on moving onwards and upwards in their career by successfully upgrading their membership.

Associate via the online entry exam

Fiona Abbott, Tata Steel
Eniola Adenuga
Carley Allison, Tata Steel
Toni Ashton, ABP UK
Nicholas Avery, Tata Steel
Andrew Clark, Merseyside Environmental Advisory Service
Paul Comerford, Ministry of Defence
Simon Culling, Wafer Technology
Richard Dainty
Toni Dalton, Artelia UK
Alistair Deighan, Gulf Marine Services
Nicholas Desira
Gary Dickenson, AQA
Christopher Faulkner, Gibson
Gary Fern, Walkers Snack Foods
Katie Fisher, Software Alliance Wales

Steve Flaherty, NYSE Euronext
Oliver Foster
Claire Grainger, Tata Steel
Philip Gray, BDP
Vicky Hall, National Physical Laboratory
Jason Heatman, Tata Steel
Richard Jeans, Emcor Group
Alan John, Tata Steel
Danny Kearney, Lee Demolition
Sue Kidd, Monmouthshire Housing Association
Darryl Lewis, Tata Steel
Elisa Manicardi, GW Pharmaceuticals
David Martin, ERIKS Industrial Services
David McCabe, LRQA
Shaun McKenna
Sean Meyrick, Tata Steel
Vicki Mitchell, NHS Property Services
Paul Morriss, A E Rodda & Son
Darren Mould, FCO Services
Laurence Newman, AWE
Andrew Nolan, Tata Steel
Mike Parkes, Defence Support Group
Alun Rix, McArthurGlen – Bridgend
Emma Ryan, BioRegional

David Smith, Landmarc Support Services
Richard Smith, British Sugar
Holly Stainer, BPF Group
Graham Stockport, Tata Steel
Luke Tattersall, AA Projects
Graeme Tolmie, Cranswick Country Foods
Nick Tovey, Murphy Group
Carl Ward, Greenwoods Communications
Monica Mosquera Vazquez, Argyll Environmental
Simon Walker, Tata Steel
Jessica West, WB Projects
David Whyte, General Dynamics UK
Laura Wilkins, Babcock International Group
Hollie Wilson, Tata Steel
Hywel Woolf, Tata Steel

Full membership

Mahboob Ali, SGS
Martin Ballard, Willmott Dixon
Jo Colwell, Oxford City Council
Jessica May, Balfour Beatty
David Morgan, Cornwall Council
Duncan Murray, ACD Ecology

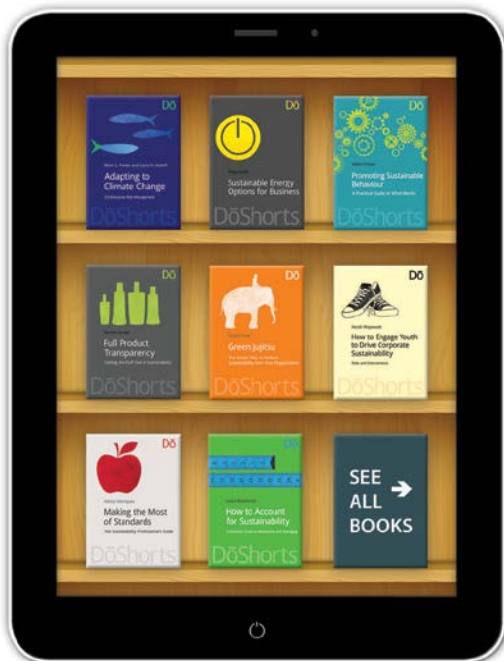
Full and Chartered environmentalist

Clare Blackledge, Environment Agency
Gemma Bourne, Bovis Lend Lease
Alexander Hampson, Black & Veatch
Alan Lloyd, Industrial Air Monitoring Consultants
Isaac Njoroge, Lafarge Cement UK
Angela Payne, Deloitte
Adrian Rous, WYG
Harry Sealy, Halcrow/CH2M Hill
Nicola Steele, Enterprise Mouchel
Laurie Wills, Element Sustainability
Matt Winter, Highways Agency
Helen Worsley, National Grid

Upgrading your membership is important in ensuring you gain the professional recognition you deserve. It can help you secure the job you want and achieve a higher salary. To progress your membership visit iema.net/membership or call +44 (0)1552 540 069.

IEMA events

Date	Region/Time	Topic
21 Aug	Scotland West	Travel planning and the new Scottish government electric vehicle road map
11 Sep	Scotland West	Closing the circle on food: Becoming a link to regenerate local food production and supply
Membership workshops		
2 Sep	Scotland West	Full and CEnv membership
30 Sep	Yorkshire & Humber	Full and CEnv membership
2 Oct	East of England	Full and CEnv membership
14 Oct	South East	Full membership (Southampton)
25 Nov	South East	Full membership (London)
Vision 2020 roadshow/webinar		
22 Aug	1pm–2pm	IEMA Vision 2020 webinar
27 Aug	Northern Ireland	IEMA Vision 2020 workshop
2 Sep	Midlands	IEMA Vision 2020 workshop
5 Sep	North West	IEMA Vision 2020 workshop



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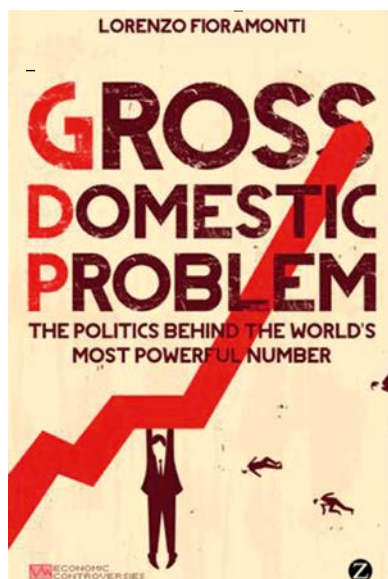


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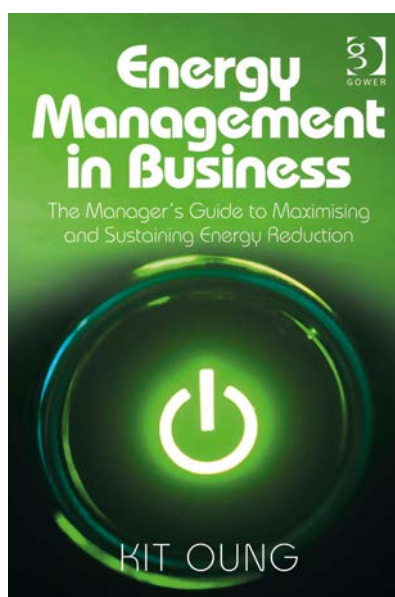
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Gross domestic problem

Lorenzo Fioramonti / Zed Books / Paperback £30 / ISBN 978-1-7803-2272-8

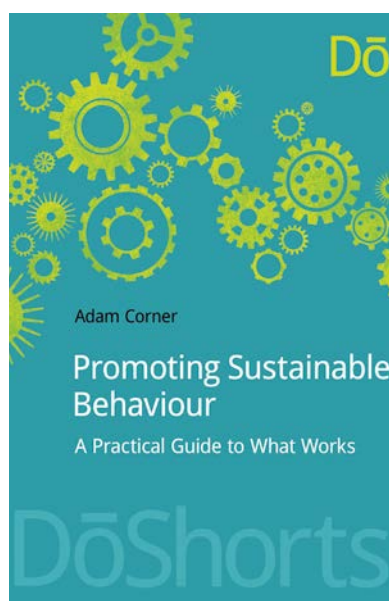
Gross domestic product (GDP) is often used to explain the world. For Lorenzo Fioramonti, the term symbolises the destructive character of capitalist society and is a primary cause of our social and environmental crises today. The concept of GDP, and the way it is calculated, is rooted in the Great Depression, and was developed in the US plans for engagement in World War II and during the Cold War. GDP was a driver of consumerism and militarism because consumption and weapons could be counted, and Fioramonti doesn't contradict the argument that it can be a powerful tool. US generals, for example, saw it transform their ability to decide how much production could be shifted to war purposes from consumer products. But what of now? Curiously there is no shortage of people who contend that GDP is a highly inaccurate or misleading metric. Many economists, international bodies and NGOs have tried to develop an alternative for measuring what counts. Yet GDP rests unrivalled. Through economic turmoil, conservative voices have urged the continued need for growth. However, Fioramonti's hopes lie in the range of community initiatives, such as local money systems, which seek to dethrone GDP. One of the pleasures of reading history is the nudge that the commonplace is not there by chance. This book is more of a hefty shove to a standard world view. Few will instinctively align themselves with the author's anti-corporate perspective, but environmentalists are likely to be provoked into rethinking how the approach taken to measuring their organisation's performance has played a constructive role in assessing how well we are doing as a world. Mike Peirce, director at University of Cambridge programme for sustainability leadership.



Energy management in business

Kit Oung / Gower / Hardback £45 / ISBN 978-1-4094-5245-4

This book aims to introduce energy management and reduction techniques to business managers. It is divided into four parts – strategy, tools and techniques, avoidable energy losses, and management – and describes how the involvement of management is central in tackling energy consumption. The book assumes a relatively sophisticated audience and provides a fair amount of detail to underpin the concepts being introduced. This includes 32 short case studies and a longer fictitious one illustrating specific issues. However, I would have liked more discussion of the short case studies to help the reader make the connections between the theory and practice. Overall the book is interesting and covers a lot of ground reasonably quickly. It's also well referenced, giving the reader the opportunity to find further details. It does, however, go into too much detail in some areas where it is less accessible. Also, much of the technical data assumes some familiarity with engineering and, as a result, is a little biased towards manufacturing firms. This is a good book for managers looking to broaden their understanding of the challenges in cutting energy use. Adam Leaver, AIEMA.



Promoting sustainable behaviour

Adam Corner / Do Sustainability / ebook £30 / ISBN 978-1-9092-9325-0

This 62-page ebook is a concise and thoughtful explanation as to how sustainable behaviour can be achieved in households and organisations. It gives the reader an understanding as to why sustainability is, on the whole, not adopted as a personal or organisational core value. Particularly insightful is chapter five, which looks at how we can change behaviour without using scare tactics. It argues that using images of nature being harmed is not an effective way of promoting sustainability, and that positive actions relating to everyday activities can be far more successful. Throughout the book, the various theories cited are explained using real-life examples, or through website links to more information. This brings the book to life. You can download the ebook to various devices or read it directly through the publisher's website (dosustainability.com). I do, however, have two small gripes. The first is that I couldn't download the book to my Kindle from the website although I am assured you can from Amazon. The second is that, although the book is insightful, the cost may be prohibitive for some. If you would like a thought-provoking two-hour read on promoting sustainable behaviour, I would recommend this. Andrew Fletcher, AIEMA, commercial director at ESP.

AIEMA members can claim a 15% discount on Do Sustainability titles by quoting code: IEA15

Peter Bragg

Head of environment and energy,
Eurostar International

Why did you become an environment professional?

I have been passionate about the countryside and preserving it since childhood. I wanted to have a career that helped businesses to operate sustainably, responsibly and efficiently.

What was your first environment job? I worked for a small consultancy in Baldock, Hertfordshire, mainly assisting large automotive clients, such as Ford, to implement ISO 14001.

How did you get your first environment role? I enjoyed the environmental management part of my degree the most and decided that I wanted to specialise in this area after graduation. Although I considered studying for a master's degree, I was keen to start work and build my career. A few speculative CVs later, I landed a role in a small, local consultancy with a fantastic client list.

How did you progress your career? After a few years working in consultancy, I decided to work in-house for a business. When a role came up at Network Rail (then, Railtrack), I jumped at it. Although I hadn't worked in the railway industry before, it struck me as a fascinating sector with big challenges and opportunities. Twelve years later, I am still in the sector and feel privileged to work for Eurostar; one of the best known train companies in Europe and one with a reputation for ambition, innovation and progress in delivering sustainability.

What does your current role involve? As head of the environment and energy team at Eurostar, I am responsible for "Tread Lightly", our sustainability and carbon reduction programme. It covers carbon emissions reduction, sustainable procurement, waste and recycling, as well as managing relationships with key partners, such as Ashden, with whom we partnered last year to launch an annual sustainable travel award for organisations in Belgium, France and the UK.

How has your role changed over the past few years? Although customer interest in sustainability remains strong, and delivering a sustainable, low-carbon product continues to be a large part of my role, there has been a shift in focus towards making our wider business operations as efficient as possible. This is why we've worked hard over the past year to measure the carbon footprint of our entire organisation and identify opportunities to cut our emissions.

What's the best part of your work? It's great to be working for a business that not only provides a sustainable product, but that truly cares about its environmental impact.

What's the hardest part of your job? Over the past few years, consumer engagement in environmental issues has declined, as the economic climate across Europe has deteriorated. The constant challenge of my job is to ensure that my company's sustainability practices continue to inspire our customers.

What was the last training/event you attended? With Eurostar's strong reputation in this area, I am regularly asked to speak at events and conferences. These are great opportunities to share our work and to learn from businesses in other sectors.

What are the most important skills for your role and why? Patience, influence and confidence – it is important to remember that not everyone is as passionate about sustainability as you, or has it at the top of their job description. You have to build relationships, articulate your business case and share success.

Where do you see the environment profession going? I see it increasingly becoming part of the core business, rather than something shouted from the rooftops to customers. It will continue to be an important part



Career file

Qualifications:

AIEMA, BSc in applied environmental science, postgraduate award in business leadership, diploma in corporate governance

Career history:

2010 to now Head of environment and energy, Eurostar International
2001–2010 Senior environment manager, Network Rail
1999–2001 Consultant, Entec UK
1997–1999 Consultant, EMC

of delivering resource efficiency and sustainable business benefits.

Where would you like to be in five years' time? Hopefully, I will still be working for Eurostar in this or a similar role, helping the business lead sustainable travel practices.

What advice would you give to someone entering the profession? They must be persistent, passionate and confident. It's an incredibly tough environment for graduates, so they need to make their CVs stand out and they can't let knock-backs deter them. Ultimately, it's a great industry and a rewarding profession to be in, so it's worth the effort to get your first job. Despite some negative press, I believe that the profession has a bright future in helping businesses and society navigate an economically and environmentally sustainable path through future challenges. Irrespective of the debate around man-made climate change, there are numerous good reasons for developing a sustainable future, whether it is delivering energy independence, better health, great cities or protecting the planet.

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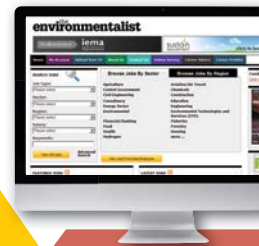


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