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UK regulation: endless paperwork or essential protection?

The EU leading on the environment

Ask yourself the question: if the Thames was still the open sewer it was back in the 1840s, and we still had the 'pea souper' smogs of the 1950s, would London be a global financial centre?

It would be foolish of me to suggest that environmental regulation is the only reason London is a major financial centre. But a clean environment helps – people want to live and work in a healthy environment.

The importance of environmental regulation was recognised many years ago with concerns about the health and environmental impacts of rapid and uncontrolled development during the Industrial Revolution. In 1845 the government introduced the first major piece of environmental regulation, the Public Health Act, which was aimed at reducing the outbreaks of cholera caused by poor sanitation and contaminated water.

Environmental regulation today involves interpreting and implementing a wide range of legislation covering different media, processes and substances. It involves applying many different standards and targets, and a suite of different instruments, tools and techniques. It requires finding a balance that:

- provides risk-based, outcome-focused and cost-effective protection for the environment and human health;
- supports sustainable growth and minimises administrative costs to regulated businesses; and
- ensures the public retains confidence.

At the Environment Agency, I believe we play our part in striking this balance. Between 2000 and 2011 regulation has been a major factor in achieving:

- a 73 per cent reduction in emissions of SOx;
- a 37 per cent reduction in NOx;
- a 38 per cent reduction in fine particles; and
- an increase in the amount of material recovered from
- waste at the industrial sites that we regulate from 37 to 63 per cent.

The number of serious pollution incidents has halved. Ammonia and phosphorus loads from sewage works have more than halved since 1995. Reducing pollution makes a difference; for example, cleaner rivers are helping otters to thrive.

Regulation can be good for business and the economy. It can help to avoid waste, and drive efficient processes and careful management. It can also help to drive innovation. Examples include finding more efficient ways of using resources and stimulating the development of new technologies, which can reduce costs and create new markets. Regulation also provides a 'level playing field' and certainty for businesses which often need to plan actions and investments years ahead.

Environmental regulation has a clear role to play, not only in protecting people and the environment, but also in protecting valuable resources and providing a framework for sustainable growth. A healthy environment and a healthy economy go hand in hand.

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FOR MORE INFORMATION

For more environmental performance data see Sustainable Business Report 2011: www.environment-agency.gov.uk/business/news/143854.aspx

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A brief history of environmental law in the UK

Ben Christman describes how the current set of environmental laws were assembled.

Environmental law is of importance to everyone. It helps to ensure a healthy environment, human wellbeing and a sustainable economy. As Lord Hope stated recently, environmental law proceeds on the basis that "the quality of the natural environment is of legitimate concern to everyone"[1]. UK environmental law has ancient roots, but is relatively young as a legal field[2]. This article examines four key ages of UK environmental law and concludes with a forecast for the future.

INDUSTRIALISATION: PUBLIC HEALTH AND POLLUTION

The Industrial Revolution swept through Britain from the mid-18th century, resulting in the rapid urbanisation of the population as workers moved to settlements around increasingly mechanised industrial centres. Economic success was tempered by heavy social and environmental impacts, and UK environmental law is therefore rooted in a response to industrialisation.

Epidemics were rife in the early 1800s, primarily due to a lack of sanitation. On a visit through the wynds (narrow lanes) of Glasgow and Edinburgh, a Dr Arnott encountered disturbing scenes: human waste piled outside the houses, which led to his remark that the inhabitants were "worse off than wild animals"[3]. Chadwick's horrifying report on public sanitation in 1842 paved the way for the Public Health Act 1848[4]. This created powers for central and local government to take steps to protect public health, marking the start of a proactive approach to public health in the UK[5].

The use of coal as an energy source and the concentration of industrial production led to air and water pollution. Recognition of the need for the restriction of property rights and controlling self-interested conduct grew as it became clear that the absence of penalties for actions that adversely affected others left little incentive for polluters to clean up their act[6]. The first statutory response to industrial pollution was the Alkali Act 1863. It forged a new and scientific role for the state in the Alkali Inspectorate (AI), an expert enforcer of the law that represented a highly innovative form of regulation. Soap, glass and textile industries had to register with the AI, and airborne emissions of muriatic acid were to be reduced by 95 per cent, with the remainder diluted. Focusing on one environmental medium (air), there was little recognition of the integrated nature of environmental problems; perversely, the Alkali Act led to increased water pollution as condensed gas products were released into watercourses[7]. Successive Alkali Acts passed over the following decades expanded the scope of the legislation to cover the pollution of air, land and water from chemical production, and air pollution from a number of related industries.

The underpinning regulatory philosophy was one of technological optimism: a confidence that scientific solutions could be applied to pollution problems to ensure a satisfactory outcome. This approach broadly continues today.

AFTER WORLD WAR II: PLANNING

Following the destruction of parts of Britain during World War II, rebuilding and reorganisation were desperately needed. The Attlee Labour government introduced the Town and Country Planning Act 1947 as a means of controlling the rebuilding process[8]. The law had two main features: local authorities had to produce their own local plans, which detailed land-use policies and proposals for certain developments; and planning permission was required from local authorities for developments to ensure that they accorded with the local plans (or any other "material considerations"). Highly centralised, the planning systems across the UK retain these key principles today.

Planning is now broadly accepted, but at the time it represented an unprecedented shift in the state's

control over the use of private property, nationalising the development value of land in part because of an increasing recognition that property rights were limited by wider public interests. Thus the development of planning controls combined the promotion of public health and pleasant urban development, with the restriction of private interests.

Whilst not originally environmental in nature, planning has allowed for an increasingly considered, proactive approach to the environmental impacts of development. It provides for the locational control of developments (e.g. avoid situating incinerators beside nurseries) and the regulation of the intensity of any particular activity. The planning systems across the UK remain under-resourced, under-enforced and biased towards development, but nevertheless provide opportunities for minimising the environmental impacts of developments.

LATE 20TH CENTURY: SUSTAINABLE DEVELOPMENT, INTERNATIONALISATION AND NEOLIBERALISM.

The mid-20th century saw the birth of modern environmentalism and the development of a public environmental consciousness. Literature such as *Silent Spring*, *'The Tragedy of the Commons'* and *The Limits to Growth*[9], catastrophic incidents such as the Great London Smog of 1952 and an increasing understanding of anthropogenic climate change showed the limits of a *laissez-faire*[10] approach to environmental issues. The scene was set for large-scale state intervention and therefore the development of a comprehensive body of environmental laws.

International action drove domestic change. A succession of UN conferences initiated by the 1972 United Nations Conference on the Human Environment in Stockholm and the UK's accession to the EU in the same year proved critical moments. The Western mode of development was increasingly acknowledged as ecologically illiterate, and a shift towards sustainable development was prescribed. International laws concerning biodiversity, atmospheric pollution and climate change developed, enshrining principles such as the 'polluter pays' principle.

EU membership has proved significant in compelling the UK to shake off its reputation as the 'dirty man of Europe'. EU water quality policy was instrumental in the introduction of absolute pollution limits for drinking and beach water; it forced the government's hand, requiring "substantially greater expenditure on sewage treatment and disposal than would otherwise have occurred"[11]. The proliferation of legislation in this period saw the UK's environmental legal architecture emerging, covering almost all environmental mediums. The dominant style was 'command and control': an environmental target would be identified (a threshold of pollutants in the air, for example), and a licensing system would be put in place to 'control', or enforce this command. Often penalties would be used to ensure compliance.

The rise of neoliberalism in the 1980s saw the 'command and control' approach challenged by a shifting preference for light-touch regulation, and increasingly criticised for its perceived inflexibility, inefficiency and costliness to businesses. Allied to this, regulatory budgets fell as the main British political parties sought to reduce the size of the state, limiting regulators' abilities to police laws. Organised industrial lobbying grew, increasing resistance to regulation[13].

The breadth and quality of EU environmental law has heightened the profile of 'green' issues, helping to propel the environment up the domestic political agenda from the 1980s onwards[12].

The environmental law 'toolbox' developed apace, and environmental laws became less recognisable as neoliberalism intensified. Less intrusive forms of environmental law gained in popularity, such as economic and reflexive instruments. Economic instruments seek to mimic or harness market forces to pursue environmental goals. Typical economic instruments include 'green' taxes such as the landfill tax. This aims to discourage the use of landfill waste disposal by taxing landfill operators a set charge per tonne of waste, increasing annually (currently £72/tonne). Whilst the landfill tax has led to more recycling, it has also seen incineration and fly-tipping becoming increasingly attractive. The unpredictable nature of markets and the regressive social impacts of flat-rate taxes pose further problems for the use of economic instruments.

Reflexive laws require actors to adopt certain procedures that stimulate reflection, without specifying outcomes. Environmental impact assessments (EIAs) are reflexive in nature: they require those proposing developments that threaten "significant environmental effects" to carry out an assessment of the environmental consequences. A tool

not a rule, the assessment is fed into the decision-making process, but does not require a particular outcome. Conflicts of interest remain problematic because the party that stands to benefit from proceeding with the development also conducts the EIA and controls the information generated; occasionally the temptation to underestimate or ignore certain potential impacts has been irresistible.

21ST CENTURY: DEMOCRACY, DEVOLUTION AND DECARBONISATION

The increasing democratisation of UK environmental law is a commendable trend. Led by various international agreements to increase public involvement in environmental matters (particularly the Aarhus Convention')[14], there has been a shift towards more participatory environmental laws in the 21st century. Citizens now have rights to environmental information, a voice in environmental decision-making and access to legal remedies where environmental laws are broken. These represent a power shift in environmental decision-making, helping to level the playing field between citizens and the powerful entities that often inflict environmental harm.

Access to environmental information is now robust, with strong legal rights established and enforceable. Environmental information rights were introduced before broader information rights in the UK, helping to pioneer open government. Participation rights are less vigorous, and are often superficial (e.g. citizens are invited to submit comments on an activity, but decision-making rests with government).

The ability to use legal remedies to challenge decision-making has been the most contentious. Under the terms of the Aarhus Convention, the UK must ensure that procedures for citizens to ensure that environmental laws are upheld must not be "prohibitively expensive"[15]. Whilst well-resourced interest groups such as ClientEarth have pursued important test cases and challenged decision-making[16], for most UK citizens the legal expertise needed to uphold environmental laws remains unaffordable. The Aarhus Convention's ideal of a participatory environmental democracy is yet to be fully realised in the UK[17].

Intertwined with democratisation, devolution was aimed at revitalising democracy across the UK and providing for the local control of public policy. Devolution was asymmetrical, with different powers given to each of the regional governments and legislatures to make laws. When combined with the differing political, economic and geographic circumstances in each of the devolved regions, devolution has resulted in something of a disintegration of UK environmental law.

Scotland can legislate in relation to the environment and planning, but its impact is limited by its inability to access many of the fiscal levers that influence environmental outcomes. Holyrood has been lively, legislating to designate two Scottish National Parks, transforming Scotland's water management system, and applying 'Strategic Environment Assessments' to almost all Scottish public plans and strategies[18]. Scotland has often outshone Westminster in making more pro-'green' laws, but the Scottish outlook remains stubbornly "closer to "business as usual" than to one that truly respects environmental limits"[19].

▲ **Growing from Victorian seeds, a sprawling environmental law environment in Britain.**

Wales and Northern Ireland have been less active lawmakers, for different reasons. The Welsh Assembly has a duty to make a scheme to show how it proposes to promote sustainable development[20], and has become a leader in doing this through policy. However, it has only had the ability to pass primary legislation[21] since 2011, limiting its influence on environmental law[22]. Laws to promote active travel and make sustainable development the central organising principle for the Welsh Government are currently being discussed in Cardiff[23].

Political divides in Northern Ireland led to the suspension of devolution between 2002 and 2007. The legacy of the Troubles meant that until recently, the dominant concerns of the Northern Irish government were peace and security, with the environment historically a "non-issue"[24]. Political stability has helped to drive change and the environment is now on the agenda in Stormont[25]. The threat of EU fines forced the administration to update environmental legislation, but Northern Ireland's new leaders have shown little commitment to delivering it in practice. Proposals for reform of the planning system within the Planning Bill that are currently being debated reflect a determination to establish the region as the UK's capital of deregulated land management[26].

The legal limelight has shone upon climate change in the 21st century. Motivated by increasingly alarming reports from the Intergovernmental Panel on Climate Change

and a lack of action to reduce greenhouse gas emissions, a civil society and political coalition formed The Big Ask campaign. Their call for binding emissions-reduction targets was answered in the Climate Change Act 2008.

Symbolic and innovative, the Climate Change Act 2008 is the worthy accomplishment of a strikingly broad political alliance. The act requires the relevant Secretary of State[27] to ensure that the UK's net greenhouse gases are 26 per cent and 80 per cent lower than the 1990 baseline by 2020 and 2050 respectively – a huge task. To achieve this, the government must produce carbon budgets every

garden now governs the relationship between humans and the

five years that set out the maximum emissions for each period, aiming for gradual reductions in line with the long-term targets. The Act also created an independent Climate Change Committee to provide expert advice and analysis to the government. The philosophy of the act is that "this built-in series of duties, actions and reports will create the transparency, accountability and political pressure necessary to achieve the purpose of the legislation"[28].

The Act needs sustained political commitment to succeed, yet its operational reality has not been entirely heartening. Fears over the economic impacts of emissions reductions infuse discussions over carbon budgeting, despite the evidence surrounding the costs of business-as-usual emission patterns[29]. Rumblings are being heard within mainstream political parties that the Act should be abolished after the next general election due to its perceived cost to businesses.

WHERE NEXT?

Environmental law is constantly evolving, occasionally succeeding and often failing, extraordinarily complex and frequently misunderstood. Growing from Victorian seeds, a sprawling environmental law garden now governs the relationship between humans and the environment in Britain. Its evolution has not been a linear process, often moving in various directions as a reaction to certain events without any obvious broader strategy or principles, and referenda concerning EU membership and Scottish independence may add more twists to the tale. A 2012 UK Environmental Law Association (UKELA) report explained that environmental law requires careful pruning – it lacks coherence, transparency and sensible integration, and the process for making many environmental laws is flawed[30]. Wading through the legal undergrowth may be lucrative for those selling legal advice; but for those subject to the law, identifying how to comply can be tortuous and expensive.

The nature of environmental concerns has changed. Industrial pollution and sanitation were easy victories with straightforward win–win solutions that often enjoyed broad political support. Environmental challenges are now more complex problems, often 'wicked'. Climate change is the ultimate example: a symptom of many other ills, with consequences for both continuing current trends and taking action to reduce emissions, a vocal and well-resourced (yet often misinformed and numerically minor) opposition, phenomenal scientific complexity, a transboundary, long-term nature and no single obvious legal solution[31]. Tackling unsustainable consumption, the forthcoming push for fracking and remedying the various breaches of planetary boundaries[32] will test environmental law further.

Politicians hold the purse strings and take vital decisions, making David Cameron's pledge to lead "the Greenest Government ever" a promising moment. The superficial reality of this commitment has been exposed by the emergence of an increasingly fundamentalist form of neoliberalism. This evidenced by the intensifying red-tape discourse which neglects the benefits of regulation and gives undue weight to claims of the inconveniences that it creates[33], and is exemplified by George Osborne's comments that environmental goals represent a "burden"[34] on businesses. Those who wish to take a strimmer to environmental protection may succeed in a critical vacuum, as "the environment dies away in silence"[35].

David Attenborough's recent warning that "all is not well"[36] in the natural environment suggests that environmental governance in the UK has not been spectacularly effective. Environmental law remains a long way from reaching climax ecosystem status, and the current political atmosphere makes it likely that the Sisyphean[37] struggle for the legal protection of the environment will continue long into the future. ES

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The state of UK environmental legislation: opportunities for reform?

Eloise Scotford and **Rosie Oliver** assess the changes that are needed and those already in progress.

In 2012, the UK Environmental Law Association (UKELA) completed an ambitious assessment of the state of environmental legislation in the United Kingdom in light of its increasing complexity[1]. Some are concerned that the complexity of environmental legislation is getting to the point of undermining its ability to deal with environmental problems. A Supreme Court judge and pre-eminent environmental law jurist agrees, having noted "the contrast between the relative simplicity of the basic objectives [of environmental law], and the complexity of the machinery by which we try to give them effect"[2]. Others also agree – from academics who see that the pace and scale of legal change makes environmental law incredibly challenging to understand let alone critique[3], to judges concerned that the rule of law is being undermined in an age of "legislative hyperactivity"[4], to industrial operators who find that lack of clarity in legislation is difficult to comply with, leading to wasted time and financial cost[5]. In fact, the case for closely considering the current state of UK environmental legislation and how to change it for the better seems overwhelming.

The Government also now agrees. Beyond its ongoing cross-departmental "better regulation" agenda[6], the Cabinet Office and Defra have recently developed a package of reforms for environmental legislation in pursuing the Government's Red Tape Challenge, which aims to reduce regulatory burdens on business at the same time as improving the quality of legislation[7]. This has now been complemented by another governmental programme – the Smarter Environmental Regulation Review (SERR) – that aims to simplify and facilitate access to environmental data, guidance and legislation[8].

So legislative change seems to be needed and change is also afoot. In light of that, this article first examines the current picture of environmental legislation and considers why it is so complicated. It then considers the various ways in which it can be improved, including through the next phase of the Government reform of environmental legislation.

WHAT IS ENVIRONMENTAL LEGISLATION?

Part of the reason that environmental legislation is such a minefield is that it includes a wide range of regulatory areas. If environmental legislation is conceived of as the body of primary and secondary legislation that applies to environmental problems, then this at least includes laws that apply to waste, water and air quality, climate change, energy use and supply, nature conservation and biodiversity, genetically modified organisms and the use of chemicals. It also arguably extends to laws that relate to planning and development. Planning laws are not only fundamentally informed by environmental requirements and duties (see, for example, section 28G(2) of the Wildlife and Countryside Act 1981 and the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 SI 2011/1824), but decisions that reconcile conflicting views over land use provide the basic framework for how communities and individuals interact with their local and wider environment.

Furthermore, even across each of these different areas, it is not possible to say that there is a single body of UK environmental law[1]. One result of UK devolution is that environmental policy and legislation are increasingly matters for each of the UK's devolved administrations[1]. This is leading to accelerating divergence in environmental legislation between England, Wales and Scotland in particular, with Scotland and Wales now embarking on quite radical new approaches.

AT A GLANCE: DIVERGENCE IN ENVIRONMENTAL LEGISLATION

In Wales in 2013, there is a planned Future Generations Bill, which promises to be pioneering legislation that purports to incorporate sustainable development as a "central organising principle" of government, as well as an Environment Bill that promotes natural resource management based on an ecosystem approach.

In Scotland, the Regulatory Reform (Scotland) Bill, introduced in March 2013, reforms environmental offences, sanctions and the powers of the Scottish Environmental Protection Agency (SEPA).

A final issue, which further complicates matters, is that legislation does not exist in a vacuum in regulating environmental problems. In particular, it is heavily supported by governmental policy documents and guidance on its application. Seeing the full picture of environmental legislation and how it works in practice thus requires looking beyond the statute book and considering all the related documents that explain how legislative provisions apply to particular sectors, which provide the technical details of environmental regimes, and which even set out basic obligations for some environmental regimes[9].

WHY IS ENVIRONMENTAL LEGISLATION SO COMPLEX?

Identifying what UK environmental legislation is already partly answers the question of why it is so complex – it cuts across a wide range of areas of government policy, it is fragmented across the administrations of the United Kingdom, and it relies on and incorporates an extensive range of documents that are not included in formal statutory provisions. However, there are also other reasons for the current web of far-reaching and often overlapping environmental legislation across the UK, as the recent UKELA project identified[1].

Over the last 40 years, we have lived through waves of largely piecemeal and reactive environmental reform[3], the increasingly pervasive influence of EU environmental law, and "a reluctance to consolidate legislation sufficiently often"[1]. Furthermore, UK environmental legislation relies extensively on secondary legislation – typically regulations and orders – as well as guidance to establish legal requirements. The attraction of secondary legislation for government departments is its flexibility: it can be brought in much more quickly and easily than Acts of Parliament (primary legislation), which are subject to lengthy Parliamentary procedures. But the downsides of this approach include a loss of democratic scrutiny and a tendency towards a confusing patchwork of legislation as more and more new sets of regulations and orders are brought in to deal with particular issues. The result is a lack of accessibility for users of legislation: requirements are spread across a range of legal instruments that interact in sometimes complicated ways, and it can be hard to gain a picture of the overall legal position applicable to a particular issue.

Over the last 40 years, we have lived through waves of largely piecemeal and reactive environmental reform[3]

Difficulties in ascertaining relevantly applicable laws can be compounded by the way that EU environmental legislation is transposed. EU legislation drives a large part of current environmental legislative reform and it is generally transposed by means of secondary legislation that uses either copy-out techniques (parroting the language of a Directive that may itself be vague or unclear) or referential drafting (simply cross-referring to 'Article X of Directive Y') rather than setting out in the domestic legislation exactly what is meant. Both these techniques incorporate directly the text of EU Directives[10].

Finally, legislation that regulates environmental issues often contains inherently complex technical requirements due to the nature of environmental problems. Thus, for example, air quality legislation has an intricate set of requirements for limiting concentrations of different air pollutants in the ambient air along with a set of complicated scientific methodologies for measuring compliance with those limits[11]. The complexity and detail of these requirements are driven partly by the fact that different air pollutants have different causes and impacts on human health and the environment, and partly by the fact that their polluting effects are also the result of interactions with other elements of the atmosphere, other pollutants, weather systems, geographical conditions and population sensitivity, amongst other factors. Other environmental problems, such as climate change and water quality, pose similar challenges for regulatory design[12].

One might ask whether the complexity of environmental legislation is in fact a problem – perhaps complexity should be accepted as an inherent aspect of legislation that relates to environmental problems, which are beset by scientific uncertainty and the subject of ever-evolving governmental policy within a fragmented UK state. However, the inevitability of change and innovation in environmental legislation is not a reason to let it accumulate exponentially without some considered reflection on its usability and rationalisation. As set out above, there are costs to industry, to judges and the judicial system, and to the regulatory machinery of government in failing to control the growing and increasingly complicated body of environmental legislation. So what needs to be done?

IMPROVING UK ENVIRONMENTAL LEGISLATION

The final report of UKELA's project looking at the state of UK environmental legislation in 2011–2012[1] focused on three key aspects of environmental legislation that needed to be improved: its coherence, its integration and its accessibility or transparency. The report, published in May 2013, made a number of recommendations for governments and regulators. These included:

- consolidating legislation more routinely, so that users need only consult a single piece of legislation to gain a clear, and ideally complete, picture of the law on a subject;
- publishing updated or consolidated versions of legislation online;
- reforms to make regimes such as planning and habitats assessments interact more harmoniously;
- improving and rationalising environmental appeal procedures;
- making sure government and regulator guidance is up to date and coordinated, avoids setting out matters that would more appropriately be addressed in legislation, and is drafted in a way that is appropriate to its function and audience; and
- imposing pressure at European level to influence the drafting of EU directives and regulations with a view to making them less ambiguous and better integrated.

PROGRESS TO DATE AND TO COME

One year on, there are grounds for believing that things will improve. For example, Defra's Red Tape Challenge reforms have helped to tidy up the statue book by

weeding out moribund legislation and consolidating the law in areas such as air quality, biodiversity, chemicals and waste regulation. Most reforms are minor legislative changes, but some could have significant practical impacts, such as proposals to streamline the planning and permitting processes through information sharing.

In addition, the Government's newly launched Smarter Environmental Regulation Review has aimed, in its initial phase, to rationalise and significantly reduce the volume of environmental guidance for England so that it is clear and easily accessible online[8]. Proposals to transfer environmental permitting appeals in England and Wales from the Planning Inspectorate to the new environmental tribunal would help bring about more consistent appeals procedures. And the Scottish Government is taking steps to introduce a more integrated framework of environmental regulation, such as the provisions in the Regulatory Reform (Scotland) Bill currently going through the Scottish Parliament.

But there is still a long way to go. Defra's Red Tape Challenge measures, although a good start, are minor improvements when what is required is major legislative surgery. As a first step, routine consolidation is required, but this is a resource-intensive undertaking. Resource issues appear to be the reason we are unlikely to see consolidated versions of legislation publicly available online for many years. In an age of reduced government spending, a more comprehensive review of all environmental legislation might thus be expected to be a low political priority.

However, the next phase of the SERR project has promising aspirations to undertake a thorough review of environmental legislation with a view to its rationalisation – as Defra acknowledges, this is a "most complicated piece of work and it is important to get it right"[13]. Time will tell how this longer-term project will unfold, but it is somewhat encouraging that 'root-and-branch' reform is being explored with a view to unknotting some of the complexity of UK environmental legislation.

Meanwhile, growing tensions around the nature of the UK's membership of the European Union may have significantly changed the government's negotiating priorities and abilities. Rather than seeking to address issues of legislative ambiguity and integration (as UKELA recommended), it is possible that our representatives in Brussels may wish to focus primarily on renegotiating environmental directives with a view to dispensing with protections perceived as barriers to growth. ES

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Smartening up the environmental regulatory framework

Sharon Holloway and **Vicky Midgley** describe what the Government is doing to make it easier to comply with environmental regulations.

In July 2012, the Department for Environment Food and Rural Affairs (Defra) initiated the Smarter Environmental Regulation Review (SERR) to take a cross-cutting user perspective for the reform of environmental regulation. This review was launched in response to the Red Tape Challenge's environment theme. Its remit was to investigate how Defra and its regulators might reduce regulatory burdens on businesses by reforming the environmental regulatory framework.

SMARTER GUIDANCE AND DATA

The review recommended early action in two main areas: rationalising guidance and simplifying the way that businesses report information. It concluded that whilst guidance and data reporting are clearly important for supporting environmental regulation, they have become more costly and complex than they need to be. Furthermore, the review's findings suggested that action on these two areas could actually raise standards in terms of environmental compliance by removing confusion, uncertainty and tedium for users.

Implementation of the recommendations began in May with the launch of the Smarter Guidance and Data project. This work is a joint effort across Defra and its agencies. The Smarter Guidance project covers environmental guidance and guidance associated with Defra's non-environmental policy areas. Guidance has been defined as any public-facing written content that explains what to do, how to do it and why.

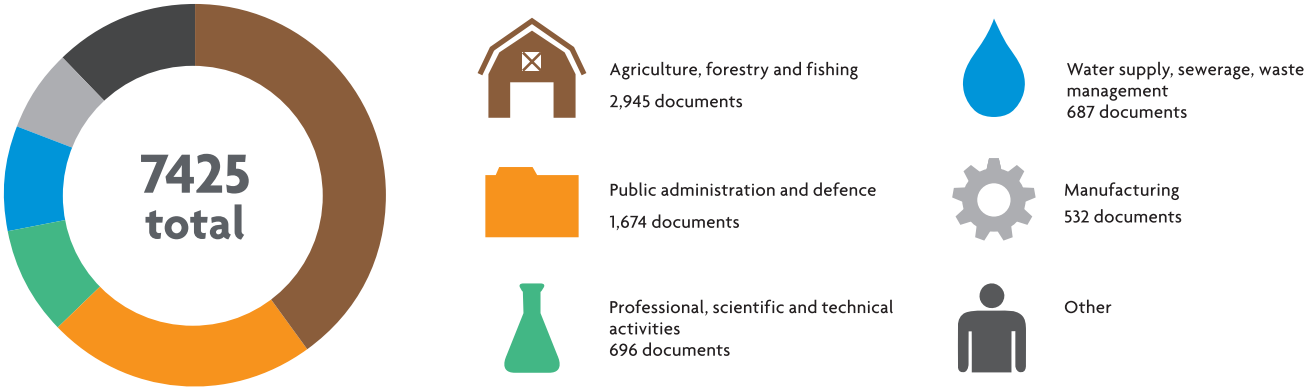
ADDRESSING PIECEMEAL PUBLICATION

"Guidance needs to be consolidated into fewer documents. Iterations and amendments are often added incrementally, making the resulting job of working out how and what should apply more difficult than it needs to be." (Business feedback on existing guidance)

Detailed mapping of existing guidance was carried out as part of the review. This exercise found over 6,000 separate documents with more than 126,000 pages of reading material. It soon became evident that extensive guidance was being generated in response to environmental legislation but that there were no consistent principles, architecture or governance to ensure that it was being designed from a user perspective. Guidance had grown in a piecemeal way.

This exercise also recorded the business sectors targeted by existing guidance documents. The most recent analysis showed the following sectors as receiving the largest number of documents as seen in **Figure 1** below.

These figures highlight the amount of reading material that different sectors are expected to digest, and give an indication of the potential time and resources that could be required to understand the relevant environmental regulations.



▲ **Figure 1. The number of guidance documents found for environmental sectors.**

Understanding environmental obligations and keeping up to date with changes takes time and resources away from the 'day job'. The review found that businesses devote significant resource to understanding environmental obligations. Businesses with lower levels of capacity struggle the most. Interviews and other research conducted as part of the review suggested that awareness and understanding of environmental regulations is a particular problem for small and medium enterprises (SMEs) and micro-businesses.

It is not surprising then, that the review found widespread support for simplification. Research carried out as part of the review emphasised this as did comments received through public feedback on the project's website.

SMARTER GUIDANCE AIMS

Smarter Guidance wants to make it easier and quicker for businesses to find clear information about what they need to do. There should be one authoritative source of guidance, covering all relevant departmental and regulator interests, with clear arrangements in place so that guidance is kept up to date and new guidance is only produced when there is a clear need. Reading material should be kept to a minimum and should give users confidence about meeting their legal requirements.

ONE SOURCE: THE MOVE TO GOV.UK

From now until Spring 2014, the Government Digital Service (GDS) will be focusing on migrating content from all the Government agencies' websites to a single website, GOV.UK. This move will lead to nearly all of Defra agency guidance, including that produced by the Environment Agency and Natural England, being hosted on GOV.UK. It will also involve a comprehensive audit of existing web content, in particular public-facing guidance. GDS has responsibility for managing GOV.UK and has been closely involved in developing Smarter Guidance's approach to reforming guidance.

START WITH USER NEEDS

"Defining a user need must be strict and honest. For GDS it's the need the user has of government, not the need of government to impart information to the user." (GDS *Service Manual)*

GDS places user needs at the forefront of content design and it is this approach that Defra has incorporated into its plans to reform guidance. The process begins with a user needs assessment:

- Who are the users targeted by the content?
- What do they want to know?
- What do they want to do, and why?

This assessment involves analysing different sources of user requirements, such as Google Analytics data, contact centre information, email enquiries, research and surveys. The data comes directly from customers and it is also tested against data on the usage of existing documents or web pages.

The size of user groups will obviously vary according to subject area, or task, so evidence of high user demand is only one of a number of factors that are considered. For example, the analysis has highlighted documents that are clearly out of date and not being used at all. There are additional criteria to test whether content meets user needs that are linked to Government's unique roles: to provide services; to fulfil regulatory functions; and to provide information that is inherent to people's rights. This assessment helps to build what is known as the 'user story' (the user need and the outline of the content that is required to meet that need). The process is built around the following format:

This approach requires sharp focus on what users need to do, or understand, and importantly on the value of the goal from the user's perspective.

User stories are the building blocks for producing content plans. These plans go through an internal review process, are assessed by GDS, and will be published on the Smarter Guidance and Data public website for comment. Detailed drafts will then be developed that will also be subject to internal scrutiny. Targeted stakeholder engagement will be used to help refine draft material before it is published on GOV.UK.

Latest findings suggest that the greatest burdens resulting from the environmental and non-environmental guidance produced by Defra and its 'arm's length' bodies are associated with the following policy areas:

- Waste;
- Wildlife management;
- Marine management;
- Landscape, countryside and recreation;
- CAP schemes;
- Land management;
- Animal health and welfare; and
- Water.

SMARTER DATA: SIMPLIFYING REPORTING

"There undoubtedly is scope for streamlining the data collection process in the environmental sector. We are pleased to join Defra in this important initiative both by providing dedicated resource and specialist in-house expertise in how

multiple reporting can be prevented, resulting in efficiency savings for both the regulator and the private sector." (Kevin Hurst, Marketing & Communications Director, Veolia Environmental Services.)

The Phase 1 Report found a total of 243 different information obligations were required from business.

In terms of the information reporting, the Smarter Environmental Regulation Review's *Phase 1 Report* found a total of 243 different information obligations were required from business. Twelve different electronic portals were identified and reporting frequencies ranged from one-off to monthly, with the most common being one-off (45 per cent), *ad hoc* or on-going (23 per cent) and annual reporting (15 per cent). Areas with the greatest number of information obligations currently are: environmental permitting (54), waste (34) and hazardous materials and chemicals (29). Information can be reported at multiple times of the year in different formats and to at different locations. Businesses described existing reporting arrangements as overlapping and being too complex. Furthermore, it is not always clear to businesses why information is being requested and how this information is being used by regulators.

'ROOT AND BRANCH' REVIEW

"By working closely with the industry and regulators, we have identified promising reform opportunities that can significantly reduce red tape. Regulators involved in the review have been proactive and supportive which has enabled it to progress quickly and positively and ensured the best options are identified." (Mark Newbold, Principal Consultant, WSP Environment & Energy Services)

In response to the review's findings, Defra commissioned an independent assessment of all the environmental and farming information that businesses submit to Defra and its regulators. These information obligations include both one-off requirements (such as permit applications) and ongoing requirements (such as monitoring data). The aim of this assessment is to examine whether all these information obligations are still needed and to explore how data collection might be streamlined.

Initial proposals have been developed for the following six policy areas:

1. Environmental permitting;
2. Water and waste management;
3. Agricultural management;
4. Emissions;
5. Hazardous industries, materials and chemicals; and
6. Habitats and species.

Three more areas are still to be reviewed: rural and animal health; marine; and carbon and other greenhouse gases. Each area involves a robust challenge process. Options that have come out of the independent assessment (led by the consultancy firm WSP) are presented to regulators and policy officials for discussion and challenge. These options are also informed by feedback from interviews with industry representatives and discussions with industry focus groups.

"Establishing options to reform the current reporting landscape is not an easy task; however this comprehensive cross-cutting review has identified potential savings that would not be possible from narrower reviews. We have put options on the table that would eliminate a range of reporting and application requirements and streamline others through the use of new digital approaches to information collection and management." (Mark Newbold, Principal Consultant, WSP Environment & Energy Services)

The options for reforming information obligations that that have been considered as part of these so-called challenge sessions include:

- Stop collecting information;
- Renew automatically;
- Exclude low-risk activities;
- Replace bespoke with standard;
- Simplify and streamline;
- Focus assessments on required information; and
- Reduce *ad-hoc* requests.

Initial proposals for reform of all the above policy areas should be published for public comment by the end of this year. Stakeholders will therefore have a further opportunity to shape plans for reform before implementation plans are developed. The latter (which will need to be agreed by Defra ministers) are due to be published in March 2014. The environmental information obligations that have been examined so far currently take businesses over four million work hours per year at a cost of around £180 million. Initial proposals that are under consideration could save nearly 900,000 work hours and £40 million per year – equivalent to around a 20 per cent saving. (See **Figure 2**)

STAKEHOLDER ENGAGEMENT

"A spring clean is much needed and as such EEF very much welcomes this bold initiative by Defra. We strongly support its vision and are ready to work with government and its agencies to make this a reality for manufacturing companies. It will provide opportunities for business and also deliver environmental benefits by making compliance simpler." (Gareth Stace, Head of Climate, Energy and Environment, EEF, the manufacturers' organisation)

▲ **Figure 2. Initial proposals from Government could save 900,000 work hours, a 20 per cent saving on total time spent complying with environmental regulations.**

Both the review and the Smarter Guidance and Data project have been extremely well supported in terms of stakeholder comments and input, including from the IES. The website has received over 6,000 visits since its launch in May and initial public feedback exercises on data and guidance attracted just over 400 individual respondents. This input provides extremely valuable information for the Smarter Guidance and Data team, and will become increasingly so as the project seeks to test initial proposals and plans for reform. ES

Sharon Holloway is a Product Manager for the Smarter Guidance Project at Defra.

Vicky Midgley is a secondee to Defra from Veolia Environmental Services and is supporting the Smarter Data initiative.

FOR MORE INFORAMATION

To find out more about how you can get involved, follow us on Twitter @defraregs or visit our website www.guidanceanddata.defra.gov.uk.

The *Phase 1 report: guidance and obligations review* on the review's findings can be found at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/199868/serr- phase1-130516.pdf.

IES: New members and re-grades

Members	Occupation (M)
Alan Costello	Assistant Scientist
Sabastian Dube	Senior SHE Advisor
Graham Muir	Post-Doctoral Research Associate
Kwok Hung Chan	HSEQ Systems Manager
Kirsty Meyer	Environmental Consultant
Uzoma Okoroa	Environmental Coordinator
Nnaemeka Mbele	Environment Operations Officer
Claire Squires	Senior Environmental Consultant
Donald Clarke	Director
Nolan Vincent	Senior Project Manager
Laura Russell	Senior Sustainability Consultant
Andrew Haigh	Sustainability Co-ordinator
Benjamin Anstee	Principle Consultant - Acoustics, Air Quality & Odour
Snigdha Jain	Senior Sustainability Consultant Member
Anna Walton	Principle Consultant
Elena Rovest	Project Manager

Fellow (F) is for esteemed individuals in environmental science and sustainability who are held in high regard by their peers	Member (M) is for those individuals who have substantial academic and work experience within environmental science.
Associate (A) is for individuals beginning their environmental career or those working on the periphery of environmental science.	Affiliate (Af) is for individuals with an interest in environmental issues but don't work in the field, or for students on non-accredited programs.

Joining the IES helps your professional development. Whatever stage you are at, the IES has membership services that will help you gain recognition and progress to the next level. Members come from all areas of the environment sector, wherever jobs are underpinned by sound science

Associates	Occupation (A)
Christopher Squires	Graduate Air Quality Scientist
Anton Apuhtin	Graduate
William Moore	Graduate
Mark Douglas	Assistant Scientific Officer
Darren Twort	Graduate
Hiu Ying Lung	Graduate
Matthew Magilton	Graduate
Sally Walker	Environmental Consultant
Kaja Zaremba	Postgraduate Student
James Alexander	Graduate
Thomas Mumford	Graduate
Peng Li	Sustainability Curriculum Auditor
Conair Morrison	Clerical/Mapping Officer
Christopher Murrell	Site Chemist
Bright Danso	EMS Adminstrator
Thomas Darley	Gradaute
Charles Baily-Stevens	Postgraduate Student
Sonia Soni	Graduate
Holly Gregory	Graduate Environmental Scientist
Robert Dawkins	Graduate
Tunrayo Olufade	Graduate
David Lakey	Graduate
Karen O'Neill	Graduate

Affiliates	Occupation (Af)
Garrick Taylor	Post-doctoral Researcher
James Pickering	Graduate Trainee Manager
Sandra George	Student
Christopher Price	Postgraduate Student
Alan Campbell	Student
Fraser Woodley	Student
Jonathan Collin	Graduate
Lucy Bunker	Student

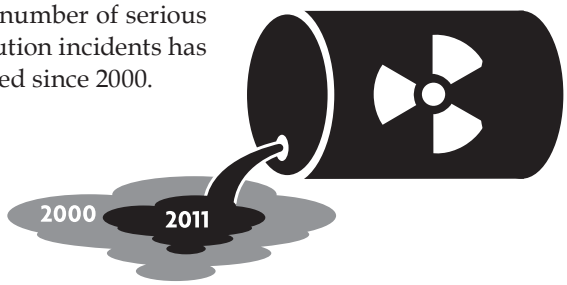
How does UK environmental regulation affect the environment?

Every year the Environment Agency collects data on environmental regulatory matters to establish trends in the efficacy of UK environmental regulation. The following show how environmental regulation is affecting the UK environment.

WASTE AND CONTAMINATION [1]

There has been an increase in the amount of usable material recovered from waste from regulated sites since 2006.

The number of serious pollution incidents has halved since 2000.



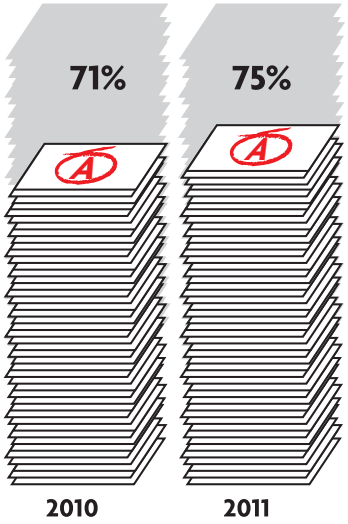
PARTICLES

Between 2000 and 2011 there have been significant reductions in emissions as a result of environmental regulation. The benefit to health from SOx and NOx reduction is estimated at £634 million from 2005 to 2011.

73% Reduction | 37% Reduction | 38% Reduction

ENVIRONMENTAL PERMITTING

The EA issues permits that set the operating standards and conditions necessary to protect the environment and people. Annual compliance assessments are rated in performance bands from 'A' (good) to 'F' (poor). Since 2006 the number of businesses requiring a permit has grown by more than a third to 13,932.



▲ **Figure 2. In 2011 75 per cent of permitted sites were rated A compared to 71 per cent in 2010.**

THE COST TO BUSINESS

178 separate companies were fined for environmental offences in 2011, compared with 179 in 2010 and 317 in 2005.

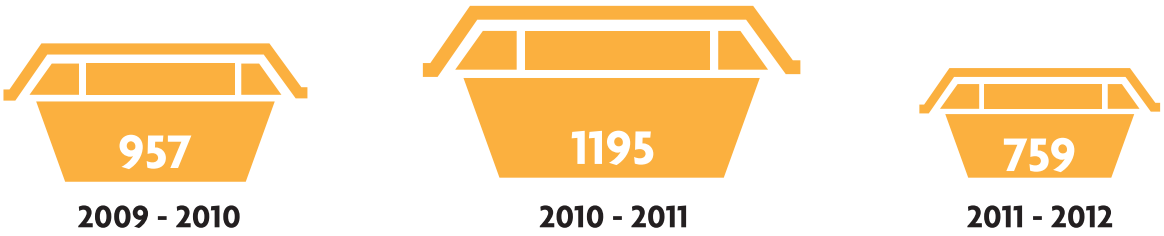
▲ Average fines

SITES OF HIGH PUBLIC INTEREST

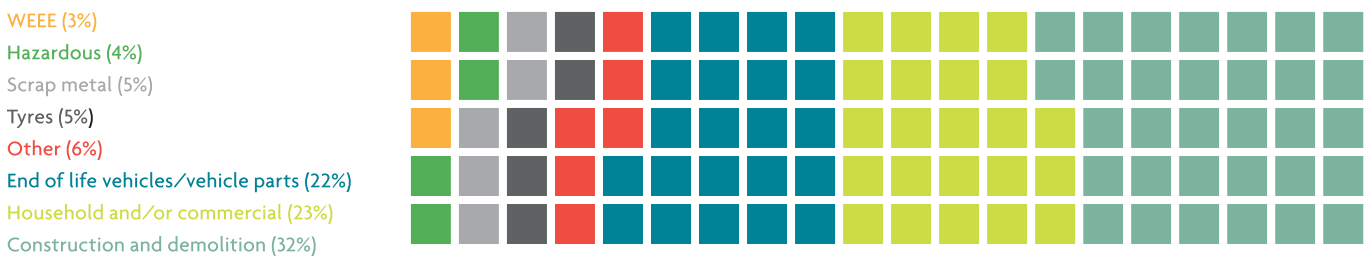
Odour was the top concern at 40 per cent of all high public interest sites and 48 per cent of permitted sites. Noise and health were the next most frequent primary concerns

ILLEGAL WASTE SITES

In the 2011/2012 reporting year, 759 illegal waste sites were stopped. Of those sites, 89 were brought into regulation through permitting or exemptions. Almost a third of illegal waste sites were dealing with construction and demolition waste, 23 per cent with household/commercial waste and 22 per cent dealt with end of life vehicles and vehicle parts.



TYPES OF SITE



SOURCES 1. Environment Agency (2012) Sustainable Business Report 2011. Environment Agency: Bristol.

Environmental regulation: ambiguity, ambivalence and legislative balancing acts

Nigel South explores the difficulties of creating legislation that effectively covers the breadth of the environmental protections needed.

Since the 19th century, regulators concerned with environmental matters have been able to draw upon public health or resource statutes, civil codes and occasionally the criminal law. The latter has typically been targeted against industrial and agricultural offenders guilty of polluting air, water or land, causing public health dangers or public nuisance problems. However, it is notable that since the early to mid-1970s, the environmental regulatory framework in the UK and elsewhere has expanded significantly. As the UK Environment Agency summarises, this reflects:

"growing awareness of the serious threat environmental crimes potentially pose to human health and the damage that can threaten sensitive ecosystems. Contaminated land, for example, may easily pollute aquifers that will take decades to recover. The costs of remedying the situation can be millions of pounds. Successful criminal prosecutions are important as a punishment, a deterrent and for the wider publicity they generate. The established principle is that the polluter should pay" (Brosnan, 2002, p298)[1].

The question is whether the "established principle" can be applied in practice?

In their survey of environmental law, Bell and McGillivray[2] note that one of the key problems that regulation in this field must face is the sheer diversity of "individuals and corporate bodies" that "carry out the activities that lead to breaches of environmental law, from solo fly-tippers to huge multinational corporations". All jurisdictions concerned about environmental damage and crime struggle with the definitional, scientific, political and operational problems that follow from this diversity.

There is little in the way of international legally binding law that might help protect the planet and there is little in the everyday actions of most consumption-oriented inhabitants of nations of the developed world that suggests we greatly care. The US sociologist Bob Agnew has talked of "everyday ecocide" and suggested that such behaviour includes "living in a large, suburban home, heated and cooled to comfortable levels; using a gasoline-powered automobile for most transportation; frequently purchasing consumer products; and regularly consuming meat", all of which contribute to increases in air, water and soil pollution, destruction of natural habitats and other species, depletion of natural resources as well as climate change[3]. Nonetheless, while the context *is* not altogether favourable, regulation *is* on domestic and international agendas.

"TOUGHER BUT MORE FLEXIBLE SENTENCING NEEDED"

The quote above is now nearly 10 years old and was a key conclusion of the UK Parliament Environmental Audit Committee in its 2004 report Environmental Crime and the Courts[4]. The report painted a picture of an "unsatisfactory" sentencing system that was inflexible in spite of some change and improvement, with fines audit frequently verging on the "derisory". According to the Committee:

"The current sentencing system is just not flexible and imaginative enough adequately to punish corporate bodies… It is disgraceful that some companies openly boast about their crimes as though they manifested some sort of commercial talent… The Government must adopt a much tougher stance with businesses – regardless of their size and nationality – *which flagrantly flout the law"* (emphasis added) (para 26)[4].

Some modest response may be found in the recently proposed Environmental Offences Guideline produced by the Sentencing Council for consultation in 2013 and which, in due course, will replace current *Magistrates' Court Sentencing Guidelines*[5] and a publication from the Magistrates' Association called *Costing the Earth*[6]. The draft document was scrutinised by the Parliamentary Select Committee on Justice which noted that it "covers a small range of offences, but a broad range of activities and offenders"[7]. Within the Department of Business, Innovation & Skills, the Environment Regulations team

has recently reported on the UK's Producer Responsibility Regulations. This is a further framework, in this case delivering UK legislative compliance with EU obligations regarding some aspects of waste disposal and recycling (e.g. of batteries, packaging and electronic equipment)[8]. In addition there are many other bodies of regulation in operation at various levels and with varying degrees of penalty within the UK and other nations but there are two (related) features of the examples above that are likely to be shared.

"The enforcement regime is [...] undermined by inconsistency".

First, the question of breadth and diversity – how can legislation and regulation catch all that it could and should be concerned with? As Du Rees points out, it can be difficult to "connect a specific discharge of a prohibited substance to a specific form of damage to the environment or to people's health"[9]. The second point to note is the additional comment from the BIS team that the aim promoted by current UK Government policy is to "improve" regulations "to optimise their effectiveness" but at the same time "reduce the administrative burdens they place on business"[8]. This leads to a classic regulatory conundrum: can there be – essentially – offender-friendly regulation? To which the answer is, of course there can, but it tends to take the bite out of the watchdog. To quote Du Rees again, what is reflected here is a common tendency towards "a *form of legislative balancing act*, which involves making compromises between different interests, i.e. economic [business] factors and environmental considerations"[9]. (Author's emphasis and addition).

In other words, it can be argued that there is a need for a reasonable balance between environmental protection and the costs of providing this. However, the question of what is reasonable is open to debate, dispute and the influence of powerful interests, while the regulators themselves are often left with an unclear role that can give rise to a weak or uneven application of law and regulations. So as Fogleman observed of the weak impact of a section of the UK Environmental Protection Act 1990, a "lack of enforcement has its roots in an enforcement-unfriendly regime, which is so complex that it can never achieve its objective of 'dealing with unacceptable risks posed by land contamination to human health and the environment'[10]. The enforcement regime is also undermined by inconsistency.

REGULATION AVOIDANCE

One UK news story of 2013 has been the controversy surrounding the ability of several major international companies to avoid paying tax to the UK Treasury by taking advantage of more flexible and less demanding tax arrangements elsewhere. This is hardly new and it is a strategy not confined to the matter of tax avoidance. It also applies to avoidance of other regimes of regulation. So, for example, in 2007, the European Commission proposed the introduction of a EU-wide framework of criminal penalties to address the loophole that enabled companies to avoid serious penalties by operating from jurisdictions with the least stringent or punitive laws. As one official noted, "member states have very different ways of punishing environmental pollution" which draws companies seeking to reduce liability and cost to those countries "where there are least sanctions"[11]. The proposal was rejected at the time by the European Court of Justice, which argued that the EU could oblige member states to introduce penalties for pollution but could not determine "the type and level of the criminal penalties to be applied".

As Huisman shows, the kind of 'soft law' instruments that do exist and operate nationally and internationally for the purpose of regulating corporate offenders can "contribute to creating generally accepted social norms" underpinning expectations of responsible behaviour by corporations but "the worst offenders are not compelled to take part" while "increasing numbers of corporations affiliated to the UN Global Compact initiative do not comply with their reporting obligations". Huisman rightly draws attention to the "ambiguity and ambivalence" underlying the system of regulation of corporate offenders as it currently operates[12].

REGULATION AND ENFORCEMENT IN AN UNCERTAIN WORLD

The two principal models that regulatory laws and mechanisms of enforcement follow are generally referred to as the compliance and deterrence models. The compliance approach seeks conformity with law or regulations without the need to resort to policing and punishment of infringements. Instead behaviour is influenced by offering inducements and incentives, or by establishing administrative procedures designed

to avoid non-compliance opportunities. Deterrence strategies work by aiming to enforce the law, detecting violation and prosecuting and penalising offenders. Punishment serves as a warning to others. In practice elements of the two approaches may be combined.

Compliance systems are criticised by some because they only impose penalties after an offence has actually been committed, even though there may have been prior indications or even hard evidence that precautions and prevention were not adequately attended to. When penalties are applied they may be quite limited in scope, usually economic measures in the form of a fine that is then typically absorbed by an organisation, with customers and taxpayers ultimately paying out. Others therefore argue that more punitive measures should be taken, and that where deterrent punishments have been used in the past these have had an impact – especially when imprisonment and negative publicity follow.

However, a further view might support the mixing of the voluntarism assumed by a compliance approach with tougher enforcement and restorative justice interventions as an effective strategy. As the environmental lawyer, Polly Higgins puts it, "Restorative justice is built on an understanding of our relationship with nature and the duty to remedy the harm caused" – addressing "the needs of the beleaguered party to restore that which has been harmed rather than simply fixating on the punishment of the perpetrator"[13]. This kind of approach to the administration of environmental regulation and justice, invoking methods and principles of mutual engagement, is both practical and consonant with ambitions to protect the planet[14].

PROTECTING THE PLANET AND A LAW OF ECOCIDE

In April 2010, Higgins put forward a proposal for an international law of ecocide to the United Nations Law Commission, arguing that nations need to do more to prevent environmental destruction and ecosystem collapse. The proposal coincides with interest in the extension of existing Environmental Courts and Tribunals (which currently number over 350 in operation in 41 jurisdictions), as well as arguments for the establishment of an International Environmental Court.

Proposals such as these may not yet be perfectly formed but at the very least they deserve contemplation and debate. The future may be uncertain but it could surely benefit from more effective and appropriate regulatory tools as well as more environmentally responsible and sensitive human instincts and behaviours. ES

Nigel South is Professor of Sociology at the University of Essex.

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WHAT IS ECOCIDE?

Ecocide is the extensive damage to, destruction of a loss of ecosystem of a given territory, whether by human agency or by other causes, to such an extent that peaceful enjoyment by the inhabitants of that territory has been or will be severely diminished. [15]

Nitrate Vulnerable Zones: a good example of risk-based, targeted regulation?

Robert Willows and **Alwyn Hart** review the regulations designed to control nitrogen pollution.

Over the past 50 years or so, developed countries have seen general improvements in water quality[1]. These have been achieved through increasing regulation and significant investments in monitoring, abatement and treatment technologies that have helped to reduce pollution from traditional sources such as the factory chimney and effluent outfall pipe. Pollution in these countries has also been lowered by the export of manufacturing industries to the developing world. At the same time the attention of policy-makers has increasingly switched to pollution from sectors such as transport and agriculture.

The production of reactive nitrogen has doubled globally over the past century and tripled in Europe[2]. Its release into the environment and perturbation of the planet's nitrogen cycle represents a global-scale experiment that is second only to that associated with emissions of carbon dioxide.

People depend on the cereals and animal food products provided by a farming industry that is both intensive and extensive. Agricultural production requires the efficient use and uptake of plant nutrients contained in mineral fertilisers, organic manures and soils and nitrogen fertilsers enable the EU to be largely self-sufficient in cereals; they are essential for food security. But, like all processes, there are limits to the efficiencies that can be achieved in farming, and the release of excess nutrient nitrogen and phosphorus is of particular concern for the water environment. The term 'diffuse pollution' is commonly applied to nitrogen and other losses from farming, and water pollution from agriculture is complex, with multiple localised farm sources, intermittent inputs, complex pathways, fates and impacts.

NITRATES DIRECTIVE

The European Nitrates Directive[3] aims to manage the agricultural pollution of waters. "Waters" include rivers and lakes, groundwater and coastal waters. Pollution is defined in two ways: as concentrations of nitrate in excess of safe levels in sources of drinking water (50 mg/l)[4] and in terms of ecological disturbance through eutrophication. Where waters are polluted or could become so, EU member states must implement measures to reduce agricultural sources of nitrates.

All naturally occurring fresh waters are regarded as a potential source of drinking water, not just those subject to abstraction by water supply companies. This followed a judicial review of a previous implementation of the Directive. However, groundwaters are particularly important: not only do aquifers provide drinking water to many major public water supplies as well as tens of thousands of individual private wells, but groundwater also maintains flows in rivers during periods of low rainfall. Elevated concentrations of nitrates in groundwater inevitably followed the increase in and intensification of post-war agricultural production[5] and, with response times of decades[6] are expected to decrease slowly following reduced agricultural loads.

In contrast, river nitrate concentrations have shown improvements in the last 15 years[7], as farming has improved the efficiency of fertiliser use. Nitrate pollution of aquifers places a significant cost on water companies, and their customers, in developing and maintaining treatment options that ensure the water is fit to drink. It is also a constraint on exploiting much-needed drinking water supplies.

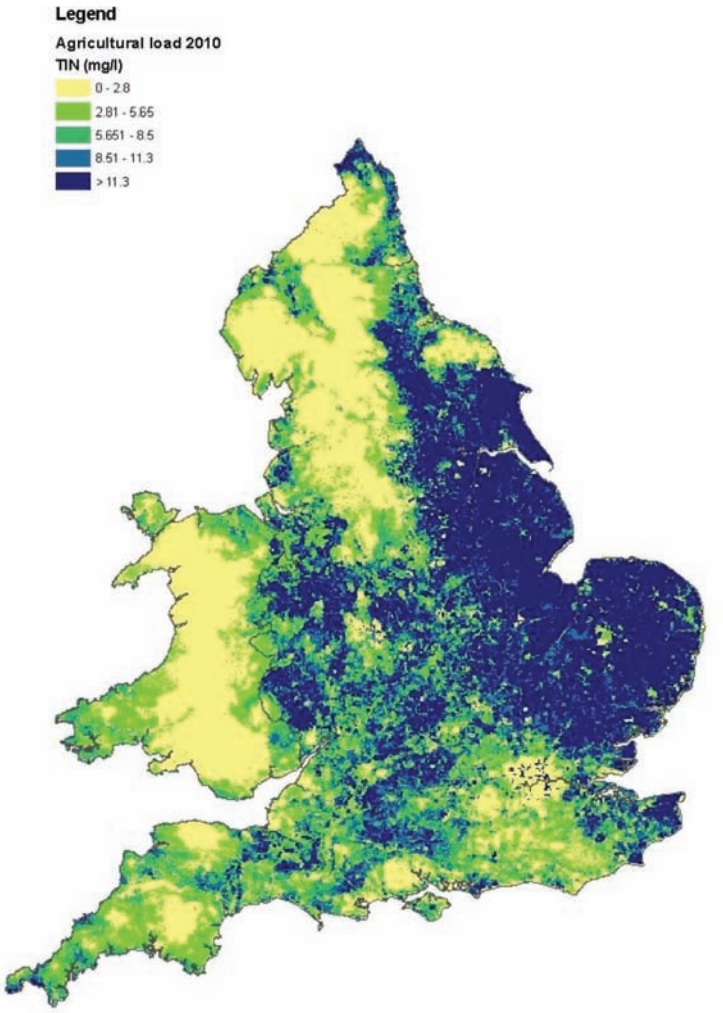
NITROGEN FROM AGRICULTURE

Agriculture is estimated to be responsible for over 60 per cent of total emissions of reactive nitrogen in the UK, similar to other northern European countries[1]. These average figures belie significant variations between catchments. For example, in north-west England, the Atlantic climate supports grassland with a long growing season. Hence the River Weaver catchment is an area of intensive dairy production and, with approximately 176,000 dairy cows and other cattle, has some of the highest densities anywhere in Europe. There are also estimated to be 2,500 pigs and two million chickens, whose manures and ammonia releases to air contribute

to the catchment's nitrogen load. In addition, there are almost twice as many human residents as cows (337,000 according to the 2001 census), plus industrial sources that discharge nitrogenous effluents directly to rivers. It is clear that nitrate pollution here is a shared problem. But the importance of the dairy sector as a source of nitrogen to the catchment becomes apparent when you consider that a typical dairy cow may excrete 110 kg per year of nitrogen, while the average human will produce about 4 kg per year.

AT A GLANCE: REACTIVE NITROGEN

Annual *average* concentrations of nitrate in water draining from agricultural soils can exceed 50 mg/l over extensive areas of a catchment (see **Figure 1**), particularly in areas of intensive arable production. Peak concentrations can be much higher. In a study of eight small agricultural catchments over five years, in almost two-thirds of catchment years, more than five per cent of water quality samples exceeded 50 mg/l. In a quarter of cases five per cent of samples exceeded 100 mg/l. (Polluted waters are defined where more than five per cent of samples exceed 50 mg/l.)



WHOLE TERRITORY OR WITHIN TERRITORY?

The Nitrates Directive allows individual countries to choose to apply regulations nationally ("Whole Territory Designation") or to target regulation in areas understood to be vulnerable to nitrate pollution by defining within-territory Nitrate Vulnerable Zones (NVZs). In the latter approach, to quote from the Directive, "all known areas of land ... which drain... into ... waters affected by pollution and waters which could be polluted ... and which contribute to that pollution" should be designated as being within an NVZ. Denmark has taken the whole-territory approach, due in part to evidence of coastal eutrophication. In contrast, the UK has taken the within-territory NVZ route. NVZ designations and associated regulations have to be reviewed and reported to the European Commission every four years.

The targeting of regulation to areas impacted by or at high risk of nitrate pollution would seem to be the right thing to do. It is consistent with the recommendations of the Hampton review[8]: any regulatory burden is focused only where it is required to protect the environment. However, it does require that risk assessments can be designed and implemented to identify land areas draining to waters that are at risk of pollution. Such risk assessments must:

- meet the legal requirements specified in the Directive;
- provide adequate evidence regarding the level of risk or realised harm; and
- ensure that evidence should be sufficient to satisfy key stakeholder groups. Stakeholders include the European Commission, water companies, farmers and their representatives and (ultimately) the courts.

There has been a history of legal challenges of countries' implementation of the Nitrates Directive by the European Court of Justice. In the past, cases have been brought against the UK, amongst others, and, currently, France. Such legal rulings have to be taken into account in the design of the risk assessments to identify areas in which the regulations will apply.

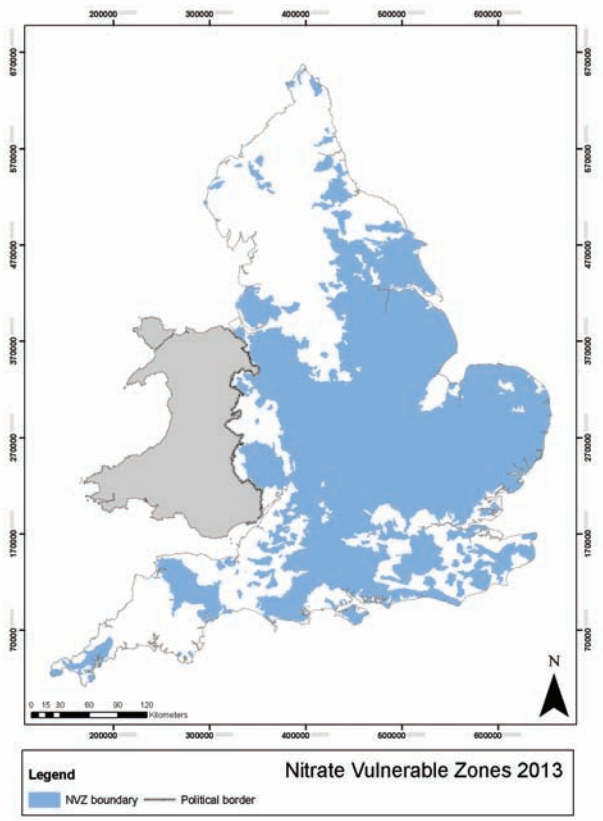
In recent rounds, separate assessments have been undertaken for the designation of rivers, groundwaters, and eutrophic lakes and coastal waters. Methodologies were developed under the guidance of method review groups comprising independent experts, representatives from the farming industry, water companies, the Environment Agency and Government (Defra and the

◀ **Figure 1. Estimate of the excess load of total inorganic nitrogen (TIN) from agriculture land (PTO). The load is expressed as an effective annual mean concentration in soil water drainage from each 1 km square. Data provided by ADAS UK, under contract to Defra and EA.**

Welsh Assembly Government). Researchers provide peer review, including expert advice on the underlying science, use of data and guidance on the validity of assumptions. All this is necessary for delivering NVZ designations that are, in effect, lines on a map separating designated fields from non-designated fields (see **Figure 2**). Implementation of the methodology on behalf of the Governments in England and Wales has been the responsibility of the Environment Agency. A review of proposed designations was undertaken in regional meetings that included farming representatives as well as Environment Agency staff with knowledge of the areas of concern.

APPEALING AGAINST NVZS

Since 1998 farmers in England and Wales have then been able to appeal against proposed NVZs. In 2013 appeals in England have, for the first time, been decided under the rules of the General Regulatory Chamber of the First-tier Tribunal. Each tribunal consists of a judge and a suitably qualified environmental scientist. It is the first time that the Tribunals Service has heard appeals stemming from the implementation of environmental legislation.



▲ **Figure 1. Nitrate Vulnerable Zones in 2013 as identified by the Environment Agency.**

Approximately 130,000 landholders were notified as having farmland that may be affected by the regulations in 2013, and 455 appeals were received. (Some landowners appealed even though their farming practices would not be directly affected by the regulations.) Although a relatively small percentage of potential appellants, it indicates some unhappiness with the perceived burden of regulations in some sections of the farming industry. Farmers could appeal against designation on two grounds: firstly that their land did not drain to a polluted water, and secondly that the water was not in fact nitrate polluted. The number of successful appeals (46 per cent by number, though significantly less by land area) indicates that the evidence of pollution risk was not always sufficient to satisfy the tribunals. Why was this?

The short answer is that there seems to have been a mismatch between the intentions of the Directive (to control diffuse sources of agricultural pollution within EU Member States) and the evidence available to prove, on the balance of probabilities to the satisfaction of a judicial tribunal, that a particular farmer's field drains to a water that in the terms of article 3.2 of the Directive "could be polluted".

RISK ASSESSMENT DATA

The risk assessments use a wide variety of nationally available data coupled with expert local Environment Agency staff knowledge. They include information on sources of nitrate and their relative importance across the landscape. This comprises data on agricultural land use at a 1 km^2 grid scale and estimates of associated nitrate losses that are based on field- and farm-scale experimental and observational data for a relatively small number of research farms and sites. It includes information on the location of consented effluent discharges, on hydrological pathways (long-term rainfall, soils, topography, drift and catchment geology) and potential impacts. Water quality monitoring data (for rivers, lakes, coastal waters and groundwaters) is used to provide evidence of the concentration of nitrogen compounds (nitrate, nitrite and ammonium, but not organic nitrogen) in receiving waters. For lakes and coastal waters, ecological data is used to provide evidence of undesirable disturbance due to eutrophication.

The water quality monitoring data are particularly important. The Environment Agency operates an extensive network of monitoring sites in rivers, lakes and groundwaters, supplemented with monitoring data from water companies where available. The monitoring network is more than the minimum required under the terms of the Nitrates Directive (the monitoring also serves other statutory purposes).

FARMERS' CONCERNS

Appellants raised a large number of issues. Despite the enormous amounts of data and information used in the assessment, the information remains relatively sparse at the scale of a water body (with an associated catchment area typically between 20 and 60 km^2). The monitoring programme cannot provide results relevant

to every farm holding. Farmers complain that much of the water quality data is downstream of sewage effluent discharges, that there is insufficient dilution perhaps associated with low summer river flows, and that discharges are not consented for nitrates. They also point out that there may be additional uncontrolled point sources. The Environment Agency argues that effluent discharges are lawfully consented and the consents are designed to provide adequate dilution, and monitoring sites are located beyond the mixing zone of the discharge. Case law makes it clear that where there is pollution and agriculture makes a significant contribution to it, then designation should follow. The case law on what comprises a significant contribution is somewhat ambiguous.

The UK is blessed with a diverse geology, varied farming land uses and topography, and a rich history of land drainage, abstractions, discharges and other engineering. This makes providing local and specific evidence of hydrological drainage and the contribution that each and every farm may make to pollution in rivers and groundwater bodies, across England and Wales a significant challenge.

Most tribunal decisions were made based on paper submissions. Oral hearings can be held at the request of either party, or at the request of the judge. In order to reduce costs it was agreed that the parties to an appeal could represent themselves without the need to employ barristers or solicitors. In some cases farmers have employed environmental consultants to present their argument. The judge, with the help of their independent lay expert, could challenge the evidence presented by either party.

LOOKING TO THE FUTURE

It is fair to say that the process has been a learning experience for all concerned. Some initial decisions have been found to be potentially unlawful and been revised. It is likely that there will be an increasing reliance on tribunals for reviewing the implementation of regulations under environmental legislation. As a consequence there will be a need for expert environmental scientists, not simply to act as expert witnesses, but who also have experience of the regulations and legal process, and can present and argue cases before a tribunal or act as expert advisors to the tribunal. The next designation is due in 2017. **ES**

Note The opinions expressed in this article are those of the authors and do not reflect the policies of Defra or the Welsh Assembly Government.

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The regulation of contaminated land in the UK

David Kerr outlines the legislation in place to remediate contaminated land.

▲ **Figure1. Estimates of the amount of contaminated land range from 50,000 to 300,000 ha, which would account for 1.2 per cent of the UK's land mass (indicated by red square in the figure above).**

Contaminated land can be viewed as the unwanted legacy of Britain's past industrial and waste-disposal activities. During the 1980s, as the UK moved away from an industrial economy, the extent of the contaminant damage to the landscape became clear. Dealing with this damage now represents a very real challenge for both present and future generations. Various estimates have been mooted as to the amount of contaminated land, ranging from anywhere between 50,000 ha[1] to 300,000 ha[2], which would account for approximately 1.2 per cent of the UK's land mass.

Whilst this seems like an inconsequential amount, one must consider the concentration of industrial activity across the UK. Industrial towns and cities throughout Britain suffered a rapid decline in activity primarily in urban areas, resulting in considerable urban blight.

Initially land contamination was not given the same weight as air and water pollution, for as long as virgin land remained available for development there was little pressure to deal with contaminated sites. Gradually however, as detrimental consequences such as human health issues and urban blight in post-industrial areas became noted, contaminated land was pushed up the public and political agendas.

Furthermore, the publication of the Brundtland Report in 1987[3] (which provided the first widely accepted definition of sustainable development), together with subsequent commissions on the environment, increased the sensitivity of the developed world to restoring and using brownfield sites and contaminated land. It became clear, therefore, that the legacy of contaminated land needed dealing with, but how and with what controls?

LEGISLATIVE AND POLICY MEASURES

In 1990, two legislative measures were passed with the aim of controlling the risks associated with land contamination, preventing the creation of new contaminated sites, promoting the remediation of land identified as contaminated and bringing land within urban areas back into use.

The Town and Country Planning Act 1990 can be viewed as a reactive measure to deal with contaminated land. It is reactive in that under this Act, contamination must be viewed as a material consideration when planning development. Planning authorities such as local councils must therefore take contamination into account in an application for development consent. In the case of the redevelopment of brownfield land, whilst the land may not necessarily be contaminated, it often requires at least some investigation for confirmation of this fact[4]. This is significant in that it adds a further level of complication in the decision-making process of brownfield redevelopment. In terms of remediation costs, the economic implications are clear. Although this policy is reactive in nature, the majority of contaminated land remediation is resultant of this policy measure[5].

Part 2A of the Environmental Protection Act 1990 is the section relevant to contaminated land and is often viewed as the primary legislative measure in the management of contaminated land. Whilst passed in 1990, it was not until April 2000 that statutory guidance was published, and then reviewed in 2012, on how local authorities may implement Part 2A. The Act was adopted in England and Scotland in 2000 and in Wales in 2001, but Northern Ireland has yet to adopt an equivalent, possibly due to the alternative nature of its local government structure. Part 2A is proactive in that is places an obligation on local authorities to identify contaminated land that poses a significant risk and take steps to remove that risk. What constitutes a significant risk is outlined later in this article. There are five key features to Part 2A, which can be outlined as follows:

1. WHAT IS CONTAMINATED LAND?

First, in much the same way that Brundtland provided the authoritative definition of sustainable development, Part 2A provides a statutory definition of what is and

what is not contaminated land. It defines contaminated land as;

"by reason of substances in or under the land that (a) significant harm is being caused or there is a significant possibility of such harm being caused; or (b) significant pollution of controlled waters is being, or is likely to be caused". (Defra, 1990, supplementary provisions)[6]

What is deemed "significant" is not outlined in the Act; however, some clarification was given in the revised edition of the statutory guidance published in 2012. This definition refers to both historical and ongoing contamination.

2. WHAT IS HARM?

The above definition is one based on risk: risk of significant harm being caused or likely to be caused. Underpinning this risk is the contaminant linkage model used in the UK. This model is also referred to as the 'pollution linkage model' or the 'source–pathway–receptor model'.

For significant risk to exist, and thus Part 2A's definition of contaminated land to be applied, a defined contaminant linkage must be in place. Any break in the linkage, for example removing the source contaminant pathway, will result in a reduction of risk to any receptor and thus the definition will not apply. In cases such as this broader definitions such as 'polluted land' or 'land affected by contamination' may be applied.

3. RISK

The third facet of Part 2A is the concept of risk. What constitutes significant risk of harm is not outlined in the Act, although the recent revision of the statutory guidance has at least attempted to address this issue by outlining a four-tier hierarchy system for rating contaminated land: Category 1 land is definitely contaminated, whilst Category 4 land is not contaminated and thus will no longer be considered under Part 2A. The inherent problem with an even tier system such as this is that it renders the middle two categories difficult to define. Risk, and thus the land's placement on this hierarchy are at present based on guidance such as the Environment Agency's Soil Guideline Values and through toxicology science. There is, however, nothing in statute that outlines any thresholds for harm. Remediation of contaminated land under the facet of risk must therefore be to a standard where the land is suitable for its current or intended use. This is referred to as the 'suitable for use' concept.

4. LIABILITY

The costs and indeed who is responsible for said costs and tasks is the fourth element of Part 2A in that it outlines the allocation of liability. Britain adheres to the polluter pays principle, through which the persons or party who caused the contamination, or indeed who knowingly allowed the contamination to occur through omission or negligence, are liable for the costs and will be tasked with remediating the land. These are known as Class A parties, and are served with remediation notices by local authorities. In the event that the original polluter cannot be located, then the concept of *caveat emptor* comes into effect whereby, as a Class B party, the current owner or occupier of the land will become liable. If, as is often the case, neither Class A or B parties can be located or defined, the cost for reducing the risk posed by contaminated land to an acceptable level falls to the taxpayer.

5. LOCAL AUTHORITY ACTION

As outlined above, under the statutory guidance, the onus is placed on local authorities to action Part 2A. This represents the fifth feature of the legislation, that being the decentralised nature of its implementation. The tasks of deciding on liability, serving remediation notices and recovering costs are left to the local authorities. They must keep a record of land identified as contaminated as well as all remediation notices served.

THE INFLUENCE OF PART 2A

Part 2A has had both positive and negative effects. It has received some criticism for not being definitive enough. For many people who own contaminated land it has had a significant effect on the value of their land and thus their capital; however, it can be seen as reducing significant risk. Others criticise Part 2A for its convoluted liability regime[7] and that, despite its proactive intent, the majority of land contamination is dealt with through the reactive Town and Country Planning Act as outlined above. Nevertheless, the risk-based definition offered by Part 2A has become widely accepted in the UK and it is the benchmark by which environmental consultancies and remediation companies conduct their business.

It is reasonable to suggest that the regulation of contaminated land within the UK is an evolving discipline and as, through government incentives, more and more brownfield and contaminated land is remediated to be brought back into use, it will continue to evolve.

CONCLUSION

As Britain emerged from the industrial period, the extent of the contaminated land legacy became clear. This legacy represented and represents a real challenge going forward, especially in the light of our sustainability-conscious world.

In answer to the question of how contaminated land is regulated in the UK, two legislative measures, one proactive and one reactive, were passed in 1990 in an attempt to deal with the unwanted legacy. The Town and Country Planning Act 1990 is reactive in that it stipulates that contamination of land is now a material

consideration in the planning process. The majority of contaminated land is dealt with through this measure. Part 2A of the Environmental Protection Act 1990 came into effect in April 2000 with the publication of the now revised statutory guidance on its implementation. It is proactive in that it places the onus on local authorities to identify and remediate contaminated land as outlined by its risk-based definition.

The regulation of contaminated land in the UK is bifurcated in nature and is not without its critics. It can, however, be argued that it has had success in reducing risks posed by contaminated land, setting a benchmark by which contaminated land can be brought back to use. ES

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Further analysis and debate about part 2A can be found at www.ies-uk.org.uk/analysis.

Cambrian Patent Fuel Works

Kevin Stone describes the remediation of historically contaminated land.

Local Authorities have a duty to inspect all sites within their boundary that could be affected by land contamination and to identify which of those sites should be determined as contaminated land as defined in Part 2A of the Environmental Protection Act (EPA) 1990.

In 2009, Cardiff Council identified the site of the former Cambrian Patent Fuel Works as a potential Part 2A site, given that there was a reasonable possibility that an active contaminant linkage existed on the land. The specific area of interest consisted of a mixture of council and privately owned (ex-council) residential properties with gardens and associated sheds and garages, located approximately 3 km north-west of Cardiff city centre.

The Cambrian Patent Fuel Works had been one of four patent fuel works that had operated from 1846 to 1920 within the Taff Valley. The works took unusable fragments of coal and coal dust and heated it in cast-iron retorts. The coke-like result was mixed with pitch and heated before being fed by hand into moulds for compression. The compressed briquettes of fuel were then distributed for sale throughout Cardiff and the surrounding area.

Cardiff Council commissioned a programme of intrusive site investigation works to generate a sufficient and robust dataset to enable an informed decision for each individual property. The site investigation focused on potentially significant source–pathway–receptor linkages, the most significant of which were considered to be:

- the potential for dermal contact with, and ingestion or inhalation of, soils contaminated with polycyclic aromatic hydrocarbon compounds (PAHs), including naphthalene and benzo[*a*]pyrene; and
- indoor inhalation of naphthalene vapours.

Both naphthalene and benzo[*a*]pyrene are possible carcinogens.

SAMPLING THE AREA

The site investigation involved a programme of systematic shallow soil sampling across all of the target properties, soil vapour sampling at key locations and a limited programme of indoor air sampling. All properties under investigation were occupied at the time of the works. Cardiff Council and their appointed environmental consultants (WorleyParsons) engaged with residents during all stages of the project to ensure that they had a clear understanding of the works being undertaken and why they were necessary.

Following the completion of the site investigation, a detailed quantitative risk assessment (DQRA) was completed to assess the significance of potential source–pathway–receptor linkages using the site-specific data generated during the investigation. Contaminant data were compared with site-specific threshold criteria, derived using the Environment Agency's contaminated land exposure assessment (CLEA[1]) protocol. The DQRA identified that the presence of benzo[*a*]pyrene in shallow soils in the gardens of 13 properties at the site presented a significant possibility of significant harm to residents via dermal contact, ingestion or inhalation. Therefore Cardiff Council determined these 13 properties as 'Contaminated Land' under Part 2A.

The original polluter of the site (the owners of the Cambrian Patent Fuel Works) had ceased trading in the 1920s and could not be traced. Therefore, under Part 2A the current owners/occupiers were deemed to be Class B appropriate persons. Under Section 78N of the EPA 1990 the enforcing authority, in this case Cardiff Council, have powers to undertake appropriate remediation works on behalf of the appropriate persons. In line with the statutory guidance the Council decided to waive the costs of remediation from the private owners as research satisfied the authority that the owners could not have reasonably been expected to know that the land was contaminated at the time of purchase.

Cardiff Council applied to the Welsh Assembly Government's Capital Funding Programme and successfully obtained funding to carry out remediation works to render the site fit for purpose. The works, which lasted six months, involved removing shallow soil across readily accessible areas of the site and replacing it with imported topsoil that had been proven to be free from potentially harmful substances. ES

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