Lessons from the History of UK Environmental Policy

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Contents

Foreword

Environmental policymaking has a long history, even if 'the environment' has been framed as a category for public and political concern only in more recent times. A policy history, as John Haldon argues in his long view, 'should be about how and why the decisions made by those with power to decide, and the way in which they made their decisions, changed through time'. The processes involved, and their intended and unintended consequences, are fascinating in their own right. Importantly, however, they can also offer insights for policy- and decision-makers today. With hindsight, it is possible to see more clearly what has endured and what has changed, and to understand better how progressive environmental policies have emerged and evolved.

The five essays that follow offer a wide range of perspectives on these issues. Appropriately, we begin with Haldon's long and expansive view of environment–society interactions. Three further essays draw lessons from a range of environmental challenges and responses, manifest over different timescales and in a variety of locations. The closing contribution is Graham Walker's chronology and discussion of key policy developments since the 1960s, focusing on the UK within a wider international context. The collection does not attempt a comprehensive coverage of environmental policy histories; this would be a major undertaking indeed. Rather, the intention is to draw lessons from particular histories and identify common threads and themes.

Some fundamentals have hardly changed. One is that environmental problems, with natural and/or anthropogenic causes, are part of the human condition. Societies have mitigated, adapted to or displaced them (from time to time collapsing if they could not), and new challenges have periodically emerged. This cycle is identifiable from pre-historic times through ancient and more recent history to the modern era; it can be seen in Haldon's long history, Harriet Ritvo's account of the nineteenth century struggle over reservoir plans for Thirlmere, and Walker's overview of developments since the 1960s. It is interesting to trace how phenomena previously lived with, or even seen as signs of prosperity—gross pollution, landscape degradation, traffic growth, greenhouse gas emissions—have at important junctures been re-framed as problems. This is illustrated in the chronology, the Thirlmere story and the essay by Tony Burton.

A second common thread is that of inequality. Vulnerabilities to environmental hazards, and the impacts of societal responses, have been unevenly distributed. It is in this context that environmentalists have sometimes been accused of elitism. Ritvo records how defenders of Thirlmere were described as 'arrogant elitists who wished to reserve for their own trivial pleasure' a resource that the working people of Lancashire needed. In the 1970s, the Labour politician Anthony Crosland similarly complained that 'middle class environmentalists' opposing roads and airports wanted to 'pull up the ladder behind them'.[1] The sentiment still finds frequent expression in accusations of NIMBYism. Yet the least privileged communities tend to suffer most from environmental degradation. At a global scale, the world's poorest people already suffer disproportionately from the impacts of climate change. More locally, it has long been recognised that air pollution and 'bad neighbour'

1 Crosland, A. (1971), *A Social Democratic Britain: Fabian Tract 404*, (The Fabian Society).

developments have greater effect on lower income areas; a case in point (a landfill site in Scotland) is discussed by Cornell Hanxomphou. Haldon shows that the inequitable distribution of risks, costs and benefits stretches far back in history, and more recently has spawned an active movement for environmental justice, the subject of Hanxomphou's essay.

A third theme—and an important lesson—is that some battles are never 'won' but reflect underlying fault lines that must continuously be negotiated. Environmental conflicts, past and present, often reflect divergent conceptions of 'the good' rather than clear choices between 'good' and 'bad'. Whether costs and benefits (even if they can meaningfully be measured) should be incorporated into a utilitarian calculus, or a greater emphasis placed on duties and obligations, is a long-running argument that constantly resurfaces in environmental controversies. And unsurprisingly, given deep differences in interests, beliefs and values, progress in environmental policy has arisen more often out of conflict than consensus.

If certain themes have endured over time, there has undeniably been profound change. Scientific knowledge about environmental systems has greatly expanded over time, and the environment has become a visible arena in which science, politics and policymaking interact. Since the 'environmental revolution' of the 1960s, policies and institutions have proliferated at all levels (as is clear in the chronology), while the 'emblematic' concerns[2] have expanded in scale and scope. Most significantly, the environment as a political issue has moved from the periphery towards centre stage. These transformations have involved the dynamic interaction of knowledge, politics, institutions, social norms and events. In this mix, as Burton shows, the role of civil society organisations has been highly significant. There is a paradox, too; much-needed change has all too often seemed elusive, yet looking back we see the 'slow, complex, but nonetheless progressive, development of environmental policymaking' that Walker encapsulates.

Despite substantial progress, immense challenges lie ahead. They include (but extend beyond) climate change, biodiversity loss, chemicals in the environment, and locally serious problems of air and water pollution. A number of key messages emerge from this collection of essays. First, while technological progress will be crucial, technical fixes are not enough and themselves require critical scrutiny. Haldon notes the many historical instances where 'technological and logistical innovation allowed the social-economic system to continue to function, yet also undermined the longer-term resilience of the same system'. We are possibly at such a moment in the early twenty-first century. A second, related message can be taken from all the essays: it is that analysis of environmental problems and proposed solutions are likely to mislead unless social, cultural and political dimensions are fully taken into account. It follows that insights from the social sciences and humanities are crucial, alongside those from natural science and engineering, in understanding past developments and informing future policy choices.

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2 The term refers to concerns that dominate the agenda at any point in time. In his analysis of the acid rain controversy in the 1980s, Maarten Hajer argued that 'people understand the bigger problem of the ecological crisis through the example of certain emblems'; Hajer, M. (1995), *The Politics of Environmental Discourse*, (Oxford University Press), p. 5.

Executive summary

Since 2019, the British Academy has been producing a series of reports known as *Policy Histories*, each covering a different area of public policy in the UK. The aim of the series is to use historical insights and learning from history to inform policymaking.

This report aims to provide policymakers with an opportunity to revisit, review and reflect on environmental policies over the years. The intention is that, in doing so, lessons can be learnt from the successes and failures of previous environmental policies. Learning from the past to develop effective policies for the future is increasingly urgent in the context of climate change and biodiversity loss.

This report provides a chronology and reflection on key environmental policy milestones in the UK from the 1960s until now. The chronology takes that period as a starting point as that is when issues on the environment started to form a unique policy stream. The report also offers four complementary commentary pieces exploring specific environmental policy themes and timeframes. Two of the papers provide a broader context for the chronology piece as they review ancient and 19th century history, whilst the other two discuss the 1960s onwards, reflecting on key moments in the chronology.

As policymakers build upon the government's commitments from COP26 and implement its 25 Year Environment Plan and new Environment Act, it is hoped that the emerging themes and lessons from these papers will be valuable.

This report highlights several key lessons from history for policymakers:

- The significance of culture and society in environmental policymaking
- The challenge of making environmental decisions that meet diverging stakeholder interests
- The importance of understanding the implications of short-term policies on long-term environmental protection
- The need for policies to be made holistically and collaboratively
- The crucial role civil society organisations can play in shaping policies

Lessons from history

The significance of culture and society in environmental policymaking

Our chronology highlights the paradigmatic shifts in environmental policy and how these shifts are intimately connected with social and cultural change as well as scientific and technological developments. The influence of the arts in shaping public consciousness about environmental issues is hugely important in understanding the binding forces behind new socio-political 'green' movements and campaigns. Harriet Ritvo shows in her chapter how this influence goes much further back than the counterculture of the 1960s, pointing to the role of Wordsworth and fellow Lake District poets and artists in stimulating the spirit of nature conservation through their depictions of the natural beauty of the region.

John Haldon explores the role of culture in detail in his chapter on the long history of civilisation responses to environmental threats. He argues that while today's policymakers may be better placed to tackle environmental threats due to scientific and technological advancement, they face similar challenges to ancient civilisations in navigating cultural, political and economic factors, which have only become more complex as societies have developed.

Haldon warns that decisions made solely based on science will likely fail, because cultural and political-economic factors constrain strategies for responding to environmental issues. These factors mean that there remains much complexity and irrationality even in out more scientific-rational paradigm. Well intended policies are often met with cultural resistance if they are not attuned to the uneven power relationships in society and how it has historically as well as presently been the least privileged in society who bear the greatest cost of societal responses to environmental threats.

The challenge of making environmental decisions that meet diverging stakeholder interests

Policymakers have struggled to develop environmental policies without coming into conflict with competing interests and perspectives on the environment among different groups in society.

One of the longstanding antagonisms has been between the interests of business and industry, and those of local communities. Harriet Ritvo's chapter on the battle over the construction of the Thirlmere reservoir explores the development of the environmental debate between conservation and industrialisation in the late 19th Century. The environmental conflict highlighted individuals' and communities' varying perspectives and relationships toward the environment. It revealed the growing pressure that economic development can put on policymakers and businesses to provide growth, often at the expense of the environment, and the impact this has on people and places. Ritvo draws conclusions from the Thirlmere case of how policymakers today, under the continued pressure of ever-increasing urbanisation and delivering economic growth, should make decisions affecting the environment based on assessing the range of available options and by consulting a wide range of both local and non-local stakeholders.

Cornell Hanxomphou highlights similar problems in his chapter on environmental rights in Scotland. Importantly, he also shows how, in the past few decades, citizens have grown in their political strength to challenge decisions that affect the environment, especially where it impacts their health and safety, by adopting a rights-based approach. By listening to the different concerns of citizens and balancing the rights and responsibilities of different stakeholders, Hanxomphou argues that policymakers can make better environmental decisions that are mutually beneficial in the long run. Tony Burton's chapter also speaks of the role civil society organisations play in giving citizens a stronger voice that can outlast individual campaigns and cut across.

The importance of understanding the implications of short-term policies on long-term environmental protection

Getting environmental policies to produce desired outcomes is difficult because they often involve making gradual progress against longer-term goals. Policies can also have unintended consequences in the future that are hard to predict in the present.

Tony Burton's chapter points to both issues when examining the role of campaigning by civil society organisations on environmental issues. His case study of the Campaign to Protect Rural England reveals how each generation of policymakers and policy influencers must work hard to sustain the progress they inherit and remain vigilant to short-term policy shifts, which could lessen long-term environmental protections. For some, issues of environmental protection and sustainability, such as dropping planning targets for brownfield development, the same evidence and arguments must be frequently revisited due to a lack of institutional memory within government and a tendency to revert to conventional wisdom rather than empirical evidence and lived experiences.

Short-term thinking in policymaking can also dislocate society's perspectives on an issue and activate new political demands. Ritvo's case study of Thirlmere, for instance, shows how one decision of economic necessity – the building of a new reservoir – built a new public consciousness for conservation that may otherwise have gone untapped. This has had long-term consequences on policy decisions, such as the development of National Parks and better public access to the countryside.

The need for policies to be made holistically and collaboratively

Environmental policies cover an extensive range of issues that have never neatly fit within a single department or agency. Our chronology has shown how the range and complexity of environmental matters have developed rapidly over the post-war period. Environmental policy has also been deeply intertwined with economic and social policies, leading to a range of overdetermined effects and unintended consequences, such as the impact of post-war urban planning decisions on land use, vehicular emissions, and energy consumption that are discussed in Tony Burton's chapter.

Burton's analysis of land use and transport planning in the UK shows how crucial it is that planning policy decisions are made holistically, considering the environmental, societal and economic pillars of sustainability. While urban visions may have been skewed towards economic and social needs in the past, they must now balance future economic and social needs with the environment to fully consider what is in the long-term public interest. Equally, as Haldon has pointed out, what appears rational and beneficial within the conventional wisdom of the time may prove problematic, even catastrophic, in the long term, suggesting that much more joined-up, forward-looking work must be done to protect future generations.

The crucial role civil society organisations can play in shaping policies

Civil society's capacity to engage with decision making and access justice has been an important facet of environmental policymaking. Successful policy interventions on the environment have often come from governments responding to and working collaboratively with civil society, as both Cornell Hanxomphou's and Tony Burton's chapters describe.

In Hanxomphou's analysis of environmental policy in Scotland, he shows how civil society organisations can help identify critical issues and put them on the agenda of policymakers who are further from the coal face and in need of intelligence from local communities to properly ascertain the impact. Examples like the campaign against the Greengairs landfill show that unpacking and understanding the concerns of ordinary citizens can benefit the affected communities and wider policy and regulation. A relationship of trust, participation and effective consultation with communities will be essential tools in how we move forward with environmental policy for the future.

This is also the case for more sustained national campaigning such as that described by Burton, where there is a clear role to play for well-organised, evidence-based campaigning through respected civil society organisations. The Campaign to Protect Rural England (CPRE) was able to positively influence policy because it collaborates with academic researchers and experts to deliver compelling evidence and communicate it effectively through the proper channels. In a complex policy ecosystem with competing demands on policymakers, these well-established civil society organisations can provide vital support to sound policymaking.

Image: Photo by Carlo Amuruso / Moment / Getty Images

From past to present: comments on history and policy

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Introduction

Social ties, trust and the coherence of communities ('social capital') is essential for effective mitigation and recovery. Analysis of recent disasters reinforces the point that navigating and enduring disasters is not simply a matter of wealth and infrastructure – social networks, culture and politics are central. But there are always costs to resilience, and these costs have generally been very unevenly distributed across society as a whole.

If history is above all about how and why things changed through time, a *policy history* should be about how and why the decisions made by those with power to decide, and the way in which they made their decisions, changed through time. It is undeniable that our modern scientific paradigm permits policymakers to have a better understanding of cause and effect and places us in a much better position than in the past to respond appropriately to environmental crises. Yet we face two

3 Director, Climate Change & History Research Initiative (CCHRI), Princeton University: https://cchri.princeton.edu/. I am grateful to the members of the CCHRI for discussion and for their insight on the topics dealt with in this article; and to the anonymous reviewers for their helpful and constructive suggestions for improvement. For some further contributions to this discussion see the chapters in: Izdebski, A., Haldon, J. and Filipkowski, P. (eds) (2022), Perspectives on public policy in societal-environmental crises. What the future needs from history (Dordrecht).

fundamental problems. First, the lucrative and entrenched structures underpinning both elite and non-elite interests (and perceptions of those interests) coupled with international competition over resource control act to inhibit attempts to shift system dynamics towards greater flexibility of response.[4] Second, decisions based solely on 'science' generally fail to account for (and thus effectively respond to) the cultural and political-economic factors which constrain strategies for response. We should not underestimate this. Governments, whether democratic or not, need to build trust in order to implement effective policies if they are to avoid either widespread hostility and non-compliance on the one hand or subversive non-compliance on the other, a point that applies to pre-modern as well as contemporary political systems.[5] The relationship between what people believe about themselves, the world they inhabit (and how they perceive it), and how this affects their actions and understanding should be a key aspect of policy planning.

Ritual practices to avert or atone for catastrophes or disasters have always functioned as a critical element of people's understanding and response. During a period of prolonged drought during the Late to Terminal Classic Period (ca. CE 680-950) certain Maya populations intensified cave rituals to placate rain deities and mitigate against climate stress.[6] In the Levant in the late third millennium BCE and at a time of increasing aridity (ca. 2200 BCE), an increase in temple-building has been interpreted as an attempt by temple elites to convince the population (and themselves) of their ability to influence rain deities.[7] Peruvian coastal settlements of the second millennium BCE that were located in a relatively arid zone were subject to the El Niño phenomenon that generated torrential rainfall and subsequent flooding. Excavations have revealed a direct association between laminated flood deposits and cycles of monument rebuilding during the period between ca. 1600 and 1000 BCE. By maintaining such key symbols of community and its relationship to the landscape, religious leaders may have been attempting to demonstrate their control over natural forces.[8] There are many other examples of similar types of ritual responses in the face of environmental challenges.[9] We should not be surprised. As the recent COVID-19 pandemic has illustrated, similar ritual practices exist in contemporary society and are being shared globally through technologies of the internet and social media. We paint rainbows on our windows and clap hands with neighbours on our doorsteps to help demonstrate our own resilience against the natural threat of the pandemic. But in the absence of greater trust in the state and its official science (or, indeed, in countries like Brazil, an infiltration of ritualism into the state itself) more pernicious "irrationalities" also circulate, from drinking strong alcohol, herbal tea or bleach to cure COVID-19, to wearing special pendants to protect oneself against 5G mobile signals.[10]

The degree to which key ideas – conveyed through a religious or political ideology or worldview – penetrated to the roots of any society directly affects how people

4 Palma-Oliveira, J.M., Trump, B.D., Wood, M.D., Linkov, I (2018), 'Community-driven hypothesis testing: A solution for the tragedy of the anticommons', Risk Analysis 38(3),pp. 620-634 ; Bruckner, T., Bashmakov, I.A., Mulugetta, Y., Chum, H., de la Vega Navarro, A., Edmonds, J., Faaij, A., Fungtammasan, B., Garg, A., Hertwich, E., Honnery, D., Infield, D., Kainuma, M., Khennas, S., Kim, S., Nimir, H.B., Riahi, K., Strachan, N., Wiser, R. and Zhang, X. (2014), 'Energy systems', in *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, (Cambridge University Press).

5 Golden, C. and Scherer (2013), 'Territory, Trust, Growth, and Collapse in Classic Period Maya Kingdoms', *Current Anthropology*, 54(4), pp. 397-435; Aldrich, D.P. (2012), *Building Resilience: social capital in post-disaster recovery* (Chicago University Press); L. Clarke (2002), 'Panic: myth or reality?', *Contexts*, 1(3),pp. 21-26.

6 Moyes, H., Awe, J.J., Brock, G.A. and Webster, J.W. (2009), 'The ancient Maya drought cult: Late Classic cave use in Belize', *Latin American Antiquity*, 20(1), pp. 175-206.

7 Rosen, A.M. (1995), 'The social response to environmental change in Early Bronze Age Canaan', *Journal of Anthropological Archaeology* 14 (1), pp. 26-44.

8 Nesbitt, J. (2016), 'El Niño and second- millennium BC monument building at Huaca Cortada (Moche Valley, Peru)', *Antiquity*, 90(351), pp. 638-653.

9 Haldon, J.F., Chase, A.F., Elizalde, M., Izdebski, A., Guzowski, P., Ludlow, F., Middleton, G., Mordechai, L., Nesbitt, J. and Turner, B.L. (2020), 'Demystifying collapse: climate, environment and social agency in pre-modern societies', *Millennium*, 17, pp. 1-33.

10 World Health Organization (2022), 'Infodemic' [Accessed 10 August 2022].

understand and respond to the challenges they face. This is as true of past societies as it is of today, yet it is rarely taken properly into account. A historical perspective can help to redress this imbalance and reveal the extent to which people at all levels of a society attempted to mitigate risk and absorb future shocks. Such action was neither irrational, in the logic of the culture in question, nor was it entirely without effect: religious processions may not have reduced the mortality of earthquakes, but they served to bolster social cohesion and thus societal resilience in the face of adversity.[11] Recent experience with COVID-19 has demonstrated quite clearly that our 21st century responses are not as practical as we like to think. Moral and religious ideological responses do little to reduce the number of infections and deaths, but nonetheless help people cope with their changed circumstances – and this is a key aspect of building or maintaining social and cultural resilience. At the same time, however, it is essential to remember that the term 'resilience' is not an unproblematic positive. Focus on systemic or structural resilience may well describe neutrally the (supposedly positive) outcomes of challenges to a system as a whole.

But in the process, this may ignore the interests of important sectors in society. Resilience of what and of whom (and who benefits from it in what ways) is, therefore, an important aspect to bear in mind.[12] As a recent discussion has pointed out, for example, there is no automatic connection between resilience building and poverty reduction.[13] In the following discussion, these two aspects of the term need to be kept in mind.

Human activity has been an integral element in ecosystems across the world since the early Holocene (ca. 9,000 – 7,000 BCE), indeed, it is fair to say that environmental history is also cultural history.[14] Long before the beginning of the Common Era, most ecosystems owed their particular characteristics to many centuries of human activity. While premodern cultures learned how to manage the landscapes they inhabited, they could still face problems of over-exploitation, surface erosion, and deforestation. Anthropogenic environmental damage – ie. damage to the environment from human activity – was at times a significant problem. The evolution of blanket peat bogs across much of the western regions of the British Isles during the mid-Holocene (from ca. 3,700 BCE onwards) was set off by prehistoric farmers and herders felling trees[15]; the extinction of large mammals in North America ca. 9,000 BCE was certainly exacerbated by palaeo-Indian hunters.[16] Whether better-known environmental transformations such as that of the deforestation of Easter Island or the extinction of the flightless Moa in New Zealand can likewise be associated with significant human interventions[17] remain points of contention.[18] When more structured or hierarchical societies became aware of such impacts, they – or elements within them – often took positive steps to address such problems. But these steps sometimes had consequences that were detrimental in the medium or longer term and that were not foreseen, or foreseeable, at the time.[19]

11 Haldon, J.F., Binois-Roman, A., Eisenberg, M., Izdebski, A., Mordechai, A., Newfield, T., Slavin, P., White, S. and Wnęk, K. (2021), 'Between Resilience and Adaptation: A Historical Framework for Understanding Stability and Transformation of Societies to Shocks and Stress', In Linkov, I., Trump, B.D., Keenan, J.M (eds), COVID-19: *Systemic Risk and Resilience.* (Dordrecht), pp. 235-268.

12 Cote, M. and Nightingale, A.J. (2012), 'Resilience thinking meets social theory: Situating social change in socio-ecological systems (SES) research', *Progress in Human Geography*, 36(4), pp. 475–489.

13 Olsson, L., Jerneck, A., Thoren, H., Persson, J., O'Byrne, D. (2015), 'Why resilience is unappealing to social science: Theoretical and empirical investigations of the scientific use of resilience', *Science Advances May*, 1(4).

14 Roberts, C. N. (1998), *The Holocene. An Environmental History* (Oxford University Press).

15 Moore, P.D. (1975), 'Origin of blanket mires', *Nature*, 256, pp. 267-269.

16 Martin, P.S. and Klein, R.G. (1984), Quaternary Extinctions: A Prehistoric Revolution (Arizona University Press).

17 Flenley, J.R., King, S.A., Jackson, J., Chew, C., Teller, J.T. and Prentice, M.E. (1991), 'The Late Quaternary vegetational and climatic history of Easter Island', *Journal of Quaternary Science* 6(2), pp. 85-115 ; McGlone, M.S., Anderson, A.J. and Holdaway, R.N. (1994), 'An ecological approach to the Polynesian settlement of New Zealand', In Sutton, D.G (eds), *The Origin of the First New Zealanders* (Auckland University Press), pp. 136-163.

18 Rull, V. (2020), 'The deforestation of Easter Island', *Cambridge Philosophical Society Biological Reviews*, 95 (1), pp. 124-41 ; Gemmel, N.J., Schwartz, M.K. and Robertson, B.R. (2004), 'Moa were many', *Proceedings of the Royal Society*, 271 (Suppl. 6), S430–S432 ; Allentoft, M.E. et al. (2014), 'Extinct New Zealand megafauna were not in decline before human colonization', *Proceedings of the National Academy of Sciences*, 111(13), pp. 4922-4927.

19 Janssen, M. and Scheffer, M. (2004), 'Overexploitation of renewable resources by ancient societies: sunk cost effects as explanation for their collapse', *Ecology and Society*, 9(1), p. 6.

Not all hazards are equal: a multi-decadal drought is a far different prospect to a three-year one, and a multi-decadal parching of land accompanied by war and soil erosion is worse still. The scale and number of hazards has always mattered, as did the way these interacted with social structure and vulnerabilities, and how they were – and continue to be – addressed by culturally moulded responses. Not all responses were automatic cultural adaptations, but could also be more explicit, centralised state responses (for better or worse). The sum of these factors shaped what kind of society would emerge from the climatic stress it faced. A key conclusion from the analysis of past cases is that often the culture and vulnerabilities of a society are more important than the magnitude of the hazard it is facing, a finding that reflects evidence drawn from contemporary disaster risk management and reduction.[20]

Elite interests and the uneven costs of resilience

State-like polities have tended to be managed and administered largely by small, elite groups drawn from a socially privileged sector of society, although the term 'elite' reflects often complex, multi-faceted and usually internally highly differentiated or segmented socio-economic groups. The specific interests of these sub-elements at any given moment may not necessarily overlap or coincide; they may not necessarily always share political perspectives or sentiment.[21] Yet they all tend to respond to challenges to the structures or arrangements underpinning their socio-economic and political position and status as much as they are concerned with those of the state or ruler they serve (although some pre-modern states have been able to maintain, for a while, an establishment entirely divorced from the vested interests of their society). This is an important aspect of a structural problem common to all complex pre-modern political systems: states have relied on elites to maintain themselves, yet those elites, whatever their origins, also develop vested interests that compromise or jeopardise those of the state. The ways this relationship worked itself out in the past has varied enormously. The problem remains today, of course, although 'elites' are generally both more complexly structured and sectorised than ever (national, international, and multinational), and state autonomy – and thus state economies – compromised by global economic factors: the interests of international finance and investment capital rarely overlap neatly with those of nation-states, as variations in the markets, particularly during moments of global crisis, daily illustrate. When a threat to such vested interests is perceived, elites are capable of overreaction – as with the inappropriate deployment of the military into post-disaster areas, such as San Francisco after the great Earthquake of 1906, for example[22] as well as capitalising on disasters for questionable ends (what Naomi Klein dubbed 'disaster capitalism' [23]). Rebuilding is thus a task for trusted hands.

Elites, or sectors within complex elite groups, appear from the earliest times to have had in the longer-term adverse impacts on social and economic sustainability. In the ancient Near East, across Anatolia and Syria onto the Iranian plateau and southwards into the Arabian Peninsula, the archaeological as well as paleoenvironmental evidence indicates very clearly that societies evolved from the earliest times a range of risk management strategies to deal with problems of aridity. These were not just short-term responses. To the contrary, a pattern of shifting from foddering close to settlements to extensive grazing away from centres of population

20 Faulseit, R.K. (2015), Beyond Collapse: Archaeological Perspectives on Resilience, Revitalization, and Transformation in Complex Societies, (Carbondale, Ill); Van Bavel, B., Curtis, D.R., Dijkman, J., Hannaford, M., de Keyzer, M., van Onacker, E. and Soens, T. (2020), Disasters and History: the vulnerability and resilience of past societies (Cambridge University Press).

21 Nadel, S.F. (1956), 'The concept of social élites', *International Social Science Bulletin*, 8(3) ; Wright Mills, C. (1956), *The power elite* (Oxford University Press).

22 Clarke, L. and Chess, C. (2008), 'Elites and panic: more to fear than fear itself', *Social Forces*, 87(2), pp. 993-1014 ; Solnit, R. (2010), *A Paradise Built in Hell: the extraordinary communities that arise in disaster* (Penguin Publishing).

23 Klein, N. (2007), *The Shock Doctrine: the rise of disaster capitalism* (New York).

has been a common practice since the Neolithic. This strategy of diversification or 'extensification' increases the amount of land used for agricultural and pastoral activities, extends the amount of land exploited away from settlements and thus increases the number of wild species of plants upon which livestock feed. This in turn reduces demand on cultivated crops and promotes diversity in the food base as a whole – creating a less vulnerable and more stable sustenance strategy, improving levels of predictability, supporting agricultural and pastoral planning, and offering increased resilience to environmental pressure.

Yet extensification also has potentially negative outcomes, since, in periods of more beneficial climate, it can lead to substantial population growth with consequent increasing pressure on resources. A recent extensive survey of the relationship between landscape types, archaeological evidence for urbanism and agricultural expansion and contraction in ancient northern Syria and Mesopotamia and the shift from favourable to more arid and cooler climate shows just this pattern. An economic boom that peaked in the middle of the third millennium BCE intensified the push into more arid environments. But this reduced the margin for dealing with uncertainty and, at the same time, increased the risk of crop failure, especially in the event of a climatic shift towards increased aridity. While the members of the urban palace elites who had the greatest access to or control over land may have had the resources (reserve food and seed stocks, under-exploited lands) to mitigate the risks to a degree, it has been pointed out that such a buffer can actually encourage over-confidence and risky strategies.[24] The end result was to intensify social differentiation and hierarchy and thus elite control over producers. Many of the Mesopotamian states were victims of their own success, incurring new vulnerabilities by overexpansion during times of plenty. Many other examples from the ancient world (e.g. Late Chalcolithic and Early Bronze Age Jordan, the Third Dynasty of Ur) and the medieval period (e.g. the Abbasid Caliphate) show that 'good-times' overexploitation of marginal landscapes can result in desertification, and illustrate how successful political-societal systems become vulnerable to environmental stress as a result of sectoral (often elite-led) successes, stresses that are considerably increased as a consequence of adverse changes in climatic conditions.[25]

That elites in general have been resilient is hardly surprising – they can adapt to radically changed circumstances and retain their basic socio-economic advantage, even where a major shift in political and ideological control takes place and these elites are no longer the ruling element. It was only very rarely that elites were effectively wiped out and replaced, although there are plenty of exceptions: even rapid revolutionary events, such as in France between 1789 and 1794 or Russia in 1917-1918, do not always involve the total removal of an established super-elite.[26] In contrast, the Norman conquest of England in 1066 and in particular the repression following unsuccessful English revolts against Norman rule during the late 1060s and 1070s effectively removed the old 'Anglo-Saxon' elite and replaced it with an almost entirely new one.

Examples of elite resilience are many, but such cases also draw attention to a second crucial factor, namely the uneven distribution of both the impact of environmental hazards and of the costs of recovery. Of many examples, we can cite the case of the Ottoman empire from the late sixteenth to early seventeenth centuries CE. A key

24 Tainter, J. (2006), 'The archaeology of overshoot and collapse', *Annual Review of Anthropology*, 35, pp. 59–74.

25 Haldon, J.F., Izdebski, A., Kem, L., Mordechai, L. and Trump, B. (2022), 'SDG 13: Climate action. How societies succeeded or failed to respond to environmental disruption', In Gutmann, M. and Gorman, D. (eds), *Before the SDGs: A Historical Companion to the UN Sustainable Development Goals* (Oxford University Press), pp. 385-424.

26 Mayer, A. (1981), *The Persistence of the Old Regime: Europe to the Great War* (Verso Books) ; Caiani, A.A. (2017), 'Reinventing the Ancien Regime in Post-Napoleonic Europe', *European History Quarterly*, 47(3), pp. 437-60.

factor in the empire's resilience was its size, and it developed systems to mobilise crucial resources from distant locations to provision its cities and military and to balance regional surpluses and deficits, including food, labour, timber, and strategic materials. The security provided by Ottoman soldiers as well as legal and tax provisions encouraged the expansion of agriculture and the containment of mobile pastoralism. The empire seemed resilient to socio-environmental stress: when tested by a series of local droughts, shortages and famines during the 1560s-1580s, Ottoman officials were able to contain the damage by shifting tax burdens from the affected areas, ordering fixed-price sales of grain from other provinces, and in some cases arranging direct shipments from local or imperial granaries.

While the relatively complex Ottoman system could absorb small impacts, it proved less flexible when dealing with multiple, continuous, and repeated shocks. Extended drought in central Anatolia in 1591-96 severely curtailed food output, causing prices to double and near-famine conditions in some regions. This coincided with a series of extraordinarily cold winters, a combination that caused a major epizootic outbreak affecting sheep and cattle across Anatolia, the Crimea, and the Balkans, eventually reaching Hungary and Central Europe. This massive death of livestock deprived rural producers of a major source of wealth and subsistence, and deprived Ottoman armies of a key source of protein. But this was not the only stress factors the empire faced, since it was at this time deeply enmeshed in the so-called Long War (1593-1607) with the Habsburg Empire. The usual – and largely effective – state response to droughts and famines had been to reduce taxes and/or provide relief supplies. Instead, the state was now forced to increase requisitions from the very Balkan and Anatolian provinces that were the worst hit by escalating shortages and famines. The result was a major rural uprising, the so-called Celâlî Rebellion (1596-1610). The combination of famine, violence, population displacement and disease generated a significant mortality crisis in parts of the empire – tax records from the 1620s-40s suggest up to 50% mortality in many parts of Anatolia after the 1580s – all of which produced a situation that induced a long-term shift in Ottoman population and land use.

The imperial system as a whole therefore held, but the cost of the vulnerabilities inherent in the Ottoman system were borne disproportionately by the least privileged social groups who, unlike most members of the social and political elite, were not sheltered either by access to wealth or in the apparatus of the state at the capital and in the provinces. This undermined the resilience of the entire socio-economic and political system, since these groups formed the backbone of such a premodern economy. While the latter possessed a remarkable degree of resilience within the limits imposed by environmental and political conditions, when acute social and environmental problems combined, they could neither sustain their own livelihoods nor shoulder the burdens of imperial economies and ecologies, severely damaging the state's fiscal base and at the same time permitting local landlords and powerful officials to exploit rural populations at the expense of the central government.[27]

The complex and sophisticated irrigation and water-management system constructed from the 9th century CE at Angkor by a succession of Khmer rulers offers another illustration. Long before it became a royal capital the local farmer and fisher communities had constructed moated mound villages and exploited the natural resources provided by the waterways around them, making optimal use of the annual monsoon which dominates the climate of the Khmer lands and which, if

27 Izdebski, A., Mordechai, L. and White, S. (2018), 'The Social Burden of Resilience: A Historical Perspective', In Haldon, J.F. (eds), *Society and environment in the East Mediterranean ca 300-1800 CE. Resilience, adaptation, transformation*. Special Issue, *Human Ecology*, 46(3), pp. 291-303.

not managed through canals and substantial reservoirs, would inundate the region. The monsoon was then, as it is today, predictable, and cyclical, and intensive rice cultivation was structured around this seasonal pattern. Under the Khmer kings a vast network of canals and managed reservoirs covering an area of almost 1,000km^2 was constructed to control the water released by the monsoonal storms and the main local rivers.[28]

Archaeological investigation has produced clear evidence of attempts to modify some of the major features of the water management system, apparently in response to water shortages, and this has been associated with the fact that the monsoonal rains from the middle decades of the 14th century and for several decades thereafter were unusually weak, as well as with a short but severe drought in the early 15th century. Both the archaeological and the documentary historical evidence for the same period indicate a transfer of both elite investment as well as political interest away from the irrigation-dependent rice economy of the interior to key coastal centers connected with a flourishing maritime commercial network. At the same time a growing political-military threat to the interior lands from the neighbouring kingdom at Ayuddhaya culminated in the fall of Angkor in 1431. The Angkor system evolved as an effective means of managing water resources and supporting a thriving agrarian and fishing economy and was engineered with particular attention to mitigating the risks associated with the annual monsoonal cycle.

But in its rapid growth under increasing royal and elite management it also effectively consumed its marginal reserves, with the result that the system had no capacity to absorb the continually increasing costs imposed by the shifting climatic conditions. As the costs of maintenance, repair and revision of the system as a whole grew ever heavier, so the canal and reservoir system deteriorated, and royal elites moved their attention away. A combination of drought, political pressure and excessive costs rendered the whole system unsustainable. Incremental decisions taken over a generation or more that tended towards minimising the social and economic risks borne by members of the elite resulted in what amounted to a restructuring of the royal economy. While Angkor in one sense became a victim of its own success, the real costs of its failure were not borne by those elites who were able to use their resources to move away and re-establish their elite position in Khmer society elsewhere.[29]

Even where states were ideologically predisposed through a particular moral economy to assist the poorest or weakest in society (e.g. the Christian Eastern Roman empire and the Islamic Ottoman empire), existential challenges were generally resolved by pushing the increased costs required for state survival onto those sectors of the society least able to resist – an inevitable consequence of pre-existing systemic inequalities. In the process, however, this also unintentionally transformed the relationships between the central power and central and regional elites. There are plenty of examples. From the 6th c – 12th c. the Eastern Roman – usually called the Byzantine – empire was undoubtedly one of the most sophisticated states in western Eurasia, with a complex and effective fiscal and administrative structure that maximised resource extraction and maintained a balance of power between the state, elites, and provincial society. By the early tenth century, after two centuries of rebuilding after the shock of the early Islamic conquests, it was entering a period of expansion in both the Balkans and the Middle East. In parallel, there had evolved a social elite of office holders and landowners who gradually achieved a near monopoly

28 Fletcher, R. et al. (2009), 'The water management network of Angkor, Cambodia', *Antiquity* 82(317), pp. 658–670.

29 Buckley, B.M., Anchukaitis, K.J., Penny, D., Fletcher, R., Cook, E.R., Sano, M., Nam, L.C., Wichienkeeo, A., Minh, T.T. and Hong, T.M. (2010), 'Climate as a contributing factor in the demise of Angkor, Cambodia', *PNAS*, 107(15), pp. 6748-6752 ; Reid, A. (1993), *Southeast Asia in the Age of Commerce, Expansion and Crisis*, Volume Two (Yale University Press).

on the senior and middling posts in the military and civil administration. The tension between these two aspects of the East Roman state revealed itself in the efforts of the elite to expand its wealth in land, generally at the expense of village communities who were a key element in the state's finances and provided the core of the provincial armies, thus jeopardising the effectiveness of the central state administration itself.

In the 920s a series of natural disasters devastatingly impacted the agriculture of the western Anatolian provinces, giving the wealthy or powerful opportunities to absorb further properties into their estates. In 927-28 CE there occurred a particularly severe winter in the Balkans and Anatolia, combined with a series of extremely poor reduced harvests. Farmers and peasants in the affected areas were forced into selling their land for food or money to survive – a subsistence crisis that provided those with the necessary resources an opportunity to exchange liquid assets for large tracts of land. To protect its own interests the state legislated to protect the position of the economically most vulnerable. But this had only short-term success, chiefly because it was directed against the very people the state depended upon to implement it. The government was eventually forced to adopt the tactics of the elite, converting public land into imperial estates in order to secure the income derived from them. The overall impact of all this was to present the better-off with an opportunity to expand their land and wealth, reducing in the process much of the rural workforce to dependency either on the state that should have protected them or on those who sought to dispossess them. In the state's attempt to restrain its own elites, it destroyed the fortunes of the more vulnerable members of society.[30]

Unintended outcomes

Past responses have varied from planned, organised adaptations to more cultural habituations. How successful these were depended on the severity of the change faced, and often what other stressors it was accompanied by. Farmers and landowners in agrarian societies have always expected occasional severe challenges, such as two consecutive bad years or several years in a row with below-expected productivity. Studies of ancient as well as contemporary agrarian societies indicate that most cultures evolved compensatory mechanisms to help them through potential subsistence crises. This included new cropping practices or the use of alternative, hardier crops. When adverse pressures were sustained over a longer period – a generation or more – either relocating entirely or changing their subsistence basis altogether, from mixed agriculture and livestock, for example, to pastoral herding and transhumance or nomadism. Where the resources and knowledge were available, societies have been able to adapt to more arid conditions over longer periods, treating a lower amount of precipitation as their new average and adjusting their subsistence strategies. Thus, late Roman mixed farming in semi-arid regions such as the Negev was both sophisticated and resilient, with a range of cultivars that were produced in combination to meet the exigencies of the climate and terrain, combining grains and legumes to generate a year-round aridity-resistant sustainable crop. Similar crops were known from Bronze Age times in south Arabia, as recent archaeological and palaeoenvironmental work has shown, so that we may be fairly sure that the pre-modern farmers of that region were no less able to develop sustainable agrarian systems.[31]

30 Haldon, *et al.*, *Between Resilience and Adaptation: A Historical Framework for Understanding Stability and Transformation of Societies to Shocks and Stress*.

31 Decker, M. (2009), *Tilling the Hateful Earth: agricultural production and trade in the Late Antique Near East*, (Oxford University Press); Hole, F. (2005), 'Integration of climatic, archaeological, and historical data. A case study of the Khabur river basin, Northeastern Syria', In Costanza, R., Graumlich, L.J. and Steffen, W (eds), *Sustainability or Collapse? An integrated history and future if people on earth* (Cambridge University Press), pp. 77-87 ; Ekstrom, H. and Edens, C.M. (2003), 'Prehistoric Agriculture in Highland Yemen: New Results from Dhamar', *Bulletin of the American Institute for Yemeni Studies. Yemen Update*, 45, pp. 23-35.

Responses to environmental hazards can entail both opportunities as well as (often unintended) outcomes and costs. The city of Berytus (present-day Beirut) was a major Roman provincial centre. It housed a famous law school and by the early 6th c. CE was also a centre of the lucrative Roman silk industry. In 551 a major earthquake hit the eastern coast of the Mediterranean, and the epicentre was likely a few kilometres offshore from Berytus. Scientific reconstructions suggest that the city was struck by both a tsunami and a city-wide conflagration. Key urban infrastructure (including the water supply) was destroyed along with other significant short-term damage, corroborated by archaeological evidence for a meter-deep layer of destruction in some areas. The law school disappears from the historical record, and the local silk industry also disappears. Yet both had become vulnerable decades before the earthquake through a combination of economic, cultural, and social changes within the empire. The 551 earthquake was the catalyst in an ongoing process of change rather than the prime cause. Yet even though it lost its wider cultural importance with the law school and the silk industry, economic life seems to have continued at about the same level as before the earthquake, as the population took advantage of the new situation, including a restructuring of local pottery production and markets, shifts in commercial connections and trade routes, and developments in flourishing specialised industries, such as glassware. Costs can be balanced by opportunities.[32]

Another example is the case of early 19th-century Krakow in Poland. By the middle of the 18th century the city of Krakow, along with most of the Polish-Lithuanian Commonwealth, was slowly starting to recover from a generations-long crisis associated with frequent warfare that had torn Central Europe apart from the 1640s onward. But in the final decade of the 18th century the economic and demographic recovery slowed down as the Commonwealth was conquered by its neighbors, Habsburg Austria, the Russian Empire and the Kingdom of Prussia. From 1795, Krakow became a provincial city on the northernmost periphery of the Habsburg monarchy.

This, however, was just one aspect of the challenges the city had to face in the late 18th century. Beginning in the 1780s and for several decades thereafter, dendro-climatic reconstructions have shown that the region of Krakow and the city itself suffered unusually cold spring seasons, much cooler than had been typical of the preceding decades. The onset of this process was sudden and took place within a few years, and thanks to the daily measurements of weather conditions that started at the Jagiellonian University in Krakow in 1792 it can be shown that this unusually severe cold lasted well until the 1830s. In the context of northern European climatic conditions, this meant greatly increased demand for fuel, due both to the colder winters as well as the prolongation of the need for heating well into spring. Fuel for heating and cooking was largely derived from local wood resources, and an immediate result of the changed climate was a dramatic rise in the price of firewood. Paradoxically, the price situation improved after the city was conquered by Austria in 1795, because the city's deteriorating political and economic situation led to demographic decline thus reducing the demand for firewood. At the same time the conquest provided the city with easier access to the timber-producing Carpathian highlands located to the south. Nevertheless, as the springs became even colder, the price trend persisted, and firewood grew increasingly expensive. Further pressure on firewood prices came as the result of the impact of the Napoleonic wars in the period ca. 1805-1813 in the region – extensive military operations, commercial blockades, and related phenomena over several years all took their toll. Supplies of firewood

32 Izdebski, *et al* (2018), 'The Social Burden of Resilience: A Historical Perspective' pp. 292-295 ; Mordechai, L. and Pickett, J. (2018), 'Earthquakes as the Quintessential SCE: Methodology and Societal Resilience', in Haldon, J.F (eds), Society and environment in the East Mediterranean ca 300-1800 CE. Resilience, Adaptation, Transformation. Special Issue, *Human Ecology*, 46(3), pp. 335-348.

were frequently cut off and combined with the colder seasonal conditions from October until March created a major challenge for the city.

The solution to the problem was an innovation introduced by the inhabitants of Krakow themselves. Coal replaced wood as the major fuel for the city's fires – inaugurating a transition from the renewable resources of firewood and charcoal to the fossil fuel, coal. Easily accessible coal fields were located within 20-30 km of the city, and coal could be brought on carts relatively inexpensively. Burning coal had until this point been largely avoided on a large scale because of the heavy smoke it produced, but by the 1810s average annual consumption of coal had already reached 2 tons per person. This led to significant public health issues: official instructions on coal burning circulated by the city council leave no doubt that carbon monoxide poisoning became a serious problem. Over the following decades this early transition to fossil fuels, in a city located in a deep river valley with a significant number of days without wind, led to an accumulation of pollution which over generations led to a marked deterioration of the health of the urban and surrounding populations and a degradation of urban ecosystems (parks, gardens, urban woods, etc.). In fact, Krakow remains notorious for its poor air quality still today. Here we have a good example of socio-ecological maladaptation in the face of compounded environmental/climatic and socio-economic stresses.

While the transition to fossil fuels was a significant adaptive innovation, it led over the longer term to major environmental problems, and it may be that this innovative early transition to fossil fuels (most central European cities introduced the change at least 60 years later) led to larger public health and environmental issues than had the city followed the standard path of eastern European industrialisation. The case of Krakow illustrates the importance of unintended consequences: technological and logistical innovation allowed the social-economic system to continue to function, yet also undermined the longer-term resilience of the same system. It also underlines the ambivalent value of a term such as resilience. As has recently been emphasised, the switch to fossil fuels, in particular coal, along with the rise of steam power, entailed the generation of massive and systemic economic inequalities.[33] In the early 19th century, no one understood the longer-term implications of the transition to coal, but this is a perfect example of both longer-term unintended and unpredicted outcomes and why the potential to address social-ecological challenges alone, without taking into account fundamental structural imbalances, is insufficient. Building sustainability into solutions to environmental and climatic challenges is only one, albeit crucially important, element in this.[34]

Conclusion

We know that while past cultures had no 'scientific' insight into climate or climate-related phenomena, they were often aware of the dangers posed to their communities by climate events or by over-exploitation. What we might call 'natural' risk mitigation was determined by cultural habit but could include planned interventions aimed at securing a specific resource such as water or wood, either on the part of a central political establishment or through community action, although the two often combined. Today, increasing awareness and scientific understanding permits a much more proactive approach, and along with public pressure has led to efforts to address issues in climate and science policy. Understanding how the costs of resilience were distributed and the degree to which that distribution was uneven, and why, is an important aspect of understanding how and in what form societies

33 Malm, A. (2016), *Fossil Capital: The Rise of Steam-Power and the Roots of Global Warming* (Verso Books).
34 Izdebski, A. and Wnęk, K. (2020), 'The history of Krakow smog', In Izdebski, A., and Szmytka, R (eds), *Krakow. An Ecobiography* (University of Pittsburgh Press), pp. 147-160.

weather significant environmental challenges. Yet in order to understand both what is lost and what might be to gain from responding to environmental challenges we have to take into account the cultural, economic and social dimensions. In all the historical examples mentioned here, the actions and responses of both individuals and groups were determined by their habitual or natural assumptions on the one hand and by vested interests and the need to sustain existing societal arrangements, on the other. Where these came into conflict, it was generally short-term elite interests (even if understood through the dominant worldview as in the interests of all) that came out on top.

Resilience in one social group or institution – the rapid return of its baseline function, lifestyle and living conditions – directly impacts other groups within the same society. In general, the underprivileged or less powerful have always been the most likely to bear the heaviest cost of societal resilience to environmental stress. To grasp the potential for all to receive just returns we need to understand the socio-economic and cultural relationships of exploitation and subordination as well as the relationship of different social groups to their environments. Social elites often survive societal crises and transformations because they have a vested interest in preserving their position and more often than not retain the resources to do so.

But many – perhaps most – of the problems we face today are difficult to resolve precisely because of the role of elites and the lucrative political-economic structures they inhabit. The well-financed and resourced fossil fuel lobby has delayed, distorted and destroyed climate policy, including through calculated disinformation campaigns.[35] The externalised costs of fossil fuels are increasingly known, and the health impacts alone could justify high carbon prices which often outweigh the costs of mitigations. But decarbonisation is unlikely to occur, not only until the political challenges underpinning years of international and national deadlock are unravelled, but also because of the embeddedness of the interests of fossil fuels in the mode of production of which we are so entwined, as Malm has so eloquently demonstrated.[36] A transition requires the will of political and economic elites as well as their ability to develop alternative options for a society in which the majority have little option but to rely on fossil fuels for basic work and living. We have seen from history how even good intentions can have unintended negative consequences, particularly for the most vulnerable. Delivering a just transition in which the poor are not simply casualties is the critical question for policymakers.

Environmental policymakers and political leaders today generally have a much greater appreciation of threats and risks, potential and actual, than at any time in the past – which puts them in a far better position to plan for system recovery. They also face policy challenges that are more global in scale and must involve mitigation as well as adaptation. But just as in our historical cases, their ability to respond appropriately continues to be determined by a range of cultural/ideological, political/structural and economic factors. Of these, elite interests are arguably the single most important aspect, many of which work to constrain or even discourage the implementation of potentially effective policies that could address both short-term challenges and mitigate future risks. This becomes particularly acute when such interests do not align with those of the far more numerous non-elites, who are significantly more likely to be adversely affected.[37]

35 Pezzey, J. (2014), 'The influence of lobbying on climate policies; Or, why the world might fail 13', *Environment and Development Economics* 19 (3), pp. 329-332 ; Jacques, P.J., Dunlap, R.E. and Freeman, M. (2008), 'The Organisation of Denial: Conservative Think Tanks and Environmental Scepticism', *Environmental Politics*, 17(3), pp. 349-385.

36 Malm, A (2016), *Fossil Capital: The Rise of Steam-Power and the Roots of Global Warming* (Verso Books).

37 Acemoglu, D. and Robinson, J. (2012), *Why Nations Fail: The Origins of Power, Prosperity, and Poverty* (Crown Business).

The tendency towards structural socio-economic imbalance in responses to environmental challenges and the fact that culture and politics have always been key shapers of societal responses must be a question that future policy planners place at the heart of their calculations. Because this sort of imbalance has generally been the case until now does not mean it has to be the case in the future. Ensuring a more equal and just distribution of the costs and thus extending resilience more evenly across all social-economic sectors would appear to be the obvious solution towards a more sustainable future for today's complex and globalised socio-political system.

The fight for Thirlmere: a Victorian environmental conflict

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Stretched placidly beside the A591, in the heart of the Lake District, Thirlmere hardly presents the stereotypical face of the industrial revolution. On the contrary, with its sheet of water, its surrounding evergreens, and its evident lack of development or pollution, it seems to epitomise an alternative stereotype. Yet the process by which Thirlmere assumed this pleasant form provoked decades of conflict in the late nineteenth century, and the main issue was the threat of encroaching industrialisation or urbanisation.[38] That conflict still reverberates after a century and a half, both with reference to Thirlmere in particular, and much more generally, as conservation and other environmental issues have become of increasing concern in Britain and throughout the world. The struggle over Thirlmere was in many ways quintessentially Victorian, but it has also turned out to be a kind of template or model for many subsequent (and continuing) environmental struggles. It can therefore help to inform our understanding of current environmental policymaking in the UK.

Perhaps it would be more accurate to suggest that it provided several alternative models of environmental conflict, emphasizing alternative perspectives. This

38 For an extended account of the struggle to convert Thirlmere into a reservoir for Manchester, see Ritvo, H. (2009), *The Dawn of Green: Manchester, Thirlmere, and Modern Environmentalism* (University of Chicago Press).

divergence became clear as early as 1876 when residents of Cumberland and Westmorland gradually realised that agents of Manchester had been snooping around the lake. Their rumoured objective was to convert Thirlmere into a reservoir: to dam it, raise its level as much as fifty feet, and pipe its waters one hundred miles southeast to the cisterns of Manchester. Not only would the completed dam submerge the natural outline of the lake, along with the dramatic cliffs that surrounded it, but it was feared that the new shoreline would be liable to recede during dry seasons, exposing sheets of unsightly, smelly mud. Inquiries were made and suspicions were confirmed; in due course, committees were organised, and public appeals were launched, led by an ad hoc group called the Thirlmere Defence Association. Not only local people, but lovers of nature, beauty, and heritage from throughout the English-speaking world rallied round. Ultimately legal action was taken, in the form of sustained and expensive opposition to the parliamentary act required to empower the Manchester Corporation to purchase the property and easements necessary for this massive enterprise. Against formidable odds, the parliamentary resistance was successful in 1878; more predictably, it failed when the legislation was reintroduced in 1879.

Of course, this was not the only way to look at it. Before setting their sights on the Lake District, the progressive industrialists who ran Manchester had already taken significant steps to provide their city with a reliable supply of high-quality water. But even as the construction of a massive series of reservoirs at Longdendale in the nearby Peak District drew to completion, politicians and engineers began to foretell a not-so-distant future when these resources would be insufficient. The industrial demand for water had outstripped predictions; in addition, rising water consumption in working-class homes reflected not only population growth but an increasing standard of hygiene. No local sources of water remained available, and so the city officials searched the relatively hilly, unpopulated, and rainy districts to the far northwest for suitable sites for additional reservoirs.

After much deliberation and debate, the Manchester Corporation settled on Thirlmere as the likeliest initial candidate. It lay within a circle of steep hills that would make it relatively easy to flood, and its high elevation would simplify the technical challenges of the hundred-mile-long pipeline. Further, its water was pure and of high quality, which was especially important since Manchester was the centre of the textile industry; the manufacture of cotton textiles required large amounts of pure water. Thirlmere's shores were undeveloped and lightly populated, which, it was hoped, would ease negotiations with landowners. Once the decision had been made, Manchester moved vigorously to purchase as much property as possible before its intentions became public, after which, inevitably, complications would arise in the form of both sentimental resistance and inflated asking prices. These obstacles turned out to be more formidable than had been anticipated; the opposition spearheaded by the Thirlmere Defence Association proved unprecedentedly varied, determined, and widespread. In the end, however, perseverance and ready money triumphed over all difficulties. Although the Manchester Corporation Water Bill of 1878 failed on a parliamentary technicality, the Manchester Corporation Water Bill of 1879 passed easily into law. After a lapse of a few years, the extensive works were begun. In 1894 the first Thirlmere water arrived in Manchester, accompanied by official dinners for the elite (one at each end of the long pipeline), and fireworks and dancing in the streets for ordinary citizens.

The proposed conversion of Thirlmere into a reservoir for the city of Manchester crystallised Victorian feelings about industry and progress, countryside and heritage. These large issues continue to provoke debate, and in terms that would seem familiar to the members of the Manchester Waterworks Committee and their opponents. But the mere fact of controversy- of alternative perspectives- does not

constitute the major significance of this case, either for the Victorians or for us. Similarly, massive projects, most notably railroads, caused repeated transformations of the nineteenth-century landscape. They invariably provoked some antagonism, primarily on the part of people with the most concrete possible stake in the proposed changes: that is, the owners and occupiers of properties that would be materially affected. What made the Thirlmere Scheme (as it was usually termed) especially noteworthy in its own time, and especially predictive of the shape of future conflicts, was the conspicuous prominence within the controversy of individuals and interests unconnected with property in the narrowest sense.

Thirlmere lay close to the centre of the Lake District, which had occupied a pre-eminent position in the pantheon of English natural beauty even before its sacred status was consolidated by the poetry of William Wordsworth and his fellow Lake poets. Further, by the middle of the Victorian period, many writers, politicians, and others with ready access to the press had become summer residents of the Lake District–paradoxically, in large part, because of the construction of a railroad that Wordsworth had opposed a generation earlier. Indeed, the proliferation of railroads also enhanced countryside access for the less affluent, including urban workers whose recreational needs were increasingly acknowledged. And perhaps most important, the Thirlmere Scheme was broached at a time when the notion of public ownership of landscape was being expanded and consolidated so that it was both newly potent and newly vague. In tandem with organised attempts to protect physical access to private property, via rights of way or public footpaths, came assertions of a new kind of spectatorial right or lien on land. It was claimed that the citizenry as a whole–the nation, that is to say–had a vested interest in preserving the traditional appearance of certain rural landscapes. As one newspaper editorial put it, "The lake country belongs in a sense, and that the widest and best sense, not to a few owners of mountain pasture but to the people of England."[39]

The nebulous new sense of ownership invoked by such assertions—a sense that citizens of a nation (or, still more expansively and vaguely, members of a supra-national cultural community) should have some say in the disposition of significant landscapes even if they held no formal title to the property in question-seemed so radical that one shocked member of the Parliamentary Select Committee characterised it as "rather communistic."[40] But even if some of his more broad minded colleagues were inclined to sympathise, there was no clear legislative way for them to act on their sympathies. Non legislators were, however, not similarly constrained by mere law, and they endlessly rehearsed these technically inadmissible arguments in the court of public opinion. Many eminent and eloquent personages entered the lists on each side, mostly lining up rather predictably—so that, for example, the big guns of the Church were against the Scheme in Cumbria, but in favour of it in Manchester. The debate was punctuated by a series of public and semi-public confrontations, of which the most conspicuous and dramatic were the hearings of the Select Committee. Politics, aesthetics, technology, and science mingled in arguments about the costs and benefits of the Thirlmere Scheme before it was implemented, as they did after its completion–and as they still do retrospectively more than a century later.

Advocates of the Thirlmere Scheme did not argue that they wished to deface an unspoiled valley or destroy the integrity of a uniquely beautiful and significant region. Instead, they stressed progress and prosperity. Manchester needed more water because it had grown with unforeseen rapidity; it was to be hoped that such

39 Thirlmere Defence Association (1877), *'Extracts from the Leading Journals on the Manchester Water Scheme* (Windermere: J. Garnett, 1878), p. 15.

40 House of Commons Select Committee on the Manchester Corporation Water Bill, Shorthand writer's notes, *Minutes of Evidence.*

growth would continue, and not only for the benefit of the industrialists who reaped its profits and sang its praises most conspicuously. At only a small remove, they argued, the entire nation had a stake, since the British economy depended heavily on the manufacturing districts of the north. But, as the Manchester Corporation's spokesmen tirelessly repeated, they were also acting on behalf of their entire local constituency, ordinary citizens as much as captains of industry. They therefore presented their search for water, in terms that combined populism and paternalism, as a quest to ensure full employment and modern sanitation for Manchester's working classes-amenities that they had often notably lacked. The disproportion between the population of Manchester and its hinterland and that of the Lake District (more than a million as opposed to mere tens of thousands) prompted the suggestion that the ostensible defenders of Thirlmere were actually arrogant elitists who wished to reserve for their own trivial pleasure a resource of which the numerous labouring people of Lancashire had more serious need.

They even challenged their critics on aesthetic grounds, asserting that, rather than impairing the Cumbrian landscape, their works would "enhance the natural beauties in that district."[41] The carriage road to be built along with the proposed waterworks would, in addition, make Thirlmere more accessible so that the best views of the lake, which had previously been restricted to intrepid pedestrians, would become available to all. And while making the lake more beautiful and more open to the admiring gaze, Manchester's plan would paradoxically also preserve Thirlmere from the depredations of tourism and ordinary commerce. As one engineer pointed out, "in order to maintain the purity of the water..., the Corporation has purchased the whole drainage ground of the lake, and it is their interest to prevent the erection of buildings, or lead workings, or of anything which will tend to injure or contaminate the water."[42]

All this may sound as though these two positions, although opposed, were not irreconcilable. But of course, as continues to be the case in such confrontations, absolute recognition that the opposing position had some merit was not really the issue. Only the most blinkered of industrialists and engineers refused to acknowledge that Thirlmere, and the Lake District more generally, embodied and represented values that could not be completely assessed in utilitarian terms. Similarly, only the most intransigent of the lake's defenders regarded Manchester's desire for more water as intrinsically indefensible. Instead, the issue was relative: of two acknowledged goods, which one should have priority? From the perspective of the Thirlmere Defence Association, there was no question that the preservation of the Lake District was more important than supplying Manchester with the best and cheapest water. From the perspective of the Manchester Corporation, the concrete physical and financial requirements of their citizens and factories easily trumped the more nebulous concerns of remoter constituencies. As the Lord Mayor put it at the official opening of the works, "Of course, the inhabitants of that district did not desire to see their country disfigured, but they forgot, what...they ought to have taken into consideration, the object that Manchester had in view. Sentimentalism... ought to have given way in the face of the necessity of conferring upon a large and crowded population the inestimable boon of a good supply of water."[43]

The basic structure of the Thirlmere debate has subsequently been replicated in controversies about many other settings threatened with similar transformation. In most places, official regulation plays a more significant role in shaping large-scale developments than it did in Victorian Britain. A few new voices have joined

41 Thirlmere Water Bill (August 1878), *'Report of Meeting of Owners and Ratepayers in the [Manchester] Town Hall'*
42 Bateman, J.F. (1884), *History and Description of the Manchester Waterworks* (Nabu Press), p. 216.
43 Harwood, J.J. (1895), *The History and Description of the Thirlmere Water Scheme* (Blacklock), p. 179.

the discussion, expressing perspectives that were either muted or missing in the original controversy--most conspicuously those of expropriated residents (small farmers and labourers in the Thirlmere case) and those of ecologists. The sense of entitlement on the part of stakeholders has become increasingly global. Yet powerful as these additional interventions can be politically, intellectually, and emotionally, they have had little influence on the formulation of the core opposing positions. This persistent pattern can be seen in environmental conflicts of every scale, from those with primarily local impact to those with national or international implications. For example, the reintroduction of beavers has inspired enthusiastic support from many ecologists and environmentalists, as well as reciprocal resistance from those worried about the reengineering of lakes and streams, or the impact on resident wild and domestic animals.[44] Unsurprisingly, the proposed reintroduction of previously exterminated predators, including wolves and bears, is still more controversial.[45] Transportation has often provided an arena for the expression of alternative positions. Advocates of motorway expansion have repeatedly been countered by advocates of buses, trains, and bicycles.[46] And the protracted struggle over the planned third runway at Heathrow Airport has mixed local and national environmental concerns with a range of economic and political agendas.[47] The need to replace fossil fuels with alternative sources of energy has been widely acknowledged, both nationally and internationally, but consensus on how to achieve this goal and who will bear the costs has proved elusive so far.[48]

Thus, hindsight makes the lesson of the Thirlmere controversy seem more complicated, not less. The assessment of a policy or set of actions must depend to some extent on the range of available options. In 1878, the most compelling alternative to the Thirlmere Scheme was the Thirlmere non-Scheme–that is, the preservation of the status quo. That option no longer exists. Instead, possible alternatives are represented by the other Cumbrian lakes, which exemplify various histories of exploitation and development. Next to Thirlmere in its current incarnation, undistinguished but relatively unexploited, some of them seem to have suffered at least equal violence, and perhaps in not so good a cause. Around the world, dams–now built on a scale that would have been inconceivable to Victorian projectors--remain among the most environmentally controversial and politically fraught of development projects. The pressures that triggered the initial fight for Thirlmere have in the meantime been exacerbated. Increasing urban populations, increasing individual expectations, and economies based on constant growth make it unlikely that these pressures will become less intense any time soon.[49]

44 See, for example, Coz, D.M and Young, J.C. (2020), 'Conflicts over wildlife conservation: Learning from the reintroduction of beavers in Scotland', *People and Nature*, 2, pp. 406-419.

45 For an account of the contrasting perspectives, see *The Guardian* (2021), 'Reintroducing wolves to UK could hit rewilding support, expert says' ; for an argument in favour, see *Rewilding Britain* (2022), WOLF

46 For opposing views see Friends of the Earth (2018), 'Roads to ruin? The UK's most controversial road plans' and Forbes (2021), 'Government to Scale back England's £27 Billion Road Program, Reports BBC'.

47 A collection of government documents about Heathrow expansion is available at https://www.gov.uk/government/collections/heathrow-airport-expansion.

48 The consensus is distilled in the United Nations report on the recent UN Climate Change Conference in Glasgow (COP26)

49 Not all people have contributed equally to the current global environmental crisis. Unfortunately, those who have contributed least seem likely to suffer its consequences first and most.

The role of civil society in policymaking: a CPRE case study

Tony Burton
Environmental Planning Campaigner

> *"National planning policies already recognise the importance of sustainable development and make clear that reducing carbon emissions should be considered in planning and decision making."*
> Net Zero Strategy, HM Government, October 2021

In the now urgent debate about how we can all live without causing irrevocable harm to our planet there is one area of public policy where England has been especially prescient – the regulation of land use change and development. As the 2021 Net Zero Strategy correctly identifies, national planning policies *"already recognise"* sustainable development. Sustainable development has in fact been officially at the heart of the English town and country planning system for two decades. This chapter sheds some historical light and perspective on how it came to pass that England saw a revolution in its planning policies during the 1990s and the important role of civil society in achieving the change.

While the story of town and country planning has complex origins its legislative roots are just over a century old. The coincidence with the story of England's rich pedigree of conservation charities and civil society groups is not by chance. The National Trust, Open Spaces Society, civic societies and Campaign to Protect Rural

England (CPRE) were instrumental in the genesis of planning, and they have been a powerful influence on its development ever since.[50]

The benefits of a long history of environmentally-conscious planning are increasingly evident. Imagine devising a Net Zero Strategy for an England which had not had Green Belts protecting it from urban sprawl for more than 80 years. Imagine trying to unpick the levels of car dependency and pollution and the paucity of local green space which would be there now were we locked into even more sprawling and resource-hungry lifestyles than those already being experienced. The acts of nationalising the right to develop land to ensure it is in the public interest and of preparing-forward looking land use plans rooted in the public interest have been powerful forces for good which are now showing their value in addressing today's climate, wildlife, and pollution crises.

This has not happened by chance. It is the direct result of campaigning and research by civil society groups that provided both answers for policymakers and a mandate for political action.[51] This chapter focuses on the particular influence of CPRE in the early 1990s as a case study. It shows how CPRE's combination of timely research and effective advocacy helped create a new campaigning paradigm that was instrumental in embedding the link between land use, development, climate and sustainability into public policy for the first time. The number of civil society groups engaged in these issues has grown as have new forms of advocacy built especially on the growth of social media and issue-based movements. Yet many of the lessons from the campaigning work of CPRE during this formative period of policy change remain relevant today.

As we pick over the consequences of the 26th UN Climate Change Conference of the Parties (COP26) so it is opportune to reflect on the impact of the 1992 Earth Summit (UN Conference on Environment and Development) in Rio de Janeiro. This was the genesis of the COP process and where the world first agreed on the need to act together on climate change and collectively signed up to "sustainable development".

The Earth Summit gave focus to a febrile period in the history of domestic public policy on the environment, sustainability and land use. It was just five years after the Brundtland Commission's landmark definition of sustainable development as *"development that meets the needs of the present without compromising the ability of future generations to meet their own needs"* and two years after the UK's first Environment White Paper (1990).[52] As we now appreciate, the consequences of sustainability and acting on climate change could not be more far reaching. There is barely a corner of public policy that has not been impacted. So why was it that planning policy became the "first mover" in public policy on sustainable development, committing to the goal a full five months before the Earth Summit began? How did the choices we make over where and what to build become the first proving ground for sustainability?

Giving sustainability policy bite

It is a story with roots in an unremarkable field off the A483 outside Chester. Four years before the Earth Summit CPRE had spotted this as a front line in the campaign to protect the Green Belt and prevent urban sprawl. Chester City Council's draft Local Plan had proposed major releases of Green Belt land for development and these

50 Lowe, P. and Goyder, J. (1983), *'Environmental Groups in Politics'* (George Allen & Unwin).
51 Rawcliffe, P. (1998), Environmental pressure groups in transition (Manchester University Press); Reynolds, F. (2016), *The Fight for Beauty: Our Path to a Better Future* (One World).
52 HM Government (1991), 'This Common Inheritance'.

had avoided challenge until the intensive scrutiny of CPRE's evidence and a public inquiry. Crucially, as it turned out, this was not just a familiar debate over protecting green fields but also put the spotlight on the Green Belt's role *"to preserve the setting and special character of historic towns"*. CPRE was able to make the link between the impact of new building and the level of activity and traffic in Chester's historic core and to show the loss of Green Belt would be felt in the character of the city centre as well as the damage to its greenfield setting. The Local Plan Inspector agreed and rejected the Green Belt release.

A combination of smart campaigning and fortuitous timing had put Chester on the national stage. The Local Plan inquiry coincided with the Government press conference celebrating the 50th anniversary of the 1938 Green Belt Act. The Government press conference turned from a celebration to an inquisition as the Government's record was put under the spotlight by broadsheet journalists armed with details of the threat to Chester.

Undaunted Chester City Council took a different route. With its Local Plan blocked, the focus turned to Cheshire County Council's draft Structure Plan where the Green Belt releases reappeared. A few years had passed and so the debate over Chester's future coincided with the shifting sands of public policy priorities anticipating the Earth Summit. It was a coincidence that would have far reaching implications.

Ahead of the Earth Summit Government, officials had taken the first tentative steps towards turning sustainability ambitions into planning policy. A draft Planning Policy Guidance (PPG) note 12 on development plans had been published but struggled fully to embrace the implications of sustainability. An annex on the environment had been included of uncertain weight and unclear impact. The Whitehall policymakers needed to be faced with the practicalities of making sustainable development work on the ground for the issues to be grasped.

As PPG12 was debated so CPRE mounted a strong case that Chester's Green Belt boundary defined its "environmental capacity" and was a test of how the country understood the implications of "sustainable development". This time it made sure that the final decision maker would be the Secretary of State. It won not only the public inquiry but also the policy debate over the future role of land use planning. And so it came to pass that, sensitised by concerns over the Government's Green Belt record and in anticipation of the Earth Summit, the centenary celebrations of trade magazine *The Surveyor* on 23 January 1992 became the unexpected platform for sustainable development to be officially recognised in domestic public policy for the first time. Environment Secretary Michael Heseltine announced Chester's Green Belt would be protected and in the very next breath that sustainable development would be included in new national planning policy as an objective of the planning system. The freshly minted PPG12 was transformed into a powerful evocation of the need to take on board the implications of sustainability and put them at the heart of planning for the public interest:

> *"Local planning authorities should take account of the environment in the widest sense in plan preparation. They are familiar with the "traditional" issues of Green Belt, concern for landscape quality and nature conservation, the built heritage and conservation areas. They are familiar too with pollution control planning for healthier cities. The challenge is to ensure that newer environmental concerns, such as global warming and the consumption of non-renewable resources, are also reflected in the analysis of policies that form part of plan preparation"*
> (para 6.3)

The approach was repeated that same year in the Government's lead statement of national planning policy PPG1, *General Policy and Principles* – and an influential official study of environmental capacity and historic cities was also commissioned. And so, fully two years before the UK's first Sustainable Development Strategy[53] and five months before the Earth Summit, it was the planning system that paved the way for both sustainable development and environmental capacity to find their way into public policy.

Sense and sustainability

The new vocabulary brought to the policy debate by the Earth Summit was proving challenging in other ways. We grappled not only with "sustainable development" and "environmental capacity" but also with the "precautionary principle" and "managing natural resources". Then as now, there was intense debate over definitions and how best to translate words into actions. Then as now, it required civil society to provide the catalyst needed to bring meaning to the policy jargon and to create the pressure and the route map which shifted political and policy priorities.

Within months of the Earth Summit, CPRE published *Sense and Sustainability* [54] setting out not only the main principles of sustainable development as they applied to land use planning but also the essential steps to achieving it. The work effectively translated the international jargon into practical guidance which Government and other decision-makers could use. The tone was set and a government keen to take action reached for the advice it provided.

CPRE also took on some of the shibboleths that drove unsustainable planning decisions. Astute academic collaborations resulted in mould-breaking research that demonstrated the impact of predict-and-provide policies for road building [55], minerals extraction[56] and housing development[57] [11] and demonstrated how predict-and-provide fuelled a vicious cycle of further growth in traffic and demand for minerals and building. These changes had immediate business impacts and progress took longer to secure. They needed the backing of independent voices, including the Royal Commission on Environmental Pollution (1994)[58] and the Standing Advisory Committee on Trunk Road Assessment (1994)[59] , and further academic work[60] before Government took note. Yet by the end of the decade Ministers were declaring "*predict and provide is dead*" and changing tack on planning for minerals, new roads, and housing.

Changing the geography of development

This strengthening of national policy and the changes to official planning methodologies undoubtedly brought significant changes but the fundamental questions over the environmental and sustainability implications of the geography of development remained. Barely one-third of new development in the 1990s was taking place on brownfield sites and the pipeline of out of town shopping centres and dormitory new settlements was growing and on the cusp of irrevocably hollowing out

53 HM Government (1994), 'Sustainable Development: The UK Strategy'.
54 Jacobs, M. (1993), '*Sense and Sustainability: Land use planning and environmental sustainability*' (Campaign to Protect Rural England).
55 Campaign to Protect Rural England (1992), 'Where motor-car is master – how the Department of Transport became bewitched by roads'.
56 Campaign to Protect Rural England (1991), 'Determined to dig: the role of aggregates demand forecasting in national minerals planning guidance' ; Campaign to Protect Rural England (1993), 'Driven to dig – road building and aggregates demand' ; Owens, S.E. and Cowell, R. (1996), *Rocks and hard Places – Mineral Resource Planning and Sustainability* (Campaign to Protect Rural England).
57 Bramley, G. (1995), *Circular projections: household growth, housing development and the household projections* (Campaign to Protect Rural England).
58 Royal Commission on Environmental Pollution (1994), *Transport and the Environment* (Oxford University Press).
59 The Standing Advisory Committee (1994), 'Trunk Road and the Generation of Traffic'.
60 Owens, S. and Cowell, R. (2001), *Land and Limits: Interpreting Sustainability in the Planning Process* (Routledge).

England's cities and market towns. Battles raged over whole new greenfield towns, including at Stone Bassett (Oxfordshire) and Micheldever (Hampshire), and an effigy of Environment Secretary Nicholas Ridley was burned at Foxley Wood (Hampshire).

CPRE recognised this debate would never be fully addressed simply by making the case for countryside protection or even by demonstrating how planning for new housing was distorted by the overwhelming influence of demand-led household projections. It required something more strategic, even counter-intuitive, and the result was the launch of an urban campaign by a high-profile countryside campaign group. CPRE's *Urban Footprints*[61] initiative combined longstanding rejection of urban sprawl with the insights of "ecological footprints". It put cities at the heart of the agenda about environmentally sustainable development, including protection of the countryside. The approach relied heavily on research and a strong evidence base for its success. An examination of land use change statistics showed how official figures significantly underestimated the amount of urban land in England and how one-fifth of the country would be urbanised by 2050 without action.[62] This was followed by compelling new maps demonstrating the loss of an area of rural tranquillity in England the size of Wales since the 1960s[63] and the spread of light pollution.[64] New demographic analysis showed 300 people a day moving out of the major cities for rural areas.[65] Alongside these threats, CPRE's research pointed to the major opportunities in a different approach. It demonstrated how towns and cities are better places to build than green fields and how building on brownfield sites uses fewer resources, saves land, reduces car dependency, and improves run down neighbourhoods. It also demonstrated how more building in towns and cities can be achieved without building over playing fields and wild space or building more tower blocks.[66] CPRE's work pioneered what is now a widely accepted norm – that brownfield sites should be the priority for new building and that high-quality, well-designed buildings at increasing but still gentle density can provide the homes and buildings we need and a better quality of life for the majority, all at a lower environmental cost.

Launching its *Urban Footprints* in 1994 then Environment Secretary (and now Climate Change Committee Chair) John Gummer expressed a hope '*that in thirty or forty years' time people will look back on today and say, they realised the danger, they realised it quickly enough to avoid it*'. Five years later and as a result of resolute campaigning against the sprawl of new housing, the Government established the Urban Task Force led by Lord Rogers[67] which successfully put an urban renaissance on the official policy map.[68] In short measure, the Government set targets for the first 50% and then 60% of new building to take place on brownfield sites.

In parallel with its work on new housing, CPRE worked closely with the House of Commons Environment Committee's 1994 inquiry *Shopping Centres and their Future* to slow the shifting geography of retail. Its recommendations echoed CPRE's evidence on how to reverse the loss of retail from High Streets and town centres to out-of-town developments. By 1996 the Government had shifted, and Planning Policy Guidance note 6 *Town Centres and Retail Developments* all but stopped the mass migration out of town by introducing a "*presumption in favour of town centres*" delivered through a new "*sequential approach*" that required town centre options

61 Campaign to Protect Rural England (1994), '*Urban Footprints*'.
62 Campaign to Protect Rural England (1992), 'Lost Land – land use change in England 1945-1990' ; Campaign to Protect Rural England (1993), 'The Regional Lost Land'.
63 Campaign to Protect Rural England (1994), 'Tranquil Areas'.
64 Campaign to Protect Rural England (1994), '*Starry, Starry Night*'
65 Campaign to Protect Rural England (1998), '*Urban Exodus*'
66 CPRE, *Urban Footprints*.
67 Rogers, R. (1998), *Cities for a small planet* (Basic Books); Power, A., and Rogers, R. (2000), *Cities for a small country* (Faber & Faber).
68 UK Urban Task Force (1999), '*Toward an Urban Renaissance*'

first to be exhausted in the selection of new sites. While retail parks have continued to proliferate the wholesale move of town and city centres to vast new developments outside our urban boundaries has since only been permitted by exception.

This period also coincided with a growing policy acceptance of the impact of new roads on the patterns of development and energy use. It was widely recognised that new road junctions became magnets for business parks and that towns built out to their bypasses. The M40 then in construction spawned its own trade magazine identifying new development opportunities along its c90 mile length through largely open countryside. Yet somehow public policy maintained a studied belief that land use and transport planning operated in isolation from each other and the result was increasingly car-dependent lifestyles. CPRE's *Concrete and Tyres* (1992)[69] emphatically dispelled this myth. Painstaking research into the history of development around the M40's Junction 4 south of High Wycombe demonstrated the overwhelming influence of new transport infrastructure on the location of new development regardless of the ambitions of adopted land use planning policy.

CPRE also pioneered policy thinking about the impact of different patterns of development on energy use. While these connections were understood in academic literature, they had failed to gain traction in the policy-making community. CPRE addressed this by acting as a bridge between academic research and policymakers, enlivened by strong media interest. Its collaboration with academics resulted in the seminal Energy-conscious planning[70] which drew the simple connection then little appreciated by policymakers between where development takes place and the energy needed to travel around and service it. As a result, we saw one of the most influential of all innovations in national planning policy during the 1990s when in 1994 Planning Policy Guidance note 13 *Transport* gave official backing to the deceptively simple objective for "*reducing the need to travel*".

This chapter doesn't seek to overstate the impact of CPRE's campaigns. Nor does it underestimate the gulf that still exists between changing planning policy and changing what is actually built and where. Many of the campaign issues raised in the 1990s remain live today despite the strengthening of Government policy. For others, it seems progress made in the 1990s has had to be revisited when policymakers and politicians with short-term memories revert to conventional thinking around principles such as predicting and providing and drop targets for brownfield development. Despite decades of contrary evidence and experience many politicians and policymakers planning still consider planning to be a "burden"; a regulatory drag on the economy and a prime example of red tape to be cut. Vigilance is the campaigner's watchword and each generation needs to work hard even to sustain the progress they inherit.

The chapter seeks to shed light on just some of the complex influences that campaigning civil society organisations have on the history of public policy and political priorities. It shows how smart research, academic collaboration, compelling communications, media access, an ability to mobilise public support, political leverage and an agility to react and anticipate to political and policy opportunities made a tangible difference in one of the most formative periods of environmental policy development. The world in which CPRE and like-minded campaigning groups operate today is very different and much more complex but these essential ingredients remain as true today as they were 30 years ago.

69 Campaign to Protect Rural England (1992), '*Concrete and Tyres*'
70 Campaign to Protect Rural England (1991), 'Energy-conscious Planning – the case for action'

The language of policymaking may be different but the fundamental ideas behind political ideas such as levelling up and building back better are the same as they have ever been. What we build where and who benefits remain critical environmental policy questions. Civil society continues to be central to the way they are answered ,and it is civil society that is doing more than we realise the shape the next chapter in the history of this story.

Influencing environmental policy through the advancement of environmental rights: Scotland case study

Cornell Hanxomphou
Environmental Rights Scotland

Environmental policies are solutions to environmental concerns. They set standards and regulations in different environmental areas: air particulates have a set limit, pesticides are limited in their agricultural use, certain flora and fauna species are protected, and waste disposal has a strict process, et cetera. The failure or absence of policies such as these can affect people's health and well-being. Environmental rights focus on the human right to a healthy environment. Assessing environmental policy through a human rights lens can help foster its advancement. Civil society and the public's ability to identify and influence inadequate policy is strengthened by their ability to enforce their environmental rights.

Environmental policy and rights need to be enforceable. The Aarhus Convention, an international human rights and environmental treaty to which the United Kingdom has been a signatory since 2005, states the procedural rights needed to

achieve enforceability. These rights are access to environmental information, public participation in environmental decision-making, and access to review procedures to obtain justice for violations of their environmental rights.[71] In Scotland, in 2001, the chairman of the Environment Agency complained that 'the current scale of penalties levied by the courts makes pollution an acceptable risk'.[72] During this time, those committing acts of pollution against Scotland's environment, no matter how severe, would likely face an average fine of £2,500. The maximum fine was £20,000 and the likeliness of going to court was low at the time due to an uncooperative system.[73] Since then, access to justice has progressed through the increase of fines which has enabled more accountability of polluters through public interest litigation.

The current state of environmental rights in Scotland

In October 2021, the United Nations Human Rights Council recognised a safe, clean, healthy, and sustainable environment as a human right[74]. 156 countries have already recognised this right[75]. Scotland is soon to be one of these countries with the inclusion of the human right to a healthy environment in the Human Rights (Scotland) Bill.[76] This includes substantive rights: clean air, a safe climate, access to safe water and adequate sanitation, healthy and sustainably produced food, non-toxic environments to live, work, study, and play, and healthy biodiversity. There has also been a progression in policy to fully comply with the Aarhus Convention through the setup of the Equality and Human Rights Fund, which the Scottish Government is seeking to use to support civil society engagement on human rights with a particular focus on marginalised groups.[77] These developments have been welcomed by civil society organisations such as Friends of the Earth Scotland and the Environmental Rights Centre for Scotland.

The progression of environmental rights in policy and legislation and the desire for genuine public consultation have been heavily influenced by civil society and the public in Scotland fighting for their environmental rights in the face of injustice. This paper will explore how the current progress on environmental rights and justice is a product of 20+ years of anguish, grit, and tenacity from members of the public in Scotland. These advancements have benefited from a history of civil society movements such as campaigns against dirty developments, healthier biodiversity and ecosystems, lower carbon emissions, and better environments for people's health and wellbeing. Civil society organisations, communities, and individuals pushing for environmental justice are crucial stakeholders, but they were ignored or even seen as troublemakers not too long ago.

The context of environmental justice in the UK and Scotland

Communities in Scotland and across the UK had long been fighting for environmental justice before it was a coined concept. The longstanding desire for environmental justice is global, though the narrative varies between countries and various regions and communities within them. The history of environmental justice

71 United Nations Economic Commission for Europe (1998), Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters ('Aarhus Convention').
72 Edelstein, M.R. (2002), '*Contamination: The Invisible Built Environment*', In Bechtel, R.B., and Churchman, A. (eds.), *Handbook of Environmental Psychology*, pp. 559-88.
73 Scottish Environmental Protection Agency (2000), *Environmental Prosecutions in Scotland*.
74 United Nations News (2021), 'Access to a healthy environment, declared a human right by UN rights council'
75 United Nations General Assembly (2019), 'Right to a Healthy Environment: Good Practices: Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment' p. 4.
76 Scottish Human Rights Commission (2021), 'Commission welcomes UN Human Rights Council recognition of right to healthy environment', [Accessed 30 January 2022].
77 Scottish Government (2021), 'Funding to support equality and human rights', [Accessed 10 February 2022].

in Scotland is reflective of this wider global movement. Still, it is nevertheless unique in how it embedded examples from elsewhere into a specific Scottish context.

Environmental justice in the US

The environmental justice movement most prominently began in the United States. The US Environmental Protection Agency defines environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, colour, national origin, or income, concerning the development, implementation, and enforcement of environmental laws, regulations, and policies." The US movement was a combination of community activism and pioneering scholarship that unpacked just how environmental injustice and racism were outcomes of inequality. Specifically, segregationist real estate practice, the distribution of wealth, and the siting of municipal and hazardous waste and disposal facilities. This placed African Americans, Latinos and Native Americans with more health and environmental risks than the rest of society.[78,79]

Environmental justice in the UK and Scotland

In the UK, the strength of the environmental justice movement also remained at a grassroots level, but the focus was most often on challenging place-specific conditions such as industrial pollution and air quality rather than a coherent programme of regulatory change that came from a civil rights movement. Similar to the US, migration pathways, settlements, and history of race relations in the UK have led to most minority ethnic communities being more likely to live in the most deprived neighbourhoods in England than the majority white British group.[80] A study carried out in 1999 in England found that of the 11,400 tonnes of carcinogenic chemicals emitted into the air from large factories, 66% were in the most deprived 10% of wards, and 92% were from factories located in the most deprived 20% of local-authority wards.[81] In Scotland, the relationship of environmental injustice is more complex as there are substantial variations in the relationship between deprivation and air pollution.[82] Therefore, in Scotland, the focus is more on the link to local class-based environmental inequalities, often associated with global inequalities in resource consumption. In other words, undesirable neighbours such as chemical plants, opencast mines, and toxic dumps, are often situated closer to low-income communities.

Although discourses of environmental justice in Scotland have developed in research and policy narratives, they reflect powerful social interests. Dialogues have been predominantly created by low-income communities and the activists that emerge from them. With assistance from environmental NGOs, these activists grew in their capacity to influence the Scottish Government's stance on environmental justice.

Progress in action

In the 1990s and early 2000s, Friends of the Earth Scotland ran a campaign to highlight environmental injustices occurring in working-class communities.[83] They

78 Adeola, F. (2014), *Industrial Disasters, Toxic Waste, and Community Impacts: The Health Effects and Environmental Justice Struggles around the Globe* (Lexington Books).
79 Cutter, S. (1995), 'Race, Class and Environmental Justice', *Progress in Human Geography*, 19(1), pp. 1-22.
80 Scottish Government (2014), *2011 Census*: Chart 1.23.
81 Friends of the Earth (2001), *Pollution and Poverty: Breaking the Link*.
82 Bailey, N., Dong, G., Minton, J. and Pryce, G. (2018), 'Reconsidering the Relationship between Air Pollution and Deprivation', *International Journal of Environmental Research and Public Health*, 15(629), pp. 15.
83 Dunion, K, Scandrett, E. (2003), 'The Campaign for Environmental Justice in Scotland as a Response to Poverty in a Northern Nation', In Bullard, R.B., Agyman, J., and Evans, B. (eds) *Just Sustainabilities (Earthscan/MIT Press)*.

first used the term environmental justice in their campaign against Europe's largest landfill in the village of Greengairs.

The Greengairs campaign

The village of Greengairs developed in the nineteenth century as a small mining community. The village boasts a small pub, a few local shops, and a collection of large holes in the ground: the biggest of which became a landfill site owned by Shanks and McEwan. This landfill was used to dispose of a wide variety of waste from around Scotland, including asbestos originating from 1950s office buildings and hundreds of tonnes of dead fish from salmon cages on the west coast of Scotland. On one occasion, a decomposing sperm whale carcass, which had washed on the banks of the river Forth, was dumped at the landfill.[84, 85]. In 1996, due to a legal loophole concerning the site's licences, 160 tonnes of contaminated soil laced with polychlorinated biphenyls (PCBs)[86], well above England's acceptable limits, was transported from Hertfordshire and dumped into the landfill.[87] The local community was naturally angry and frustrated with the exposure to hazards, the smell, and complete disregard for people's wellbeing. Like many others in similar situations around Scotland, this working class community had little knowledge and no financial resources to challenge these developments. Even so, none of what had occurred was illegal, but it could be argued to be unfair.

The community protested heavily for years, reaching national media attention. After dismal attempts at public inquiries and long and laborious protesting, a result was reached. There was an independent assessment funded by Shanks and McEwan and carried out by a consultant of the community's choosing. The Scottish Environment Protection Agency (SEPA) also amended the site licence 'because of the hysteria this seemed to create' to not allow for any further dumping.[88] Years of navigating the planning system, facing uncooperative developers and councillors, and dealing with the impacts of their derelict environment took an unfair toll on the community.

Change at a national level

Dunion and Scandrett of Friends of the Earth Scotland included Greengairs in numerous written pieces that highlighted the ongoing inequality and environmental injustice in Scotland. After a visit to the landfill site in February 2002, Scotland's First Minister Jack McConnell gave a speech committing his Executive to environmental justice. This policy initiative stimulated a range of activities within the Scottish Executive's civil service and non-departmental public bodies including a push for recycling and waste reduction.

This was Jack McConnell's first speech regarding policy. He said:

> *"people who have the most urgent environmental concerns in Scotland were those who cope with daily consequences of poor quality of life, and live in a rotten environment, close to industrial pollution, plagued by vehicle emissions, streets filled by litter and walls covered in graffiti… These are circumstances which would not be acceptable to better-off communities in our society, and those who have to*

84 Dunion, K. (2003), *Troublemakers: The Struggle for Environmental Justice in Scotland*, (Edinburgh University Press), p.26.
85 Scott, K. (2002), 'Victims of burgeoning waste crisis', *The Guardian*.
86 PCBs are highly toxic industrial compounds that were used as a coolant for electrical components. They were banned by the Stockholm Convention on Persistent Organic Pollutants in 2001. They are known to cause severe harm to foetuses, babies and children and are also harmful to adults.
87 Dunion, *Troublemakers*, pp. 25-30.
88 Dunion, *Troublemakers*, pp. 29.

endure such environments which to bring up a family or grow old themselves are being denied environmental justice."[89,90]

At the time, there was little academic research into environmental justice in Scotland and little knowledge of the concept within the Scottish Executive and local authorities. Suddenly, there was recognition at the highest level of Government in Scotland that injustice was being experienced due to practices and policies that, either intentionally or unintentionally, disparately impact the living conditions of people in low-income groups. This position was also likely accelerated by the election of seven Scottish Greens Part members to the Scottish Parliament in 2003.

It can be said that the desire for environmental rights by Scottish activists facing environmental injustices had influenced the Scottish Government's position on environmental concerns. The US environmentalist Paul Hawken questioned 'which came first, the laws or the breaching of societal standards which called them forth?'[91] The struggle at Greengairs played a key part in addressing this issue of environmental rights in Scotland. Those rights, although not yet fully realised, are increasing the ability of civil society and the public to participate in Scotland's environmental policy.

Section 3 – Advancing environmental justice with the people, for the people

The rights of the public in environmental matters are captured in the Aarhus Convention, while the UK ratified the Convention in 2005, Scotland's legal system is still in breach of the access to participation and justice obligations of the Aarhus Convention Compliance Committee.[92] There has been a strong push for compliance from civil society organisations which has led to a consultation on the inclusion of the human right to a healthy environment in the Human Rights (Scotland) Bill, consultation on legal aid, and consultation on an environmental court. Scotland is compliant with the access to information obligation with the Freedom of Information (FOI) (Scotland) Act 2002 and Environment Information Regulations 2004.

Access to information

Access to information is key to improving environmental policy today. It gives power to people who may be challenging a proposal to grant a license to a polluting industry or objecting to a grant of a planning application. Scottish investigative journalism has successfully used the Freedom of Information (Scotland) Act 2002 and Environment Information Regulations 2004 to frequently report on pollution and wrongdoing, such as highlighting in 2019 that the Scottish Government knowingly ignored the negative impacts of pesticides in farmed salmon to keep minimise the broader costs of treatment to the industry.[93] Journalists also highlighted in 2021 that 400 industrial sites across Scotland were deemed "unsatisfactory" in pollution according to data from SEPA.[94] Although not directly addressing environmental issues, access to information has increased the capacity of civil society to influence policy.

89 Poustie, M. (2004), *Environmental Justice in SEPA's Environmental Protection Activities. A Report for the Scottish Environment Protection Agency*, University of Strathclyde Law.
90 Fraser, I. (2002), 'McConnell delivers green pledge', BBC News, 18 February 2002.
91 Hawken, P. (1993), *The Ecology of Commerce: A Declaration of Sustainability* (Weidenfeld and Nicolson).
92 Economic Commission for Europe (2021), Meeting of the Parties to the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters. Seventh Session, Item 7 (b) of the provisional agenda, pp. 11-15.
93 Edwards, R. (2021), 'Government salmon farm research 'excluded environmental impact', *The Ferret*, 16 March 2021.
94 Edwards, R. (2021), 'Revealed: 400 sites in Scotland Broke environmental rules', *The Ferret*, 19 October 2021.

The 'Right to Know' was a key part of Dunion's 2003 book on environmental justice, 'Troublemakers'.[95] Dunion, who went on to be the first Scottish Information Commissioner, highlighted the need for transparency and proved that FOI laws needed to be reformed and enforced by an independent body to be successful.

Health implications of being kept in the dark

The fear and concern of the unknown can grow to become psychological stress in communities. Public health specialists recognise that a distinction can be drawn between the physical harm caused by exposure to toxic sites and the effects of stress arising from such proximity.[96] This psychological stress can present itself as a public health problem. A study in the US found that residential proximity to industrial activity has a direct, positive association with perceptions of neighbourhood disorder, feelings of personal powerlessness, and depression.[97] In the most affluent areas of Scotland, men experience 23.8 more years of good health and women 22.6 more years of good health than those in less affluent neighbourhoods.[98] Based on the most widely used model to illustrate the social determinants of health, the 1991 Dahlgren-Whitehead 'rainbow model', shows that environmental conditions are one of the influences on health. Therefore, environmental conditions in Scotland may contribute to the difference in years of good health in affluent areas compared to deprived areas. This is where social justice and environmental issues overlap, where the stress of living lives which are dependent on decisions by others and where at the bottom line the sense of fairness and justice is violated.

Accessible information for the good of civil society

In 1992, the UK established the Environmental Information Regulations (EIRs), which would provide reasonably extensive rights to inquire and receive information about the environment. To have these rights on paper is the first step in legislation; the second is to have them properly implemented by the various bodies to which they apply. Once the EIRs were implemented, citizens identified that realistically obtaining information was difficult and at times impossible. Local authorities were required to set up registers covering air-polluting activities in their area. What resulted was not a well-transcribed ledger for public viewing or a terminal at a council reception or library with a searchable database. In most cases, it was a filing cabinet with original documents in folders ordered roughly.

Sometimes this was well implemented like in the case of SEPA which had a response standard of 10 days, a further 10 days shorter than the required time set by the 2004 revised EIRs. A straightforward request from a civil society organisation tested the response of all 32 of Scotland's local authorities. Only 17 replied within two months, a follow-up prompted 13 replies, some up to three months after the initial request, and two never replied.[99]

When the EIRs did work competently it allowed civil society to influence environmental change. Friends of the Earth England had used the Environment Agency's database to create a scorecard of the worst polluters. This allowed citizens to compare differences between facilities and local authorities to inform activism. It alerted people living around the Shell plant in Cheshire of the almost

95 Dunion, *Troublemakers*, ch. 6.
96 Tucker, P. (1995), *Report of the Expert Panel on the Psychological Responses to Hazardous Substances*, USA: Agency for Toxic Substances and Disease Registry.
97 Downey, L, Van Willigen, M. (2011), 'Environmental Stressors: The Mental Health Impacts of Living Near Industrial Activity', *Journal of Health Social Behavior,* 46(3), pp. 289-305.
98 Public Health Scotland (2021), *What are Health Inequalities*, [Accessed 15 February 2022].
99 Dunion, *Troublemakers*, p. 139.

11,000 kg of acetone and 47,000 kg of particulates in the air, and almost 5,000 kg of toluene discharged into local water sources.[100] The influence of environmental information in England informed Scotland's Freedom of Information (FOI) Act. This Act was underpinned by the appointment of an independent Scottish Information Commissioner who was able to order the disclosure of information in the public interest and resolve disputes between those requesting the information and those refusing to provide it with all or in part. The role of the Commissioner has aided the transparency of environmental decisions made by governments, has progressed the right to access information, and in turn has furthered the ability of civil society and the public to influence environmental policy.

Conclusion

Civil society's capacity to engage with decision-making and access justice has been the cornerstone of effective environmental policy and legislation. Civil society movements such as the landfill protests of Greengairs represent hundreds of movements around Scotland that have pushed the environmental justice agenda to where it is today. These movements may not always be apparent, but they have advanced environmental and human health. As the UK continues to grow and develop communities will face environmental injustices and will speak up.

A recognised effort for environmental rights in Scotland has been ongoing for 20 years and is yet to be fully realised. Knowledge, participation, and legal remedies are crucial. The right to information has been an effective tool for civil society to influence environmental policy. If Scotland also becomes compliant with the Aarhus Conventions' obligations of access to participation in decision-making and access to justice, then civil society and the public are better equipped to tackle their environmental concerns. Environmental policy in both the UK and Scotland still requires a significant amount of improvement to deal with the challenges of dual climate and biodiversity emergencies. Environmental injustices are still present, and people are still fighting. If Scotland can introduce an enforceable human right to a healthy environment into Scots law, and the UK follows suit, then civil society and the public will be much more capable of ensuring their human rights and influencing the progress of the Governments' environmental policies.

100 Dunion, *Troublemakers*, p. 145.

Chronology: a timeline of environmental policy milestones in the UK

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Introduction

Pressure for environmental policy has much deeper roots than set out in this chronology, as essays elsewhere testify. But the movements of the 1960s coalesced these elements, and the rise of popular science as a genre played an important role. While one might argue Sixties' works like *Silent Spring* tightly focussed on specific environmental issues, the 1970s connected these, and expressed them as a thorough critique of existing social settlements – most notably in *Limits to Growth*. By the end of the 1980s, after many years of dealing with pollution issues almost on a case-by-case basis, environmental policy had hit the international agenda. Government was able to draw on, for example, Brundtland's notion of sustainable development, or wider themes of ecological modernisation, though arguably still superficially. However, it is with the rise of climate change up the political agenda from the 1990s that environmental policy has come to play a more central role. This is expressed most deeply through the significance of the Climate Change Committee and the setting of national carbon budgets, that are designed to hold across all policy areas. The entrenchment of environmental issues at the international level, first becoming visible in the 1980s, has only become more pronounced into the 2010s and beyond.

1960-78

Overview

The Sixties saw the advent of hippie counterculture, which often incorporated environmental concerns alongside advocacy for peace – particularly nuclear disarmament – and personal rights. Nuclear power was often chief among several environmental targets for the movement precisely because of its situation at the nexus of these concerns. British nuclear power had been developed with military goals in mind, in a secrecy so complete even MPs were unable to ask questions over its budget, while its failings were hushed up. By the Sixties, other power centres – most notably the National Coal Board – had been able to employ their own nuclear scientists, who developed critical approach with a technical basis. Previously this had been the exception – Sir Christopher Hinton moving to work at the CEGB was the most notable in this regard, criticising nuclear on cost using his standing as a former member of the Manhattan Project.[101]

This was also a period when many key texts were written. In particular, the development of popular science allowed wider dissemination of what would otherwise be parochial concerns for technical communities. The most famous examples from this period include Rachel Carson's *Silent Spring* on the side effects of pesticides, while Garrett Hardin's flawed paper on overpopulation, *The Tragedy of the Commons*, was also influential. Highly indicative of this increasing public interest is that Colin Buchanan's report on roads for the Ministry of Transport was published by Penguin in paperback as *Traffic in Towns* in 1964. Moving into the 1970s, the Club of Rome's *Limits to Growth* project was another highly technical exercise that had strong cultural impacts, while the special edition of *The Ecologist* magazine, *A Blueprint for Survival*, which advocated living in small, largely de-industrialised communities to avoid environmental catastrophe, was even more radical in its conclusions.

Both were published in early 1972, with perfect timing to influence the UN Conference on the Human Environment, dubbed the first world conference on the environment, in June of the same year. Shortly after, in 1973, E.F. Schumacher's *Small is Beautiful*, on alternative economic organisation based around sufficiency rather than surplus, also proved an environmental touchstone, somewhat ironically given Schumacher's background as an economist for the National Coal Board and cheerleader for coal.

In the UK, specific manifestations of this burgeoning movement included the intentional community[102] at Findhorn, founded in 1962, and the Centre for Alternative Technology, founded in 1972. Friends of the Earth was founded in California in 1969, with its UK branch following in 1971. Greenpeace was also founded in Canada in 1969. These represent the institutionalisation of the cultural movement that birthed them, catalysed by the student uprisings of 1968, and often drawing on a far deeper wellspring of cultural history that reaches back at least as far as the Diggers and Levellers of the English Civil War. The international folk music scene was hugely popular at this time, members of which such as Pete Seeger, Joan Baez, Neil Young, Joni Mitchell (most obviously, in Big Yellow Taxi), Fairport Convention and Bob Dylan, took up these themes.

101 For the canonical overview of this period in nuclear energy, see Williams, R. (1980) *The Nuclear Power Decisions* (Croom Helm).
102 An intentional community is a relatively small group of people who have created a whole way of life for the attainment of a certain set of goals. Shenker, B. (2011), *Intentional Communities: Ideology and Alienation in Communal Societies* (Routledge Revival), p. 6.

Chronology

 UK policy

 International policy

 Social/cultural/ economic/ political shifts

 Ecological/ natural events

 Publication of reports/reviews

1961 **Land Drainage Act** [103]

This Act built on the earlier Acts from the 1930s and 1940s, which had reorganised drainage and flood defence into catchment areas that controlled drainage, fisheries and water pollution. In particular, the 1930 Act had instituted a generalised "polluter pays" principle, by allowing boards to levy the whole of a catchment area for flood defence, rather than only that land at risk of flooding. The 1961 Act gave more autonomy to boards, streamlined some of the bureaucracy involved in their functions, and increased their scope to cover sea and tidal water rather than only rivers.

1963 **Water Resources Act**

This Act continued the reforms of the 1961 Land Drainage Act by creating the Water Resources Board and reorganised the river boards into river authorities. The Water Resources Board was largely independent of Whitehall and had its own data collection and research functions.

1963 **The Buchanan Report for the Ministry of Transport**

The report set out the planning principles the government should follow for road building. Buchanan attempted to strike a balance between the need to accommodate rising car ownership and, *inter alia*, environmental protection. His rationale for avoiding congestion was that "Either the utility of vehicles in town will decline rapidly, or the pleasantness and safety of surroundings will deteriorate catastrophically – in all probability both will happen."[104] As a result, the report argued that any measures taken had to be context dependent. It also cautioned that increases in capacity could become a self-fulfilling prophecy by inducing demand, a phenomenon that has become known as "predict and provide".

1964 **London Ringways plan**[105]

Plans for a series of circular motorway-type routes around and through London had existed even before the Second World War (1943 County of London Plan, 1944 Greater London Plan). Running somewhat counter to the Buchanan report, the attempted implementation of this was kickstarted by the creation of Greater London Council (GLC), which was immediately followed by the publication of the outline plan for the scheme. There was cross-party agreement, with Ringways 1 and 2 plans published in 1966 and 1967 under Labour councils and then adopted by the Conservatives. But the plans generated significant public

103 For an overview of key UK water legislation through to the 1990s: Hallett, S., Hanley, N., Moffatt, I., & Taylor-Duncan, K. (2007), 'UK water pollution control: A review of legislation and practice', *European Environment*, 1(3), pp. 7–13.

104 Buchanan, C. (1964), *Traffic in Towns* (Penguin).

105 For an academic overview, Dnes, M. (2019), The Rise and Fall of London's Ringways, 1943–1973 (1st ed.), (Routledge). For the laity, https://www.roads.org.uk/ringways [Accessed 06 October 2021].

opposition and catalysed the nascent road protest movement, due both to the demolition of housing that would be required and the deleterious environmental effects. Start dates, cost and routes were kept purposefully vague even where they were already known to the GLC to avoid "planning blight", which did nothing to improve public relations. Though ultimately abandoned as uneconomic by the 1970s, impaired by the oil crisis, various elements of the plans did get implemented in a piecemeal fashion. The M25, for example, is an amalgam of two elements from the plan.

1966 **Aberfan disaster**

A coal spoil tip, located on top of a known mountain spring, collapsed on to the village of Aberfan, killing 116 children and 28 adults. The subsequent inquiry found that there was a complete lack of tipping policy – damningly, in line with the regulatory framework – and a lack of legislation dealing with tips globally[106]. The National Coal Board was found responsible, but the Board and its chair, Lord Robens, faced minimal consequences. Robens was politically "too big to fail", due to his ability to placate the mining unions, and continued in post until 1971. He went on to a storied career as a director and board member of many notable companies, including Times Newspapers, as well as chairing the committee that set workplace health and safety legislation.

1967 **SS Torrey Canyon**

A supertanker, lacking the appropriate charts and mismanaged by the crew, ran aground offshore Cornwall. Attempts at mitigation were disastrous, including mixing with first generation – and highly toxic – detergents, and dropping 161 bombs and a variety of accelerants on to the oil spill in an attempt to burn it off, many of which missed the target.[107] The difficulty in recovering damages from the ship's owners incentivised the development of the International Conventions on Civil Liability for Oil Pollution Damage (1969) and for the Prevention of Pollution from Ships (1973).[108] The International Tanker Owners Pollution Federation was also set up as a direct result of the accident. Botanist David Bellamy came to prominence during coverage of the disaster.

1969 **Harold Wilson's speech at the Labour Party Conference**

Introduces "the environment" as an overarching policy concept. Wilson spoke of the need to tackle the legacy of environmental issues left by the industrial revolution while also ensuring that "the second industrial revolution… does not bequeath a similar legacy to future generations", focusing on problems of air and water pollution as well as noise and congestion in urban areas.[109]

106 A full study of Aberfan: Johnes, M. and McClean, I. (2003), 'Aberfan: Government and Disasters', *Twentieth Century British History*, 14(2), pp. 196-198. Another treatment of the regulation issues can be found in Jordana, J. and Levi-Faur, D. (eds) (2004), *The Politics of Regulation: Institutions and Regulatory Reforms for the Age of Governance* (Elgar Publishing), pp. 54-58.

107 Reportedly, areas where detergents were used took five times as long to fully clear as those just affected by crude oil.

108 For full discussion of the regulatory impact: De La Rue, C., Anderson, C. B. and Mitropoulos, E. E. *Shipping and the Environment: Law and practice* (Routledge).

109 Wilson, H. (1969), Leaders speech, Brighton 1969.

1970

The Department for the Environment is founded

Three former ministries of Housing and Local Government, Transport, and Public Building and Works were merged into a single department. The broad range of the portfolio is somewhat indicative of the difficulty there has been in incorporating environmental concerns into government in Britain[110]. A defining feature of green ideology is that it desires to set the environment at the heart of governmental decisions[111], but as political decision makers have mostly had a thin commitment to green ideology, what has generally happened instead is the kind of compromise typified by the Department's founding[112]. Despite the name, the new department was in conflict with other departments over its environmental brief[113], though it did manage to produce landmark environmental legislation, including the Water Acts discussed below. Nevertheless, it was arguably outside of the department that environmental issues found their more powerful champions.[114]

1971

First report from the Royal Commission on Environmental Pollution[115]

The founding of the Commission (RCEP) in 1970 introduced an authoritative and broadly independent expert body to, in some respects, identify environmental policy problems for government to respond to[116]. This report acts as a wide-ranging overview, setting out a series of issues where the Commission can have the most impact. As such, it is indicative of the state of environmental concerns at the start of the 1970s. The primary concern is over "avoidable pollution of air, land and water in Britain[117]..." as the report puts it.[118] However, it is notable that climate change was already enough of a concern to warrant some discussion[119], even if discussion is limited by the state of the science at the time.

In brief, the approach is generally one of trade-offs[120], which is worth contrasting with later concepts of sustainable development, or ecological modernisation, which tend to stress the positive-sum nature of some environmental interventions. Finally, notwithstanding that the Commission aims for "a comprehensive policy for safeguarding the environment[121]", the somewhat diffuse power centres across government in this policy area make it little surprise that British environmental policy was often characterised by a piecemeal approach (as discussed by Weale[122] and many others).

110 Although this is also endemic to government work in general to some extent. As long ago as the 1918 Haldane report, it has been recognised that the neat categories of governmental departments are constantly transgressed by messy reality.

111 As discussed later, this is certainly the view espoused by the deep green critique of capitalism, and, to a lesser degree, by concepts of sustainable development and ecological modernisation.

112 As Fitzpatrick points out, the commitment to economic growth from both left and right has seen green issues squeezed from both sides. Fitzpatrick, T. (2017), *A green history of the welfare state* (Routledge), p. 90.

113 *Ibid*, p.91.

114 *Ibid*, p. 92.

115 Ashby, E (1971), *Royal Commission on Environmental Pollution First Report* Command 4585, (HMSO)
All RCEP reports, and government responses are available from the National Archives at https://webarchive.nationalarchives.gov.uk/ukgwa/20110322143813/http:/www.rcep.org.uk/reports/index [Accessed 06 October 2021].

116 For the authoritative account of the Commission, see Owens, S. (2015), *Knowledge, Policy and Expertise: The UK Royal Commission on Environmental Pollution 1970-2011* (Oxford University Press).

117 *Ibid*, para 4, p.1.

118 *ibid*, para 4, p 1

119 *Ibid*, pp. 37-38.

120 "The nation's resources for reducing pollution are limited; difficult choices will have to be made in their deployment" *Ibid*, p. 1.

121 *Ibid*, para 4, p. 2.

122 Weale, A. (1991), *The new politics of pollution* (Manchester University Press).

1972 **The Limits to Growth study is published**[123]

Commissioned by the Club of Rome, a body consisting of eminent scientists, industrialists and politicians dedicated to holistic "systems" thinking, an MIT team attempted to model five key variables: population, food production, industrialisation, pollution, and consumption of non-renewable resources. Though only ever designed to produce highly abstract conclusions, the conclusion of the study was that humanity was on course for systemic collapse by the mid- to late-21st century if then-current trends continued[124].

The study provoked intense debate, which coalesced around now familiar "Malthusian" and "promethean" lines. The authors were accused of being the former, in arguing that population growth might lead to intolerable stresses on resources. Their critics were accused of being the latter, in arguing, broadly, that human ingenuity would always be able to overcome external limits[125]. The debate certainly informed the intellectual history of sustainable development and highlights the dividing lines both within the green movement, and between greens and others, on capitalism, development, and industrialisation.[126]

1972 **United Nations Conference on the Human Environment**

Held in Stockholm on 5-16 June, this was the first world conference to consider the environment as a major global issue. It led to the adoption of a set of 26 wide-ranging principles for sound management of the environment and the creation of the United Nations Environment Programme (UNEP).

1973 **Water Act**

This Act took water supply and sewage away from local authorities and subsumed it into ten new regional water authorities that also took the powers of the old river authorities from the 1963 Act. Water policy arguably became marginally less independent after this move, due to the creation of the National Water Council, although local authorities retained board seats on the regional authorities.

1973 **The first oil shock**

After US domestic oil production hit its first peak around 1970, the Yom Kippur war of 1973 triggered a strong rise in oil prices as Arab oil producing nations embargoed nations that supported Israel in that war. The economic effect on OECD nations was severe, leading the bloc to found the International Energy Agency, which mandated oil storage levels in an attempt to mitigate loss of supply and would go on to expand its remit across energy as a whole. The UK brought in the Fuel and Electricity (Control) Act to institute

123 Meadows, D. H., Meadows, D.L., Randers, J., and Behren, W.W. (1972), *The limits to growth: A report for the Club of Rome's project on the predicament of mankind* (Earth Island).
124 *Ibid*, p. 24.
125 Notably in Simon, J. L. (1981), *The Ultimate Resource* (Martin Robertson).
126 A similarly structured debate would take place around peak oil supply. The concept of "peak oil demand" – i.e. that oil use will decline because less polluting alternatives reduce oil demand, not because supply will prove unable to meet that demand.

rolling brownouts (the "three-day week") and bring energy under direct government control. The crisis also spurred interest in alternative sources of energy and energy efficiency[127], as well as the development of deep-water sources of oil and gas like the North Sea.

1973 **The United Kingdom joins the EEC**

The European Economic Community enacts its Environmental Action Programme. The phrase "the dirty man of Europe" as applied to the UK originates from around this time, though the exact origin is unknown. The UK's membership of the EEC is seen as a catalyst for improvements in environmental protection in the UK.

1973 **The Nature Conservancy Council**

Created by Act of Parliament, replacing the Nature Conservancy and reorganising how national parks, nature reserves and Sites of Special Scientific Interest were administered.

1974 **Control of Pollution Act**

Heavily influenced by the analysis of the Royal Commission on Environmental Protection, this was an Act that attempted to cover air, land and water pollution through a series of licenses, fines and, potentially, custodial sentences. An ambitious and hefty piece of legislation, nevertheless Weale notes that it suffered from, amongst other things, an "implementation deficit" between lofty goals and practical application[128] – something the RCEP had noted was already a feature of pre-existing legislation. This was partly due to operators/polluters being at a strong informational advantage to regulators. Indeed, under previous regimes for water in the UK, often the regulator and the polluter were the same body.

1976 **Flowers Report**[129]

The controversy over whether to reprocess nuclear fuel leads to the report *Nuclear Power and the Environment*, from the Royal Commission on Environmental Pollution, which was chaired by British physicist Sir Brian Flowers FRS. The report stated that "there should be no commitment [to nuclear power] until it has been demonstrated beyond reasonable doubt that a method exists to ensure the safe containment of long-lived, highly radioactive waste for the indefinite future." Incidentally, it also suggests that use of nuclear power might be justified by climate change in future[130].

127 Schumacher, E. F. (1973), *Small is beautiful: A study of economics as if people mattered* (Abacus) The publication of Schumacher's *Small is Beautiful* in this year proved timely. Critical of the usage of non-renewable energy sources, including nuclear, and advocating reform to the existing economic order, the work was highly influential. Arguably it helped crystalise the intellectual movement that has become "degrowth."

128 Weale, A. (1992), *The New Politics of Pollution* (Manchester University Press) p. 17. Weale has a full analysis of approaches to environmental policy, arguing also that 1970's style permitting systems often struggled with cross-media transfer (e.g., banning air emissions creates a landfill problem), often lacked feedback mechanisms by which to update legislation, and, in general, treated "the environment" as a discrete policy area rather than a foundational tenet.

129 Flowers, B. (1976), *Royal Commission on Environmental Pollution Sixth Report: Nuclear Power and the Environment Command* 6618, (HMSO).

130 "...the build-up of carbon dioxide in the atmosphere from the combustion of fossil fuels...could yet provide a powerful argument for nuclear development..." para 510, p. 194, and para 192, p. 84 more fulsomely.

1976 **The Energy Act**

The Act put the emergency powers available to central government after the 1973 oil shock on a permanent basis, including regulations covering gas flaring and venting.

1979-91

Overview

The oil crises of the 1970s were defining events for OECD nations like the UK. Governments of consumer countries started looking with great interest at energy efficiency and alternative sources of energy. They almost completely phased out oil as an electricity generating source in an attempt to ensure energy security. In the British context, long-running conflict between government and the coal mining unions would come to a head in the 1980s with the two Miners' Strikes. Combined with question marks over oil, a renewed interest in nuclear power was natural, especially as the French reactor programme proved successful. But the impetus for privatisation was the most important principle that saw the British programme limited to just Sizewell B. Privatisation was more important than green objections, primarily over safety. Even as notable nuclear accidents at Three Mile Island and Chernobyl raised issues of public opinion, the sheer expense, which would have to be borne by the state at this point, proved too much.

The impact of studies like *Limits to Growth*, especially in a context of economic upheaval related to the oil crises, was to catalyse a more radical green critique of the existing social settlement in civil society. This generally did not filter through to policy until much later, however. Government interventions on the environment continued to be of a piecemeal nature during this period, with emphasis on pollution control and waste management; the treatment of the acid rain controversy was somewhat typical of this approach[131]. By the end of the 1980s, however, the Brundtland report gave governments a concept that could allow for a more thorough greening of policy – or, from the deep green perspective, could be deployed to triangulate environmental concerns with existing capitalism to nullify the radical content of green ideology. Whatever one's view, environmental policy problems continued to rise up the political agenda, both domestically and, to the surprise of some, internationally, into the realm of diplomacy that had traditionally been the preserve of matters of trade, war and peace.

Culturally, the key movement of this era was punk, which affected fashion, music, and comedy through the "alternative" scene. The anti-capitalist, anti-consumerist tendencies in punk tend to mesh well with green ideologies, especially deeper green strands that see capitalism and hegemonic/mainstream culture as constitutive exterior forces. Vegetarianism and veganism grew in popularity from this period, becoming incorporated in the "straight edge" punk movement, and seeing perhaps their most prominent cultural expression in this era through the "*Meat is Murder*" album by The Smiths. The autarkic "DIY ethic" of punk also has similarities with the eco-commune movement, while also prioritising strategies of direct action and protest over lobbying and engagement. This informed the green politics of the era, before the professionalisation that occurred primarily in the late 1980s and then

131 See Weale, A. (1992), *The New Politics of Pollution* (Manchester University Press) ; Maarten A. Hajer (1997), *The Politics of Environmental Discourse* (Oxford University Press). And Owens, S. (2015), *Knowledge, Policy and Expertise: The UK Royal Commission on Environmental Pollution* 1970-2011 (OUP) in particular.

1990s. That such politics was taken seriously by the state can been seen in the way green groups, like LGBT and racial justice groups, were regularly infiltrated by the police[132] and met with a violent response in public, including from the Special Patrol Group and its successor, the Territorial Support Group.

Chronology

1979 **The second oil shock**

In late 1978, a strike cut Iranian oil production by 75%. The Iranian Islamic revolution against the Western-backed regime of the Shah continued the destabilisation of Iranian production. Then the war against Iraq, armed and backed by the West, cut production from both nations. Global production fell by c. 7%. Prices only recovered to pre-shock levels by the mid-80s, by which time demand was c. 5 million b/d lower. This provided further incentives for the development of the North Sea, research into alternative energies, and a renewed interest in new nuclear power stations.

1981 **Wildlife and Countryside Act**

Enacted EC directive 79/409/EEC on the conservation of wild birds, as well as rolling up and reinvigorating existing protections. The regulations covering Sites of Special Scientific Interest were revised under this legislation. Due to regular reviews built in to the legislation[133], the act remains largely unamended.

1982 **Yorkshire asbestos**

In 1982, a documentary by Yorkshire Television took a former asbestos worker, Alice Jefferson, as a case study[134]. She had worked at a factory for 9 months when she was seventeen – aged 47 she was diagnosed with mesothelioma and given 6 months to live. As a review in the New Scientist put it, "Life will never be the same again for the asbestos companies after this film[135]." Ten days after the broadcast, the legal limit for workplace asbestos exposure was halved.

A long-running campaign by the Yorkshire Evening Post was also instrumental in bringing attention to the highly elevated levels of deaths due to mesothelioma in the areas around Yorkshire asbestos factories, in particular, Armley, a housing estate in Leeds built on the site of a former factory. The Armley case in particular, where the factory was spraying asbestos dust out of its ventilation system, is a case study of environmental problems as "externalities" – that is, profiting by passing certain costs on to the general public – as well as the impact that investigative journalism can have on policy.

132 Many of the events at the centre of "Spycops" cases currently being investigated and prosecuted date from this period. Police brutality was a common theme in punk music and comedy of the time. The French government went so far as to use special forces to sink the Greenpeace ship *Rainbow Warrior* in 1985.

133 I.e., this legislation does not fall foul of the lack of feedback mechanisms that characterised legislation in the 1970s.

134 In *Alice – A Fight For Life* (1982) directed by John Willis.

135 *New Scientist, (1982) Audience: Alice- a fight for life* p. 318.

Blue and brown asbestos were banned outright in 1985, white asbestos in 1999, while in 2012 knowledge and management of asbestos became a duty of commercial buildings managers (Control of Asbestos Regulations 2012).

1983 **Windscale documentary**

In similar vein to the asbestos documentary above, Yorkshire Television release "Windscale – the Nuclear Laundry"[136], alleging that clusters of childhood leukaemia around Windscale were attributable to the fallout from the 1957 fire there.

1983 **Water Act**

Water provision is further centralised by reducing board size, and making all members appointed by central government. In what must be seen as an attempt to prepare the sector for privatisation, headcount was reduced and investment slashed.

1983 **The Convention on Long-Range Transboundary Air Pollution (LRTAP)**

The convention, signed in 1979, comes in to force in March 1983. It is a framework convention with no targets or timetables. The convention set up monitoring and research functions on acid rain. 33 states become party to the agreement, including the entire Soviet bloc, the US, Canada and the UK. By 1984, ten countries had signed up to the so-called "30% club", pledging to reduce sulphur dioxide emissions by 30% by 1990. This included large emitter West Germany, likely responding to the surging domestic Green Party and local forest die-back. As a major emitter and with the costs borne mostly by downwind Nordic nations, the UK remained a laggard, even as the Department for the Environment lobbied for change alongside green groups[137]. By 1994, after several rounds of negotiations and protocols, European parties had reduced their SO2 emissions by around 40%, though a significant amount of this was due to de-industrialisation and the shift to natural gas for reasons other than the protocol. Still, it is arguable that the UK was effectively "shamed" into action, due to the reputational hit it took as more and more data showed the damage its emissions were doing to its neighbours[138].

1984 - 1985 **The Miners' Strike**

Environmental issues played essentially no role in the disputes at the heart of the Miners' Strike, but the outcome has had a strong, if unintended and unforeseen, impact. The government's aim was to destroy a powerful political antagonist in the form of the mining unions, to enact a privatising logic that would see the industry

136 Windscale: The Nuclear Laundry (1983) [Accessed 14 October 2021].

137 For a full treatment of the domestic UK politics at play, see Hajer, M.A. (1995), *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process* (Clarendon Press).

138 For discussion of the efficacy of the convention and the international politics at work, see for example Levy, M. (1993), 'European Acid Rain: The Power of Tote-Board Diplomacy' In Haas, P.M., Keohane, R and Levy, M.A. (eds), *Institutions for the Earth: Sources of Effective International Environmental Protection* (MIT Press) pp. 75-132, and Wettestad, J. (2002), 'The Convention on Long-Range Transboundary Air Pollution' In Miles, E.L., Steinar, A., Carlin, E.M., Skajarseth, J.B., and Underdal, A (eds), *Environmental Regime Effectiveness: Confronting Theory With Evidence* (MIT Press), pp. 197-222.

more subject to market forces, and to provide energy security of supply. Though of course other factors have played important roles – the discovery and development of North Sea gas, and decades of energy policy since[139] – the combined result has been a prolonged and near-terminal decline in UK coal production and coal-fired electricity generation. From a political perspective, it has decoupled left-wing politics from coal. Given that organised environmentalism in the UK is primarily of the left, this is a significant development in itself. It also speaks to the complicated relationship between coal and left-wing environmental politics, typified by the fact that a foundational text for environmental economics – Schumacher's Small is Beautiful, discussed earlier – was written by an NCB economist.

Diversification away from coal was also a key logic behind the Thatcher government's initial support for a large nuclear programme. Dieter Helm writes, for example, that Walter Marshall was brought in to head the CEGB precisely to support the planned major nuclear programme[140]. But as the problems with nuclear mounted, gas came to the fore. Cheaper, less capital intensive, with lower lead times, and thus more attractive to private finance, gas was far easier to fit with electricity market deregulation and the privatisation agenda of the government than nuclear.

1985 **Vienna Convention for the Protection of the Ozone Layer**

As with LRTAP above, the treaty provides for the sharing of research, the institution of international research agencies, and a fund to aid developing nations to avoid the use of ozone-depleting chemicals. The 1987 Montreal Protocol to this treaty bound signatories to progressive reductions in the use of CFCs and halons, chemicals which damage the ozone layer. Building on the approach from LRTAP, this is the first example of international action to curb a global environmental problem and has been used as a basis for constructing the climate regime, though there is a debate over how applicable the approach is[141].

1986 **Single European Act**[142]

The first major revision of the 1957 Treaty of Rome, the Single European Act's main aim was to move the European Community towards a single market, but it also introduced environment as a distinct policy area, under which the Community would work to 'preserve, protect and improve the quality of the environment', including 'preventative action', wherever it was deemed most effective to do so at the supranational level rather than being left to individual member states. Before this, environmental matters were subsumed within other existing policy areas, such as trade.

139 See Helm, D. (2004), *Energy, the State and the Market: British Energy Policy from 1979* (Oxford University Press). For an authoritative overview of the period from 1979 to 2003.

140 Helm, p. 103.

141 Broadly, the literature suggests agreeing a wide framework agreement first aimed at fact-finding, then adding gradually more restrictive protocols. For scholarly analysis of the efficacy of such an approach, see Seaver, B. M. (1997), 'Stratospheric Ozone Protection: IR Theory and the Montreal Protocol on Substances That Deplete the Ozone Layer', *Environmental Politics*, 6(3) pp. 31–67; Rowlands, I. H. (1995), *The Politics of Global Atmospheric Change* (Manchester University Press); and Downs, G. W. (2000), 'Constructing Effective Environmental Regimes', *Annual Review of Political Science*, 3(1), pp. 25–42.

142 Single European Act (1986).

1986 **Chernobyl nuclear accident**

Until the Fukushima accident of 2011, Chernobyl was the only level 7 event on the International Nuclear and Radiological Event Scale. It is unnecessary in this history to discuss the details of such a well-examined event, other than to focus on its impact for UK policy. Most directly, sheep grazing on high ground was restricted to prevent the uptake of caesium-137 into their meat. These restrictions lasted until 2000 in Northern Ireland, 2010 in Scotland, and 2012 in Wales and Cumbria.

At a cultural level, the impact was immense. The disaster at Chernobyl has become a global cultural touchstone, providing source material for everything from high art to video games, and, most recently, an award-winning HBO series. It was equally galvanising for the anti-nuclear movement within environmentalism, and, across Europe, was an important factor in decisions to phase out existing plant or cancel new builds.

In the UK, however, its impact on policy was arguably much less. In policy circles, the industry set about defending itself by arguing, not without foundation, that the reactor design at Chernobyl was radically different to both the designs then in use in the UK, and the proposed pressurised water reactor at Sizewell. These arguments were adequate within policy circles even if not with the public at large, but as discussed with regards to the Miners' Strike, it was likely that other factors were more important in the scaling back of the Thatcher governments' nuclear ambitions, not least the problem of privatisation. Thatcher herself made her frustration at the lack of a large nuclear programme clear in her memoirs[143].

1987 **Our Common Future**[144]

Popularly known as "the Brundtland report", the report was written under the auspices of the World Commission on Environment and Development, which was chaired by Norwegian Environment Minister, and then Prime Minister, Gro Harlem Brundtland. It brought the term "sustainable development" to wide public attention, defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The concept is crucial to ecological modernist thought, as it suggests that development is not inevitably in opposition to environmental concerns or the interests of putative future generations (so-called "intergenerational justice"). It has been adopted in UK policymaking, most clearly from the Major government onward, though the flexibility of its definition allows a wide array of interventions to be described as "sustainable."

143 She says, for example, that "it was never a matter of safety…but rather of cost" (p. 685). She also says twice in this short section that she supported nuclear "for environmental reasons and to ensure security of supply" (p. 684), highlighting carbon emissions from coal as an important reason. However, this latter is arguably revisionist, especially given her later expressed views that climate change was being used to usher in socialism. There is little evidence from the time of the strike that environmentalism had anything to do with the government's response. At the very least, whatever Thatcher's personal reasons for commitment to nuclear, they clearly did not outweigh her government's commitment to privatisation.

144 Report of the World Commission on Environment and Development: Our Common Future [Accessed 06 October 21].

1988

Camelford water pollution

Twenty tonnes of aluminium sulphate ended up in the water supply, poisoning c. 20,000 people. Compensation was scant and took many years to be awarded. In the 2000s there were claims of a cover-up involving the water industry and the then Conservative government, aimed at facilitating privatisation in 1989. The incident re-emerged due to the untimely deaths of some people exposed to the pollution, with coroners finding dangerous levels of aluminium in their brains.

1988

EC Large Combustion Plant Directive

The European Community directiveDirective mandates SO2 scrubbing on power plants. Pushed in large part by the West German government that had already moved domestically on this issue.

1989

Formation of the UK Green Party

The Greens go on to take 14.5% (c. 2.2 million votes) of the UK vote in the June European Parliamentary elections. As with later developments over immigration (BNP, UKIP) and EU membership (Referendum Party, UKIP), the EU electoral result is widely seen as helping set the domestic political agenda. The electoral threat posed by the Greens incentivised the major parties to reinvigorate their approach to environmental issues in an effort to capture these voters. It is perhaps no coincidence that Margaret Thatcher's famous UN General Assembly speech on the dangers of climate change was just five months later,[145] nor – given that the Green vote collapsed to just 3% (c. 471,000 votes) in the 1994 European elections and only slowly recovered – that she later recanted these views.[146]

1989 - 1991

The Royal Commission releases two reports on genetically modified organisms and the risks

The first, in 1989, proposed a licensing system administered by the Secretary of State and the Health and Safety Commission on a case-by-case basis. The second, in 1991, provided a system to facilitate this, based on the HAZOP hazard identification system. Nevertheless, GMO research continued to be subjected to protest and vandalism throughout the 1990s.

1989

Water Act

This Act reorganised the administration of water once again, privatising water supply and sewerage while handing control of river management, drainage and pollution to the newly created National Rivers Authority. The previous reorganisations had seen river water quality continue to decline, while the Thatcher

145 It is worth mentioning, however, that Margaret Thatcher had previously given a speech to the Royal Society in September 1988 which also covered the growing concerns about 'a global heat trap which could lead to climatic instability'. See https://www.margaretthatcher.org/document/107346

146 For an overview on the electoral history of the UK Green Party in particular, at least until 2009, Birch, S. (2009), 'Real Progress: Prospects for Green Party Support in Britain', *Parliamentary Affairs*,62 (1), pp 53-72 is authoritative.

government was keen to privatise water as it had other utilities. Shifting the pollution remit to a quango was aimed at preventing newly privatised water companies lowering costs by simply polluting more. Prices were also to be regulated by Ofwat.

1990 **Environmental Protection Act**

This Act attempted to consolidate the treatment of waste in a more holistic manner. Previously, emissions to air, land and waterways were dealt with by separate licensing systems, meaning a waste solution for one form of emission could merely transform the waste into another form that was unlicensed. The ongoing primary focus of the RCEP's reports in the early '90s remained pollution issues around waste disposal.

1992 - 2007

Overview

The 1990s were characterised primarily by anti-road activism against the road building campaign of the Conservative government (Roads for Prosperity, 1989). Major flashpoints included Twyford Down (1991-4), East London (against the M11 link road, 1993), Solsbury Hill (1994), and most famously, Newbury (1996). Protests against genetically modified food also gained traction. As the millennium turned, however, climate change became the overriding priority of the green movement, and a touchstone for policy. This meant a decline in protest aimed at GMOs and a renewed impetus for road and airport expansion protests, often with a sharing of personnel (e.g. John Stewart, now a central figure in co-ordinating between different airport protest groups, had performed a similar function for road protests).

The inability of the mainstream parties to adopt environmental issues in a thoroughgoing manner is arguably in part due to the difficulty of articulating them on the traditional left-right spectrum, which still dominates political thinking[147]. As primarily parties of right or left, environmental issues have tended to be viewed through this spectrum, rather than as an organising principle themselves. As a result, those who do indeed take environmentalism as an ideological organising principle have tended to find a political home in campaigning, or in minor political parties. Culturally, green issues gained further prominence in this period, notably aided by Hollywood, where Al Gore's *An Inconvenient Truth* directly followed the box office success of *The Day After Tomorrow*, which depicted a global climatic disaster. This was arguably the period over which climate change came to dominate all other green issues in the public sphere, but it was also a period where denial remained strong. For example, both Al Gore and *The Day After Tomorrow* were satirised by the animated sitcom *South Park* as alarmist and attention seeking in 2006. It is perhaps indicative of the change in the debate in the US that *South Park* made a pair of episodes in 2018 widely seen as apologising for this earlier stance.

The period from c. 2000 onward was defined by the consolidation and further development of the ecological modernist perspective[148], though this did not always

147 Carter, N (2006), 'Party Politicization of The Environment In Britain', *Party Politics*,12(6), pp. 747–67.

148 There are decades of academic treatments of ecological modernisation. An overview of early developments can be found in a special issue of the journal *Environmental Politics* (Volume 9, Issue 1, 2000). The most clear recent expression of the view is surely *An Ecomodernist Manifesto* (2015) [Accessed 07 October 2021] which is explicitly pro-nuclear.

find full expression in policy. A key cleavage between modernists and other greens is that modernists tend to favour technological rather than systemic solutions, and market-based interventions over anti- or non-capitalist ones (e.g. carbon pricing over, for example, carbon taxes or bans on products). In this regard, the return of

new nuclear to British policy can be understood in part as an ecological modernist intervention, as is the Stern Review near the end of the period.

The energy context was one of rising oil prices until 2014, with the "peak oil supply" hypothesis gaining widespread traction[149]. Proponents broadly held that the "easy" oil – i.e. that with a low breakeven cost of extraction – had mostly been found and exploited. Some went so far as to proclaim that this would result in the end of fossil fuel-based civilisation, allowing some synergy between security of supply and deep green concerns[150].

Chronology

1992 **Rio Conference**

At the United Nations Conference on Environment and Development in Rio de Janeiro, the UK committed to return greenhouse gas emissions to 1990 levels by the year 2000 as an Annex I state under the UN Framework Convention on Climate Change, which entered into force March 1994.

1992 **Department of Energy abolished**

Having largely completed the privatisation of electricity to the extent it had been able, the Major government abolished the Department of Energy soon after winning the 1992 election. With many oversight powers devolved out to the regulators Offer (for electricity) and Ofgas (for gas), the remaining functions were mostly absorbed by the Department of Trade and Industry. Energy efficiency regulation was given to the Department of the Environment.[151] The oil crisis that had seen the department formed was now well and truly over, with North Sea production steady at around 1.75 million b/d, despite a short sharp spike during the first Gulf War.

1993 **Clean Air Act**

Throughout the 1980s, the controversy over acid rain had raged. As we saw earlier with LRTAP, generally, the UK government line was one of delay due to the relatively weak nature of regulation and reliance on coal, while downwind governments like Sweden, Norway and Germany attempted to apply pressure, in part

149 Perhaps most influentially set out in Campbell, C.J. and Laherre, J.H. (1998), 'Global Production of Conventional Oil Will Begin to Decline Sooner than Most People Think, Probably within 10 Years' *Scientific American*.
As the International Energy Agency took note of this specific paper, though it was expanded on and popularised by many others since. Also influential in this regard was Matt Simmons' *Twilight in the Desert*, (2005) which argued that Saudi oil production was in decline and likely already post-peak.

150 This synergy is captured to some extent in the "degrowth" movement, standing somewhat in opposition to the popularity of ecological modernisation. It is notable that ecological modernists tend now to favour a "peak oil demand" argument – popular after the shale-induced oil price crash – in which the improving technology and falling costs of renewables is enough to outcompete fossil fuels without much further government action.

151 A brief history is available at 'History of the Department for Business Innovation & Skills' [Accessed 07 December 2021].

through the EC/EU. It is important to note that the 1956 Clean Air Act, aimed at urban smogs in the wake of the London Smog, had led to an urban bias in reporting, such that air monitoring primarily occurred within towns (150 out of c. 1,200 monitoring stations were not in urban areas). The Act had also mandated taller chimney stacks as a way of preventing local smogs – in turn,

displacing the pollution into the upper atmosphere and causing the acid rain problem in downwind Nordic countries.

The persistent domestic and international pressure finally resulted in the 1993 Clean Air Act, which consolidated the 1956 and 1968 Acts. Hajer[152] and Weale[153] are both excellent resources on this specific period, with particular focus on how the prevailing policy-making ideology helped create the policies that were eventually adopted. For both these influential authors, a key lesson for British policymakers from the acid rain controversy is that environmental problems often cannot be dealt with piecemeal, and generally require a more systemic approach.[154] Weale, for example, points out that flue gas desulphurisation equipment helped solve the acid rain issue, but left power plants with a solid sulphur waste issue instead, that they were often poorly equipped to deal with.[155]

1993 **Road Fuel Escalator introduced** [156]

Chancellor Norman Lamont specifically mentions limiting carbon dioxide emissions as a motivator for introducing the measure, stemming from the Rio conference. However, the escalator also formed part of a package of tax increases aimed at repairing the government's balance sheet during a recession and replaced some of the revenue lost by the abolition of the tax on the sale of new cars. Nevertheless, the environmental justification was also used when the 1997 Labour government continued the escalator, with then Chancellor Gordon Brown saying it was "a statement of environmental principles."[157] In some respects, the road fuel escalator highlights the tension in the concept of ecological modernisation. While one stated purpose of the tax was to curb road use, another purpose was revenue generation. As the Institute for Fiscal Studies noted in 1999, "in the long run, [it] cannot be both".[158] The fact that substantial revenue was generated but road

use increased over the life of the escalator is perhaps indicative of which justification was more pertinent.

1994 **RCEP publishes its report Transport and the Environment**

This report was highly critical of the extant road building programme. It proposed cutting the budget for new major road

152 Hajer, *The Politics of Environmental Discourse* (Oxford University Press).
153 Weale, A. (1992), *The New Politics of Pollution* (Manchester University Press).
154 Hajer tends to refer to a more systemic approach as ecological modernisation though he expresses scepticism that the UK had adopted this at anything more than a surface level during the acid rain controversy.
155 Hajer, M.A. (1997), The Politics of Environmental Discourse (Oxford University Press), p. 95.
156 The House of Commons Library briefing is an excellent introduction on this topic Seely, A. (2011), *Taxation of road fuels: the road fuel escalator* (1993-2000) (SN3015).
157 Seely. A (2011) p. 3.
158 *Ibid*, p. 6.

projects by around half and investing significantly in alternative means of public transport, specifically criticising the "predict and provide" approach that had informed the policy in the first place[159]. Coming in the context of the highly publicised and long-running protest action at Twyford Down, the policing and removal of which had reportedly cost more than the savings made by the scheme, road building slowed substantially from this point.

1994

The Conservation (Natural Habitats, &c.) Regulations

The regulations transposed the EU Habitats Directive into UK law. It established a network of conservation sites under the Natura 2000 programme, using the existing Site of Special Scientific Interest (SSSI) designation as its foundation. The government also brought in planning policy guidance (PPG 9) to support this introduction.[160] There was some debate over the efficacy of the introduction of these rules, however. The RSPB were among those arguing that the government was implementing the directive in the most minimal way possible,[161] while other experts wondered how which species to prioritise were chosen.[162] Still, others were more supportive, including English Nature.

These changes were also a consideration in the slowing of the road building programme, discussed above. SSSIs had already been utilised by environmental groups to galvanise public opinion against road building, and the government of the day was concerned that implementing the European regulations could strengthen this position[163]. In fact, implementation included provisions that allowed for social or economic considerations to override site protection specifically in the case of roads.

1995

Environment Act

The Act established the Environment Agency and Scottish Environment Protection Agency. These combined the functions of the Pollution Inspectorate, regional waste authorities, and the National Rivers Authority, centralising several environmental protection functions into a single body geared toward, in the words of the Act, "attaining the objective of achieving sustainable development." With the Agency now approaching thirty years old, the organisational upheaval of earlier decades has subsided. Still, the problems of an "implementation gap" continue. Recent research funded by a coalition of NGOs suggests cuts to the

Environment Agency over the past decade have left it struggling to enforce regulation.[164] The Act also required the development of national air quality and waste strategies, which the new agencies would enforce.

159 Houghton, J. (1994) *Transport and the Environment* (HMSO/OUP), pp. 87-88.
160 A detailed overview is Hughes, P (1994), 'Habitats Directive and the UK Conservation Framework and SSSI System', *House of Commons Library,* Research Paper 94/90.
161 Hughes, pp. 2-3.
162 *Ibid*, p. 40.
163 *Ibid*, pp.31–34.
164 Rose, E. (2020), '*The UK's Enforcement Gap 2020*' , *Unchecked* UK [Accessed 14 October 2021].

1996

Wild Mammals Protection Act

The Act brought in multiple provisions against inflicting cruelty and "unnecessary suffering" towards wild animals. However, hunting was specifically exempted.

1997

The Department for Environment, Transport and the Regions is created

The new department was formed on the first day of Tony Blair's government, replacing the Departments for Environment and Transport. The brief was something of a return to the original Department for Environment, which had also incorporated transport (until 1976) and local government. In the event, it lasted less time than in the 1970s, with the department dissolving in 2001 in the wake of the foot and mouth crisis to allow a sharper focus on agricultural issues.

1997

December: Kyoto Protocol adopted

The British government played an important role in the negotiations by, in effect, leading the EU's delegation and providing a bridge to the US through the special relationship. British sources emphasise that the British delegation, led by John Prescott, was instrumental to getting the US on board through tough negotiating,[165] while some American sources suggest the EU caved in over emissions trading in order to get the US on board.[166]

1997

The Treaty of Amsterdam

The Treaty made sustainable development a core objective of the European Council.

1998

Devolution

Referenda held in 1997 in Wales and Scotland approved devolution, with environmental measures largely devolved. The Good Friday Agreement devolved many powers in Northern Ireland.

In the early going, the story of devolved environmental policy was primarily about implementing EU directives. However, Scotland and Wales, in particular, have occasionally used these powers to push environmental protection beyond the standards set by central government and the European Union. In Scotland, climate, energy and plastic waste policies have been more ambitious but have generally retained the same framework as the United Kingdom.[167]

Meanwhile, Wales has generated its own policy outlook through two key pieces of legislation, the Well-Being of Future Generations Act 2015 and the Environment Act 2016.[168] The first of these established a Future Generations Commissioner, a role which is

165 Brecknell, S. (2019), 'Interview with Peter Unwin', [Accessed 05 October 2021].
166 Yergin, D. (2011), *The Quest: Energy, Security and the Remaking of the Modern World* (Penguin Publishing), p. 491. In any event, it is instructive to note the market-based intervention being proposed, generally a hallmark of ecological modernist policy interventions.
167 Centre on Constitutional Change (2020), 'Devolution and the Environment – now the show begins?' [Accessed 07 2021].
168 Burns, C., Carter, N., Cowell, R., Eckersley, P., Farstad, F., Gravey, V., Jordan, A, Moore, B. and Reid, C. (2018), 'Environmental policy in a devolved United Kingdom: Challenges and opportunities after Brexit' *Brexit & Environment*.

aimed at forcing governmental bodies to provide justifications for policy that consider the interests of future generations in their decisions. As such, it is squarely in line with standard sustainable development approaches to the environment. The second Act is wide ranging, and sets out a series of legal obligations on reporting for governmental bodies such as Natural Resources Wales, and requires a governmental policy response. The Welsh government is required to act on protecting biodiversity, set targets on greenhouse gas emissions through carbon budgets, extends powers over charging for plastic bags, and adds new powers on recycling and waste. This creates a distinctively Welsh regulatory framework, which in many areas goes further than required under EU directives.[169]

Northern Ireland's environmental record under devolution, however, has been less successful. The Renewable Heat Initiative is perhaps the most famous environmental scandal in Northern Ireland's recent history, but Burns et al also point to a general record that leaves much to be desired.[170]

1998

Aarhus Convention

The UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters was signed in Aarhus on 25 June 1998 by 46 states, including the UK, and the European Union. The Convention's aim was to empower citizens with a set of environmental rights. These rights are: access to environmental information held by public authorities; participation in environmental decision-making; and access to procedures through which citizens can obtain justice for rights violations. The Convention entered into force in 2001 and was ratified by the UK in 2005.

2000

Fuel protests

Angered by rising prices, agricultural and logistics workers blockaded refineries and oil terminals, disrupting the supply of fuel to the UK, as well as running "go slows" on major motorways. Though this was primarily due to a rise in the price of crude oil due to lack of supply, the aim of the protest was to lower fuel taxes, which secured the indifference and/or tacit support from the oil companies that were being blockaded[171]. Not only did these protests result in the freezing of the fuel duty escalator in late 2000, the fear over security of supply also heavily informed the process that eventually produced the 2003 white paper. This was also the year that leaded petrol was finally banned in the UK, after a long slow phase out starting from 1986.w

169 *Ibid*, p. 9.
170 *Ibid*, p. 10.
171 Doherty, B., Patterson, M., Plows, A. and Wall, D. (2003), 'Explaining the Fuel Protests', *British Journal of Politics and International Relations*, 5(1), pp.1-23 is an excellent overview, including analysis of why the protests saw some early success.

2000 **RCEP releases Energy: The Changing Climate**

Indicating the shift of concern away from generic pollution/ waste issues to the rise of climate change up the governmental environment agenda.

2000 **Countryside and Rights of Way Act**

Instituted the "right to roam", though in a more limited form than proponents desired, and stiffened penalties relating to the Wildlife and Countryside Act 1981 (i.e. to disturbing wild birds), increasing the size of fines especially relating to Sites of Special Scientific interest, and increasing jail terms.

2001 **Creation of Department of Environment, Food and Rural Affairs (DEFRA)**

The foot and mouth crisis necessitated a sharper governmental focus on agriculture and farming and had damaged the reputation of the Ministry of Agriculture, Fisheries and Food (MAFF), so the decision was made to disband MAFF and merge its functions with the Department of Environment, Transport (and a small part of the Home Office) to form Defra. Notwithstanding devolution, Defra sets environmental standards for England and across the whole UK, generally in consultation with devolved powers where that is required.

2003 **Energy white paper**

The white paper advocated for renewable energy at the grid level as well as non-oil transport fuels (LPG, biofuel, natural gas, hydrogen). The paper explicitly expected these fuels to be adopted instead of electrification. Nuclear power is left out, in part due to the precarious financial situation of the industry.

2004 **The Hunting Act**

The Act bans the hunting of wild mammals with dogs. Given the long history of hunting as a totemic issue, with many attempts to ban it over the course of the 20th century through private members' bills, it is no surprise that the Hunting Act was controversial Parliamentary business. Labour's 1997 manifesto had contained a promise for a free vote, and the Burns Report in 2000 had indicated that hunting was deleterious to welfare. Various compromise efforts had been attempted and failed to carry the House.

Despite being broadly popular, there was sharp conflict between the Lords and the Commons, and ultimately the Speaker allowed the Commons to overrule the Lords using the Parliament Act. Several attempts have been made to overturn or amend the legislation, mostly from the Conservative side, but it remains popular in polling.[172]

172 YouGov (2021), 'Should Fox Hunting Remain illegal?' [Accessed 6 December 2021].

2005 **Kyoto Protocol comes into force**

Without the ratification of the United States. The Clinton administration, under which it was negotiated, never submitted it to the Senate on the basis that it would not be ratified, and the Bush administration expressed its opposition to it.

2005 **First phase of the EU Emissions Trading Scheme (ETS)**

The development of the trading scheme was instigated in part by the drafting of Kyoto in 1997, and is integrated with the wider UN framework, but it nevertheless stands somewhat apart from the UN systems. For example, by the time of Kyoto coming into force, the ETS was already underway, and cross-compatibility with the UN scheme was to some extent worked out later.

Like Kyoto, the ETS works on a principle of cap and trade, where member countries propose emissions limits through "national allocation plans", which are subject to the approval of the Commission. It is then up to the state in question to assign the credits created to emitters and track compliance. The first phase became notorious as a failure of this system, as far too many permits were assigned, meaning emissions actually rose over the period, while the second phase was impacted by the financial crisis, which lowered industrial output leading to stockpiling permits for the third phase. Later reforms have made the European carbon market significantly more functional.

2005 **Nuclear 'back with a vengeance' speech**

A sustained PR and lobbying campaign aimed at pitching nuclear power as a solution to climate change, combined with the emergence from bankruptcy of British Energy, allow the Labour government to back nuclear once again, with Tony Blair famously stating the nuclear issue was 'back with a vengeance' in a November 2005 speech on the launch of the government's energy review, which was delayed after Greenpeace activists staged an anti-nuclear protest inside the venue.

2006 **Energy review report**

The energy review report set the UK government's energy policy as needing to address 'two immense challenges' of energy security and climate change. The review advocated investment in both renewable energy and new nuclear power stations.

2006 **The Stern Review**

The Stern Review on the Economics of Climate Change, was commissioned by the UK government and led by the economist Lord Stern FBA. It was important primarily for setting out the case that, despite the evident expense of avoiding climate change[173], the costs of not acting are substantially higher. It took a "market failure" approach, arguing that carbon has been inadequately

173 The review estimates a cost of 1% of global GDP per annum to stabilise atmospheric concentration of CO2 below 550 ppm, i.e., the point at which there is estimated to be a 50% chance of 2 degrees of warming.

priced as an externality; thus, establishing a price of carbon is deemed essential. Importantly, it also argued that avoiding emissions can still be consistent with continued economic growth, given the investment required in new and emerging sectors – broadly speaking, an "ecological modernist" approach.

2006

Natural Environment and Rural Communities Act

The Act formed Natural England as the non-departmental public body responsible for regulating various aspects of environmental protection by combining English Nature, the Countryside Agency and the Rural Development Service. Developed in response to the Haskins review, its roles include the designation of SSSIs and Areas of Outstanding Natural Beauty and grant management functions. As such, Natural England became the body that would now implement the Conservation (Natural Habitats, &c.) Regulations 1994 by providing the Secretary of State with lists of priority species and habitats for conservation.

The Act also imposed a duty to conserve biodiversity on to local authorities, which are expected to refer to these "principal importance" lists in their decision making.

2007

Consultation on replacing Air Passenger Duty with Aviation Duty

The government doubled air passenger duty at the start of the year, citing green grounds. As part of the late 2007 budget, the Labour government then considered reforming taxes on flights to move away from a "per passenger" model to a "per flight" model. The reasoning behind this was to remove or limit incentives to run partially full flights, and to allow taxation to target the emissions of the planes in question, rather than the number of passengers involved.[174]

After a prolonged consultation process over 2008, the government opted instead for restructuring the existing tax into four bands to account for distance travelled, citing the harm it might do to the aviation industry. A major issue in reform of the tax are the international agreements covering air travel, which give it certain exemptions on, for example, fuel,[175] as well as the potential for passengers to break-up their journey if the disparity between long and short haul flights were large.[176]

2008-21

Overview

The period from 2008 has been characterised by the continued rise of climate change up the political agenda. The passing of the Climate Change Act in 2008, which set

174 Seely, A. (2019), 'Air Passenger Duty: The Approach of the Labour Government (2007-2010)', *House of Commons Library Briefing Paper*.
175 *Ibid*, p. 7.
176 *Ibid*, p. 8.

binding targets for emissions reductions and created an independent body to oversee this in the form of the Committee on Climate Change (CCC), has aided the UK in its emissions cuts so far. However, it is fair to say that the fall in UK domestic emissions has so far been with the grain, as electricity generation has seen a switch from coal to renewables backed by gas. Further reductions will likely require more policy, and harder decisions, as the Committee notes in its response to COP26. The failure of schemes to increase energy efficiency, such as the Green Deal, are a case in point here, where it has proven difficult to incentivise an intervention that, on its face, is a win-win. Similarly, renewable heat incentives in Northern Ireland, where some were incentivised to heat empty barns using wood pellets, show the possibility of perverse incentives in policy interventions.

To some extent, the CCC now performs a similar function to the RCEP, which was abolished over this period, albeit with the focus squarely on climate. In this regard, this most recent period is when environmental concerns have been most central to wider policy, not least through the application of carbon budgets. The creation of the Department of Energy and Climate Change is also somewhat indicative of this trend and brought climate change directly to the cabinet table. Although it linked climate policy to, in principle, only one other specific policy area, energy's foundational nature is often starkly highlighted in moments of crisis. As a result, the brief has often been used as a proving ground for ministerial talent or given to an experienced operator to fix.

Relatively high oil prices continued until a crash in 2014 and 2015. The higher prices from 2000-2014, combined with low interest rates after the financial crisis, led to the overdevelopment of onshore US oil and gas through hydraulic fracturing, or "fracking". The UK looked to fracked gas as a possibility throughout the 2010s to replace waning North Sea supplies, with much opposition from green groups. Despite significant support from the Conservative-led governments from 2010 onwards, ultimately, no commercial gas was produced. Though the temptation is to see this as a green victory, it is arguably better understood as a lack of commerciality proving the decisive factor, given the otherwise supportive nature of the government. It is certainly the case that the geology is far more challenging than in, for example, the oil-rich Permian Basin of Texas.

As this period has worn on, it has become more and more possible to link extreme weather events to climate change. Areas of the UK have been repeatedly flooded, moorland has been set ablaze in extreme heat conditions, and the country faced a major winter storm in the so-called "Beast from the East" in early 2018 due to destabilisation of the polar vortex. So many of these events clustered together have made it easier for climate scientists to construct a public narrative around the risks of climate change, drawing on similar or worse events globally. Indeed, Met Office analysis has explicitly made this connection in some cases.[177] This has fed into a discursive shift toward an ambition of "net zero", which has been adopted by actors as diverse as the WWF and Shell. In finance, much is made of a shift towards investing that focuses on "ESG" – environmental, social and governance issues – though this, too, faces credible accusations of greenwashing.[178] Still, there remains the disconnect between public awareness of the problem and a policy response that is adequate to solving it while avoiding deleterious side effects.

The end of the period was of course marked by the COVID-19 pandemic, which unsurprisingly dominated the focus of government. The environmental impact of

177 Met Office, 'Effects of Climate Change'
178 For further information, see the British Academy's *Future of the Corporation Programme*

COVID-19 is difficult to ascertain, but, tentatively, two broad points can be made. The first is the measurable difference a partial shut-down of the global economy had on wildlife and emissions. The second is its impact as a disruptive event, allowing people generally to consider alternative ways of living, working and being. The most visible effect of this latter point is in e-commuting or "working from home", a policy long popular in green circles that previously saw only marginal adoption.[179]

Chronology

2008

The creation of the Department of Energy and Climate Change

Consistently rising oil prices since the start of the 21st century, rising domestic bills and the decision to replace aging nuclear plants had pushed energy issues back to the top of the political agenda. As privatisation had pushed energy to be reabsorbed into trade, so its rise in importance led to its re-emergence as its own department. Indeed, climate change formed a substantial justification for this latter decision, given that costs necessitated interventions into the privatised electricity market. Combining climate change and energy thus indicated an intent to ensure these issues were addressed in tandem.

2008

Climate Change Act

Provides for a legally binding target of 80% reduction in greenhouse gas emissions against 1990 levels by 2050, through a series of 5-year carbon budgets. The first three of these were set at the passing of the act, the fourth in 2011 (for 2023-27), the fifth in 2016 (2028-32) and the sixth in 2021 (2033-37). This 80% target was an advance on the 60% proposed in the previous white papers, as was the interim target of, after consultation, 34% by 2020. The current target (see below) is now 100% reduction by 2050, i.e. net-zero emissions. The UK has so far met its carbon budgets for the first two periods and is likely to come in under the third budget, aided in part by the COVID-19 pandemic.[180] Budgets are set for five-year periods, twelve years in advance, in an effort to provide a clear framework for investment decisions well in advance.

The Act also set up the Committee on Climate Change as an independent body to advise on and oversee the UK's climate change response.

2009

Corby toxic waste case links atmospheric pollutants to birth defects[181]

From 1984 to 1999, Corby council moved toxic waste from the reclamation of the Stewarts & Lloyds/British Steel works through populated areas in open trucks. Birth defect rates were three times that of areas nearby and ten times that of other comparable towns. The case is the first to establish a legal causal link between atmospheric pollution and birth defects.

179 See British Academy (2021) *The COVID Decade: Understanding the long-term societal impacts of COVID-19*
180 Climate Change Committee (nd), 'Advice on reducing the UK's emissions' [Accessed 11 October 2021].
181 Corby District Council Judgement [Accessed 11 October 2021].

2009 **Treaty of Lisbon enters into force**

The Treaty inserted a requirement for sustainable development to be pursued by the EU both internally and in its external relations, adding responsibility for imported emissions.

2009 **Heathrow Expansion**

The Labour government adopts the expansion of Heathrow through a third runway as policy.

2010, 2011 **Energy Acts**

Both Acts include greenhouse gas measures. These Acts come in the context of a change in government, the first in the wash-up of the Gordon Brown Labour government, and the second as an early act of the Conservative-Liberal Democrat coalition, led by the Conservatives who pledged "the greenest government ever".

As a wash-up Act, the impact of the 2010 Act was somewhat limited, but a major provision was that it gave the Secretary of State powers to provide (and remove) funding for CCS projects. The 2011 Act introduced the "Green Deal", that was meant to provide finance for the capital costs of improving the energy efficiency of the housing stock and allow consumers to pay this back through a surcharge to their energy bill, thus avoiding government subsidy. At its introduction, the Committee on Climate Change wrote an open letter predicting that the Deal would likely fail to reach its targets.[182] Sure enough, the policy faced multiple issues, not least that the most expensive efficiency measures, which were most likely to gain from the payment mechanism, were excluded from the scheme, and the fact that interest rates charged on the financing were high relative to market rates. In addition, uptake tended to be among the most motivated demographic, who usually had relatively efficient homes already.[183] Outside of problems with policy design, the Green Deal brand was also used by fraudsters to gain access to people's bank details.[184] The fund was scrapped in 2015.

2011 **Fracking – The Carboniferous Bowland Shale Gas Study**

Months after two seismic tremors led to a moratorium on drilling, Cuadrilla publishes its resource in place estimate for the Bowland Basin, Lancashire, of 5.6 Tcm, suggesting that the UK could develop an onshore gas industry using hydraulic fracturing ("fracking"). Interest was high due to the US "shale revolution", which had spectacularly ramped up onshore gas production there and would soon do the same for oil. The promise of a replacement for declining North Sea production led the Coalition (and later Conservative) government to implement a favourable tax and planning regime for onshore exploration and development. The fracking issue generated protests and headlines for much of the next decade.

182 Climate Change Committee (2011), Letter: Proposals for the Green Deal/Energy Company Obligation [Accessed 11 October 2021].
183 Rosenow and Eyre provide a highly critical summary in Rosenow, J. and Eyre, N. (2016), "A post mortem of the Green Deal: Austerity, Energy Efficiency, and Failure in British Energy Policy", *Energy Research & Social Science*, 21, pp. 141-144.
184 See, for instance, Citizens Advice (2014), 'Scammers cashing-in on Green Deal' and Action Fraud (2013), 'Green Deal Scam'

Despite the optimism of the industry and much of the government – and a policy regime that has generally rejected environmental or climate reasons for not proceeding – the basin has struggled to prove economic. It is riven with geological faults, which increase seismicity, while the licensing system in the UK is more restrictive than in the US even despite permissive revisions. In addition, population density means it is in general nearer dense human settlement than many US basins. It is tempting for those in the industry and green groups themselves to see the failure of fracking in the UK as a green victory, but it is perhaps better understood as a lack of commerciality. The positive terms in which Prime Ministers talked of onshore production, and the legislative support given up until the point it was "banned" suggest that, if it had been feasible, fracking would have gone ahead.

2011

Fukushima Daiichi disaster

After a powerful earthquake and tsunami, the Fukushima Daiichi reactor melts down when its back-up diesel generators fail, stopping the circulation of coolant in the reactor. In the UK context, as with Three Mile Island and Chernobyl, the disaster is more notable for the fact that it did not result in a dramatic shift in policy, while in other countries it did, most notably Germany. At what might be termed the tactical level, the existing pro-nuclear advocacy coalition was able to adequately argue both that reactor designs in the UK were different and that tsunamis rarely happen – similar to arguments that had been made regarding both Three Mile Island and Chernobyl. This was then buttressed by the pre-existing appeal to climate. At a more strategic level, removing nuclear would have required a radical and difficult rethink of energy policy, given its role as a low emission technology and the sunk political costs of getting it back on the agenda in the first place from 2003 - 2006. Thus, government had strong incentives to work with industry at the tactical level by coordinating the public relations response.[185] Similar argumentation was adopted by ecological modernists already known for their support of nuclear (e.g. Mark Lynas),[186] but – perhaps more importantly – by George Monbiot,[187] who is otherwise more associated with a deep green ideology.

2011

Royal Commission closed

The RCEP was closed as part of coalition government's budget cuts, removing an authoritative, independent voice that had considerable influence within government. This cut is also perhaps indicative of the trend in environmental discourse away from broad "pollution" issues to a powerful focus specifically on climate change.

185 Email correspondence between the government and industry was released to The Guardian newspaper after a Freedom of Information request, available at Guardian (2011), 'UK Government and Nuclear Industry email correspondence after the Fukushima accident' [Accessed 11 October 2021].

186 Los Angeles Times (2011), 'Why nuclear power is still a good choice' [Accessed 11 October 2021] – this article was syndicated, and also built on interviews Lynas was giving at the time.

187 Monbiot, G. (2011), 'Why Fukushima made me stop worrying and love nuclear power' *The Guardian*, [Accessed 11 October 2021]. Monbiot is, for example, a major advocate of rewilding and a longstanding critic of capitalism, both of which positions set him against ecological modernisation. Indeed, he wrote a public critique of the Ecomodernist Manifesto, indicating that he does not identify as an ecological modernist Monbiot, G. (2015), 'Meet the ecomodernists: ignorant of history and paradoxically old-fashioned' *The Guardian*, [Accessed 11 October 2021].

2012

The National Planning Policy Framework is published[188]

The framework consolidated multiple planning documents into a single, smaller document, while reforming many aspects of planning. Critics of the original Framework point to the "presumption in favour of sustainable development" (para. 14) in conjunction with the protection of the environment measures (sections 10 and 11), which requires local planning authorities to generally approve developments, except in those cases where the loss to the natural environment would outweigh the benefits of the development. This is often a high hurdle to pass, all the more so because it requires adequate valuation of the loss. Thus, the Framework is an interesting example of how Brundtland's phrase can be actually utilised in policy – in this case, as a way of making development the default option.

2013

Winter flooding

The UK saw several rainfall records broken over this period, with widespread flooding across the country. Later Met Office analysis of this period, as well as further flooding in 2015-16, cited climate change as making the floods 10%-15% worse than they otherwise would have been.

2014

The budget reforms air passenger duty to two bands instead of four

All long-haul flights were brought into the lower band B rate, while private jets were now included. In the Autumn Statement, it was further announced that duty would be scrapped for children on economy flights – for the under 12s in 2015, and the under 16s in 2016. Interestingly, the debate had moved from shifting to a per-flight tax in 2004-6, to the industry calling for its complete abolition by 2014-16.[189]

2015

Paris Agreement

Adopting a different approach to Kyoto, countries may set their own targets (nationally determined contribution, or NDC), which are not binding, but each must be more ambitious than the last (the so-called "progression" or "ratchet"). Though NDCs are not binding, setting NDCs is mandatory, as is reporting emissions, the hope being that reputational damage keeps countries in line. The UK's commitments under the agreement were used to unsuccessfully challenge the expansion of Heathrow. In the Dutch context, it has been used to legally bind Shell to carbon emissions reductions, which may affect the company's UK North Sea holdings.

2015

Plastic Bag Charge

Introduced for England. Again, noting that devolution has sometimes seen England lag behind, a charge was in place in Wales

188 National Planning Policy Framework (2012) [Accessed 5 October 2021]

189 For a full discussion of the debates surrounding APD, see Seely, A. (2021), 'Air Passenger Duty: Recent debates and reform', *House of Commons Library Briefing Paper 5094*, p. 54.

from 2011, Northern Ireland from 2013 and Scotland from 2014. The shift to charging for plastic bags forms part of the rising profile of plastic waste globally, including the Great Pacific Garbage Patch, awareness of UK recycling schemes merely exporting plastic waste where it is burnt, and, latterly, microplastics.

2016 **Brexit Referendum**

The environment was an extremely minor issue in the campaigns of the Brexit referendum, and indeed, government appeared to make few contingency plans were Leave to win for fear of prejudicing the outcome.[190] Currently, changes to regulations have been minor. The withdrawal agreement has at its heart the concept of a "level playing field", which in practice requires the UK to not regress environmental protections compared to when it was an EU member, including the transition period. As a result, pre-existing targets still apply, and, in the wake of the pandemic, it is too soon to assess Brexit's impact.

Nevertheless, the effect of Brexit on environmental protection in the UK has the potential to become more profound with the passage of time. As much of this chronology has shown, EU rules have made a significant difference to UK legislation, often providing the impetus for reforms that may otherwise have been left undone. It remains to be seen how far the UK diverges from the EU in this area.

2017 **High Speed Rail (London-West Midlands) Act**

Gains Royal assent, allowing construction to begin on phase one of the project. As with road and airport building, the route has seen various protest camps set up to protect habitats, delay construction and increase costs. The project shows that even projects that ostensibly have some green credentials are not immune from protest – shifting road traffic to rail has long been considered a green policy.

2017 **Blue Planet II**

Nature documentaries presented by David Attenborough have a specific place in the British cultural landscape, and the veteran naturalist's turn to a more campaigning mode in recent years has had a large impact. The impact of plastic pollution on marine life was specifically highlighted in Blue Planet II, while 2019's "Climate Change: The Facts" continued the approach.

2018 **Third runway at Heathrow approved in Parliamentary vote**

As MPs prepared to vote on the motion, environmental activists staged a protest in Parliament's central lobby. While the official position of the Labour Party, and the position of its leader Jeremy Corbyn, was to oppose the expansion of Heathrow, Labour MPs were given a free vote and a majority of Labour MPs voted for the motion, allowing it to easily pass.

190 Environmental Audit Committee (2016), 'EU and UK: Environmental Policy Third Report of Session 2015-16'.

2018

25-year Environment Plan published

A long-term plan for the environment was initially proposed by the now defunct Natural Capital Committee, a team of seven professors led by Dieter Helm. The government originally committed to producing a 25-year plan for the environment in 2016, but the Brexit vote put this on hold. Two years and one prime minister later, the plan was published.[191] It incorporates yearly reports measuring progress against targets in ten areas, as well as an ongoing consultation framework to enable the plan to be periodically updated.

When taken together with developments in the devolved nations, particularly the Welsh Well-Being of Future Generations Act 2015 and the Environment Act 2016, which were passed around the time the plan was conceived, the plan forms something of a trend in long term policymaking. Intergenerational justice has been a long-standing issue in environmental policymaking – how to adequately incorporate the rights, interests and concerns of future generations. These policy interventions are attempts to address this issue.

2019

Amendments to the Climate Change Act

The act was amended to commit the UK to net zero emissions by 2050, in line with recommendations by the Committee on Climate Change.

2019

Indefinite Moratorium on fracking

After several seismic tremors, the Oil and Gas Authority published four reports indicating that it is functionally impossible to predict the size or probability of induced earth tremors.[192] As a result, the government, previously staunchly pro-fracking, institutes a temporary moratorium on fracking of indefinite duration. No commercial gas has yet been produced.[193]

2019

EU study reveals extent of oceanic microplastic pollution [194]

The report added impetus to an increasing public awareness of plastic pollution, added weight to calls to phase out plastics.

2020

The Supreme Court overturns the Court of Appeal's decision (Heathrow Third Runway)

From the earlier decision (February 2020) the proceeding with Heathrow's third runway was viewed as unlawful due to HMG's commitments to the Paris Agreement. The appeal was brought by Heathrow itself rather than the government. Eleven years after its adoption by a Labour government, the project is now able to seek planning permission. It remains in doubt due to demand lost to COVID-19 undermining the economic case.

191 HM Government (2018), 'A Green Future: Our 25 Year Plan to Improve the Environment'.
192 North Sea Transition Authority (2019) 'Onshore Update' [Accessed 11 October 2021].
193 The latest planning guidance is at 'Guidance on Fracking: developing shale gas in the UK' [Accessed 11 October 2021].
194 Science Advice for Policy by European Academies (2019), 'A scientific Perspective on Microplastics in Nature and Society'.

2020 - 2021 **COVID-19 pandemic**

It is still too early to give a definitive account of the impact of the COVID-19 global pandemic on environmental policy, but early evidence suggests that it has been wide-ranging. The short-term effect of lockdowns was a sudden reduction in fossil fuel consumption, leading to lower carbon emissions and improved air quality. However, the stall in economic activity, changes to the structure of the economy, and increased public spending may have stifled available investment for decarbonisation and other environmental measures, while increased homeworking, if sustained, will change household energy consumption, and could also fuel migration out of urban centres, both of which have critical implications for environmental policy.

At a political level, the pandemic has delayed key discussion and decision-making on the environment. Key climate talks at COP26 (see below) were delayed by a year due to COVID-19 and the UK's domestic net-zero strategy lagged while the government responded to the immediate crisis. COVID-19 also took away much of the limelight from the environment as a political issue, while recent climate protests, such as the blocking of roads by the 'Insulate Britain' environmental activist group in September 2021 received widespread condemnation from the government, the media, and were viewed negatively by a large majority of the public according to polling.[195]

There are also early signs of social and cultural developments which may have longer-term impact. Some research has suggested that the public may have become more ethically minded during the pandemic and that this may be accelerating the response from business to meet more ethical consumer demands. The pandemic response itself may have also broken down certain barriers to business working with, and alongside, government to address social and environmental issues.[196]

2021 **COP26, Glasgow**

The assessment of the Climate Change Committee is that COP26 has been an improvement on Paris, but still falls short of necessary action. Three or four degrees of warming is now unlikely, but the ambition has to be to keep warming below two degrees and, ideally, as low as possible. Indeed, it considers the Paris Agreement to be "broadly working".[197] The agreement indicates the discursive power the concept of "net-zero" now holds, with most countries now adopting it at the very least rhetorically. Issues remain over accounting and accountability, however. Care is needed, for instance, when major oil producing nations like Saudi Arabia are happy to adopt the phrase while also planning to continue production.

195 Conner, J. (2021), 'Three weeks into motorway climate change protests, public opposition has only grown' Yougov.
196 British Academy (2021) *Shaping the COVID Decade: Addressing the long-term societal impacts of COVID-19*
197 Climate Change Committee (2021), COP 26: Key outcomes and next steps for the UK

2021

Environment Act 2021

During COP26, after 21 months of going through Parliament and three years on from its first draft, the UK government passed the Environment Act (2021). The Act dealt with the reconstitution of environmental protection in the UK following its departure from the European Union, giving government new powers to set new legally binding targets to protect and enhance the environment. It also created a new independent watchdog, the Office for Environmental Protection (OEP), to monitor and enforce targets. The UK government claim that the Act will 'deliver the most ambitious environmental programme of any country on earth',[198] and while many environmental campaigners have hailed it as a major step forward, there remains concern from some that it doesn't quite live up to its world-leading credentials in certain areas, such as raw sewage discharges, clean air targets, and in the overall independence and powers of the OEP.[199]

Conclusion

This section has attempted to map out chronologically the key moments of the last 60 years in the development of environmental policy in the UK. It has captured not only the key legislative milestones but also some of the social, cultural, and ecological events that have provided the changing context upon which policymaking on environmental matters has developed.

To end this chronology on such major events as the COVID-19 pandemic, the hosting of the UN Climate Change Conference in Glasgow, and the new Environment Act, is fitting in the sense that they represent on the one hand a moment of great political, social and economic dislocation from which new challenges, but also new opportunities, arise for policymaking; on the other hand, we have the UK at the centre of a great convergence around the environment as a global policy issue, representing the product of the slow, complex, but nonetheless progressive, development of environmental policymaking at both domestic and international levels, which this chronology has documented.

198 HM Government (2021), World-leading Environment Act becomes law

199 Laville, S (2021), 'Campaigners celebrate new UK environment law but vow to fight on', *The Guardian* and Client Earth (2022), The UK Environment Act- What's happening now?.

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