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Developing an offsetting programme: tensions, dilemmas and difficulties in biodiversity market-making in England

THEMATIC SECTION
Tradable Rights in Conservation

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SUMMARY

In 2011, the UK government set in motion a process to establish a formal biodiversity offsetting programme in England, as an attempt to tackle biodiversity loss as a result of development. Drawing on critical approaches to the commodification of nature, this article traces the dilemmas encountered by the UK government in its endeavours to roll out a biodiversity offsetting programme in the English planning system. Based on 34 in-depth interviews with key stakeholders, documentary analysis and participant observation at policy-focused events, the paper aims to show how the promise of reconciling development and conservation proved difficult to deliver. In government attempts to enrol sympathetic actors, disputes emerged over the purpose and fine detail of the proposals. Deeper tensions were revealed in clashes between governmental emphasis on deregulation and advocates' calls for strong mandatory rules and well-resourced oversight, while efforts to balance complex ecology with market demands for simplicity and certainty undermined the promise of objective biodiversity metrics delivering uncontroversial hard numbers. Though the English case is in many ways context-specific, the problems experienced raise wider political questions around establishing meaningful offsetting schemes in any part of the world.

Keywords: biodiversity, biodiversity offsetting, commodification of nature, England, market environmentalism, regulation, UK

INTRODUCTION

The problematic relationship between delivering continued economic growth and meeting international commitments to reverse biodiversity decline has led to growing academic and policy interest in biodiversity offsetting (Benabou 2014). Biodiversity offsets encompass a range of market-orientated compensation mechanisms, and involve 'conservation actions intended to compensate for the residual, unavoidable harm to biodiversity caused by development projects' (ten Kate *et al.* 2004, p. 13). The term residual refers to compensation's place within the mitigation hierarchy as a measure of last resort, after harm has first been avoided and then mitigated as far as possible. While on-site or off-site compensation for environmental damage is often a requirement of development consent regimes, offsetting specifically opens the terrain for trading commensurable biodiversity units across space. It aims at no net loss of biodiversity, measured using quantitative valuation techniques to ensure consistent accounting for loss and gain at either end of the process (Gardner *et al.* 2013). Offsetting's origins lie in USA's wetlands mitigation schemes, beginning in the 1970s, and the subsequent emergence of mitigation banking programmes during the 1990s (Robertson 2004). There were 45 compensatory mitigation programmes operational worldwide in 2011, with another 27 at various stages of development (Madsen *et al.* 2011).

Proponents argue that used properly, offsetting offers benefits for both the economy and environment, through more efficient permitting systems and land use (ten Kate *et al.* 2004). Furthermore, as environmental economists have argued, through quantitative valuation and standardization, market mechanisms and regulatory enforcement making developers pay for damage, biodiversity's true value is made economically visible in traditional accounting ledgers, and thus are taken more seriously by decision-makers (Bayon & Jenkins 2010). Such claims sit within the paradigm of the green economy, which promises a reconciliation of economic development and environmental sustainability, and the reconstitution of the non-human world under concepts such as ecosystem services and natural capital, and increasing moves towards the use of market-based instruments for conservation (see for instance Sukhdev 2010).

I investigate the troubled case of the UK government's moves to develop a formal biodiversity offsetting programme, for use in the English planning system to deliver no net loss of biodiversity as a result of development. There already exists a considerable literature that raises theoretical and practical questions related to the commodification of nature (Castree 2003; Prudham 2009). Drawing on this critical literature, I examine how the difficulties, dilemmas and tensions identified by scholars have been played out in this particular case. By doing so, I identify broader issues about the obstacles to establishing biodiversity offsetting schemes in any given context. The intention is to draw attention to the political economic conditions policymakers are required

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to navigate in reality, something too often ignored in studies of offsetting. I seek to demonstrate how problems of practical implementation encountered in the UK reflect the particular political context of land regulation in the UK, but can also be traced back to the more abstract and theoretical tensions involved in any attempt to commodify nature under neoliberal constraints. After a brief overview of biodiversity offsetting and critical perspectives on the commodification of nature, I will concentrate on the UK case study, drawing on empirical data collected between 2013 and 2014. The history of the policy's development, the arguments advanced by those advocating offsetting as a solution to biodiversity loss, and the practical problems encountered by the state in its efforts to put the system into operation are discussed, as well as the findings of the research and its wider implications for other contexts.

Commodification and environmental market-making

The growing appeal of biodiversity offsetting can be seen as part of a movement not only to inscribe nature with economic value, but to see environmental markets as the most effective method of conserving those values (Gomez-Baggethun & Ruiz-Perez 2011). Critical environmental geographers and political ecologists have long drawn attention to the increasingly pervasive neoliberal form of environmental governance (Heynen *et al.* 2007; Castree 2008*a*, *b*). One strand of this scholarship has focused more recently on a specific neoliberal paradigm of conservation (Büscher *et al.* 2014), the logic of which suggests nature can only be conserved in and through capitalism, by submission to capital and revaluation in capitalist terms (Büscher *et al.* 2012). The increasing turn to environmental markets is understood in this literature to be part of the growing commodification of nature, expressed as 'selling nature to save it' in one of the field's foundational texts (McAfee 1999).

While the concern in this paper is not simply commodification, the literature identifies a series of tensions, which are useful for shedding critical light on the difficulties and dilemmas of environmental market-making, such as the project undertaken by the UK government. Emphasis is made on the inappropriateness of the analytical categories of neoclassical economics and neoliberalism, which separate nature into discrete and exchangeable units (Büscher *et al.* 2012), and on how commodification requires the assignment of monetary values and property rights to demarcated natural entities, as though produced solely for exchange (Castree 2003; Prudham 2009). Instead, human and non-human natures are posited as always produced in part outside the relations of exchange, inextricably bound up and produced, materially, symbolically and discursively, through much wider coproductive socioecological processes (Heynen *et al.* 2006). Their values are thus always understood to be politically mediated, historically and geographically specific processes.

Central to this literature is the insistence that environmental market-making is an inherently constructive and irreducibly political project. The ways such tensions and dilemmas faced by policymakers play out will be refracted through a number of contingent factors, such the characteristics of the particular natures to be traded; the constellation of institutional, social, political and ideological forces which cohere around it; the ability of policymakers to reconcile the positions and values of different actors; the capacity and willingness of the state to intervene on a meaningful scale; and the prevailing legal and regulatory frameworks for nature conservation and land-use regulation.

In the case of biodiversity offsets, policymakers are offered a plausible path through the dilemmas of biodiversity loss and regulatory obstacles to growth, while its market-based underpinnings fit with prevailing models of neoliberal governance (Penca 2013). Offsetting rhetorically promotes a system of financial (dis)incentives to modify developers' behaviour without resorting to taxation or direct intervention, at the same time as leveraging private finance for conservation, in a climate where expanded public spending is seen as politically undesirable or unfeasible. In the process of creating offset markets, one of the central concerns for the state is the construction of a stable and fungible object of trade, defined and measured in a transparent manner accepted by all the relevant actors: buyers, sellers and brokers; economists and regulators; ecological assessors and managers; and other key stakeholder groups. This is a particularly difficult task, given the deeply complex, interdisciplinary and contested nature of biodiversity as a political concept, through which social actors compete over how the natural world should be understood, valued, and governed (Takacs 1996; Vadrot 2014), and the imprecision, uncertainty and considerable knowledge gaps present in ecological science, conservation biology and restoration ecology (Burgin 2008; Maron *et al.* 2012).

As a result of these difficulties, there is a particular need on the part of policymakers to enrol ecological scientists and conservationists, since offsetting's legitimacy relies heavily on the adequacy and integrity of the currencies and metrics (Walker *et al.* 2009). As Robertson (2006) has shown in the case of wetlands mitigation banking in the USA, ecologists play a critical role at the interface of science and policy, where their particular job is to certify the value of the commodities traded, constrained by the material and social constellations of power in ecosystem markets. This requires an act of translation from the sphere of ecological science to those of economics and law, where actors and institutions need data to be codified and legible in certain ways, with stable identities across time and space. Given the deep complexities, ambiguities and uncertainties of wetland ecosystems, the science has great epistemological difficulty in providing the information needed by capital in an uncontroversial way. The tension between market functionality and regulatory simplicity on the one hand, and the complexity of biodiversity on the other, often appears to be the most persistent dilemma faced by the state, and one which is rarely resolved for long.

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METHODS

I examined the UK government's moves to trial biodiversity offsets, with a view to national roll-out of the programme, between 2011 and 2015. The empirical analysis is based on a range of data collected between November 2013 and September 2014. Thirty-four in-depth interviews were undertaken, with a range of governmental and non-government actors. These included central government officials, public and private sector ecologists and natural scientists, conservationists, environmental campaigners, environmental economists, public policy consultants, land-use planners, developers, green business representatives, think tanks, landowner organizations, and local campaigners. Interviewees were identified and approached on the basis of having some engagement with the design or piloting of biodiversity offsetting in England, or as members of organizations or groups likely to have a direct interest in any future national policy. Data was also gathered through participant observation at four practitioner and policy-focused events, and the collection of a range of documentary material.

The purpose of analysing this wide variety of qualitative material was to build as full a picture as possible of the complex array of events and processes at play during the time of offsetting's development in England. This deep analysis of multiple sources of data allows for the untangling and reconstruction of the complex narratives, ideologies and motivations of various actors, the relations of power between different groups, and the critical points of tension and struggle through which the process was politically mediated, with the objective of shedding light on the nature of the difficulties encountered and their wider implications for the UK and elsewhere.

EXAMINATION OF OFFSETTING IN ENGLAND

Background to the case study

Prior to the 2010–2015 government's moves to introduce a formal offsetting system, the mitigation hierarchy formed an element of existing planning consent in England, meaning off-site compensation was already possible. Planning authorities were obligated to ensure development observed the avoid, mitigate, compensate sequence in cases where biodiversity was a material concern through the now defunct Planning Policy Statement 9 (PPS9). PPS9 stipulated refusal of consent if the hierarchy was not observed, unless an overriding public interest case could be made in development proceeding (DCLG [UK Department of Communities and Local Government] 2005). Compensation, when it was used, tended to be done inconsistently, negotiated through Section 106 legal agreements (UK Government 1990) with developers. The existing system however had been coming under increasing scrutiny, for both failing in its statutory duties to protect biodiversity (David Tyldesley and Associates 2012), and for the slow processing and granting of applications, delaying or derailing development projects. Especially since 2008, inflexible environmental regulation came to be viewed as a central impediment to economic recovery, with European protected sites and species taking particular criticism from politicians and developers (see for instance Milne 2012).

Investigations into offsetting had begun under the previous Labour administration, but the first concrete policy proposals came in 2011 under the newly-formed Conservative-Liberal Democrat coalition government. The Natural Environment White Paper (Defra [UK Department for Environment, Food and Rural Affairs] 2011) pledged to launch six two-year trials around the country, with a view to rolling out a national programme through the English planning system. The White Paper set out an ecosystem approach for protecting the natural environment while growing the green economy over the next five decades, building upon recommendations of national studies and a growing international policy literature, which stressed placing the natural environment's economic value at the heart of policy and suggesting the utility of market-based instruments as a means of meeting those objectives. Biodiversity offsetting had emerged as one such tool gaining traction internationally. The pilots were launched in April 2012, ending in March 2014. New guidance was also being developed aimed at simplifying the planning system, which replaced previous policies including PPS9. '[M]oving from a net loss of bio-diversity to achieving net gains for nature' constituted one component of the streamlined National Planning Policy Framework's (NPPF) definition of sustainable development (DCLG 2012, p. 3), based on a commitment laid out in the White Paper, while use of the mitigation hierarchy formed part of planning consent.

While compensation had already been possible under PPS9, the proposals marked a step-change in how compensation agreements might be governed. For the first time a habitat-based metric was developed, which would enable any area of land's distinctiveness and condition to be numerically categorized, and its biodiversity value calculated in units per hectare. This allowed quantified loss and gain to be accounted for in different places over a period of time, while the generation of biodiversity units calculated in a consistent manner created the conditions for circulation of fungible credits. Guidance added further institutional architecture, with planning authorities made the primary regulatory bodies responsible for oversight of commercial trade of credits between developers and accredited providers. The proposals meanwhile were lent substantial support in reports by two market-orientated groups. The influential conservative think tank Policy Exchange (http://www.policyexchange.org.uk/) and business-led Ecosystem Markets Task Force (EMTF), set up by the government to 'review the opportunities for UK business from expanding the trade in green goods and the market for sustainable natural services' (Defra 2011, p. 4), both made a mandatory programme their respective priority recommendations (Newey 2012; EMTF 2013). Having received lukewarm response initially, offsetting was also given fresh impetus under Owen Paterson, appointed Secretary of State at Defra in late 2012. Paterson, though

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a contentious choice due to his controversial environmental views, quickly became one of offsetting's most vocal supporters. In September 2013, the government published a Green Paper, setting out consultative plans for a national programme, confidently pledging concrete proposals by the end of the year (Defra 2013).

The release of the Green Paper marked a high point in offsetting trajectory, but also a moment where the public debate became extremely fractured. The consultation garnered a surprisingly large number of responses given the relatively obscure corner of land-use planning concerned, and there was something of a backlash from parts of the public and media against the government's perceived moves (Mathiesen 2013). More significantly perhaps, the more institutionalized environmental interests, namely the conservationists and ecologists who in principle supported offsetting, raised serious concerns over the detail of the proposals. Political interest from the government soon cooled. As 2014 was drawing to a close, a year after consultation ended, Defra had yet to release the results, let alone publish more detailed plans. The pilots failed to produce meaningful results (Evans 2013), which most attributed to their voluntary nature. Their evaluation, promised for May 2014, remains unpublished. Following Paterson's own dismissal in July 2014, many suspected the programme had been shelved, at least until the General Election of 2015.

Planning and regulatory burden: impediments to growth

The Green Paper gave the clearest picture to date of the government's overall objectives. Invoking the mantra of the 'global race', Paterson's foreword set the tone: 'Our economy cannot afford planning processes that deal with biodiversity expensively and inefficiently or block the housing and infrastructure our economy needs to grow' (Defra 2013, p. 1). The UK economy was just beginning to show signs of sustained growth, amid a slow and turbulent post-2008 recovery. The recovery however appeared fragile, stimulated in part by an escalating property bubble in London and the south east, which was in turn fuelling an affordable housing crisis (Elliott 2014). Housebuilding was therefore identified as a priority, and freeing up land for construction became a focal point for policymakers, with pressure put on local planning authorities to deliver housing. For instance, the NPPF (DCLG 2012) stipulated if local authorities could not satisfactorily establish their five-year housing land supply, developers could come forward with applications outside of local plans (local government's main strategic planning document) with permission presumed. As one local government ecologist put it: 'It was probably the worst time in national terms to launch a scheme of this nature. . . . [D]evelopers hold all the cards. Local authorities are struggling to get even things like social housing and affordable homes. . . . Trying to do extra things for biodiversity in that economic climate was very hard, and still is hard' (Pilot Leader A).

Defra was also operating in a context where any regulation of business was assumed by government to be a burden that could stymie growth. Under the Red Tape Challenge, a 'one in, two out' policy had been attached to all new regulation affecting business (BIS [UK Department of Business, Innovation and Skills] 2013). As an explicit result Defra expressed preference for a voluntary-based system giving 'developers the choice to use offsetting' (Defra 2013, p. 2), against the advice of nearly all of offsetting's supporters among environmental and green business groups (Aldersgate Group 2013; Environment Bank 2013; Chartered Institute of Ecology and Environmental Management 2013; RSPB [Royal Society for the Protection of Birds] 2013). These groups agreed a consistent and mandatory system would be necessary, otherwise most developers would simply opt against the extra cost of offsets, and weaken planners' bargaining power. Resultant low demand would also inhibit supply and impair market efficiencies, and lack of a level regulatory playing field would undermine the goal of making biodiversity's value consistently visible in financial decision-making. A voluntary approach did find favour among large developer groups however (Energy UK 2013; Home Builders Federation 2013). Though offsetting was presented as a strategy that would benefit all parties, developers were particularly wary of additional costs. As a sustainability officer of one major housebuilder explained: 'It just seems like an additional regulatory burden, it's an additional cost. It's another box we have to tick, and that comes at a business cost and a capital cost' (Developer).

Delivering for economy and environment in the face of deregulation, austerity and diminishing institutional capacity

No net loss remained a stated objective, but Defra made clear avoiding extra cost was non-negotiable and that offsetting had to demonstrably make the planning system quicker, cheaper and more certain for business (Defra 2013, p. 8). This caused apprehension among green advocates, who questioned government intentions. As one professional ecologist, involved from an early stage, said: 'There's a very strong pro-development agenda at the moment isn't there? That's fine, but it brings certain risks with it. . . . I am nervous about the way it looks like it's headed at the moment. . . . They're trying to do a sort of fast-tracked, possibly disingenuous version of it' (Consultant Ecologist A).

Discomfort around the growth narrative led to concerns offsetting could erode rather than reinforce existing protections. As an officer at one large conservation non-governmental organization explained: 'We would want a new system to capture the stuff that's currently not avoided. So it's turning approvals of low-level harm into offsets. Clearly where government are coming from . . . there's a

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danger that government are trying to turn refusals of high harm into offsets. They're very different things, and we're coming at it from very different angles' (Conservationist A).

At a time when insufficient land supply was being blamed on environmental regulations, Defra's assertion the programme could reconcile long-running tensions between development and conservation remained unconvincing to many. According to insiders, it proved an impossible sell to the Treasury, who they said effectively blocked a mandatory system; uncertain costs meant Defra was unable to satisfy the strict economic appraisal for new policies.

The lack of extra money for offsetting roused further fears around regulatory oversight. By the end of 2016, Defra, already one of the smallest government departments, was set to have lost over 36% of its 2010/2011 budget as part of government austerity measures (Jowit 2010). Cuts to local government, where offsetting would largely be delivered, were also severe. Data collected by the Association of Local Government Ecologists (ALGE) found 10 of 13 areas of local biodiversity work were undergoing 'at least a 60% budget cut' in 2011/2012 (Environment, Food and Rural Affairs Committee 2012, p. 119). It raised alarm bells 'over the apparent 'mis-match' between the aspirations and expectation expressed in the Natural Environment White Paper, when weighed against diminishing availability of resources within local government to actually engage with and undertake the sorts of biodiversity initiatives outlined' (Environment, Food and Rural Affairs Committee 2012, p. 116).

This exacerbated problems with effective discharge of statutory obligations, where biodiversity was already critically undervalued. According to ALGE's data from 2004, only 35% of local authorities employed an in-house ecologist. A more recent survey found 74% of planners had only a basic understanding of the mitigation hierarchy, with ALGE concluding many planning authorities 'do not currently have either the capacity or the competence to undertake the effective, and in some cases necessarily lawful, assessment of planning applications where biodiversity is a material condition' (Oxford 2013, p. ii). One local ecologist expressed one concern over offsetting's widespread rollout: 'I haven't been able to give it the attention it deserves. But on the other hand it's perhaps a more realistic reflection I think of how it might operate in the future, in terms of how much time people can give it. ... [T]he worry will be that those authorities which don't have access to ecological advice will have to take the metric calculations etcetera, that have been done by the consultant working on behalf of the developer, at face value' (Pilot Leader B).

For offsetting to meet its stated objectives, well-resourced and knowledgeable regulators play a critical role for its advocates, but few expect additional investment to be forthcoming. Without this, much rides on how robust and objective the tools of evaluation are, and the impartiality and independence of those using them.

The limits of ecological science

Much of offsetting's appeal comes through its technocratic claim to represent biodiversity's true value objectively with hard numbers. However, there remain significant practical questions surrounding measurement. What exactly should be measured? What are the best proxies for distinctiveness and condition? Which habitats (if any) should be considered irreplaceable? How do you quantify ecological connectivity? Should a site's potential biodiversity value be taken into account? What are the appropriate timescales? How do you deal with uncertainty and failures in restoration? Undoubtedly the decision over what precisely gets measured or what counts is likely to be biased towards the interests of one set of actors or another, and becomes the source of a repeated political contest over the detail of the instruments. The complex nature of ecology and biodiversity mean much work done by practitioners during the process, at every stage, is down to subjective judgements. Despite such concerns, there was a conspicuous absence of debate around the scientific underpinnings of offsetting in government proposals (British Ecological Society 2013).

The Chartered Institute for Ecology and Environmental Management (2013, p. 4) noted how 'members who have practical experience of using the current metric have commented that it is difficult to use. Added to this there are varying interpretations of the metric with at least three different calculation tools that CIEEM is aware of'. The assignment of habitats to the metric's categories proved an area where data from assessments was not always clear. One local government ecologist explained that 'it's sometimes surprisingly difficult to categorically state what an area of habitat is and what condition it's in, especially if it's sort of a mosaic of habitats' (Pilot Leader B). Another, reflecting on their application of the metric, said: 'It works in some areas and some habitats, it doesn't work terribly well for farmland species and habitats. It also doesn't work very well in terms of ecological connectivity. That meant that with some sites it might show a reasonably low biodiversity value, whereas in functionality terms they were quite significant sites' (Pilot Leader A).

The Chartered Institute for Ecology and Environmental Management called for clearer guidance, while a number of bodies made similar points as to the crudeness of the metric, emphasizing the need for it to reflect the full complexity of biodiversity (Environmental Audit Committee 2013).

While Defra promised further refinement of the metric related to concerns raised by experts and practitioners, officials also stressed the trade-offs with overcomplicating the system of measurement: firstly, it would undermine its simplicity and legibility for different stakeholders, and hence transparency; secondly, a more complex metric would be time-consuming and costly to operate; and finally, the functioning of markets required a certain level of abstraction for the creation of fungible commodities. In any case, adding further layers and caveats to the tools of measurement seemed unlikely

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to make objective judgements much easier. The ambiguity and unpredictability which inhere in the very nature of the biophysical processes being observed, and related limits of ecological science, mean, in practice, politically mediated disputes at the moment of measurement are always likely.

The process through which offset credits are produced, namely through ecological creation, restoration or enhancement, is itself an unpredictable and imprecise activity, prone to failure. This creates uncertainty at the credit side of the no net loss calculation, whereas loss is guaranteed on the debit side; indeed cumulative loss at a wider scale may not be taken into account at all. Ecologists and conservationists stressed the importance of this factor: 'We at our headquarters have massively struggled to do heathland restoration on our own headquarters! ... We keep getting things wrong, and things go wrong. It's just an indication of how hard it is' (Conservationist A). Some ecologists pointed to limited understanding of particular conditions for restoration: 'You see what's on the surface, but the soils have taken hundreds if not thousands of years to form, or the hydrological regime. Those are much, much harder to recreate, which is why you might get good results quickly, but actually in the long term it's not worked' (Consultant Ecologist C).

Gaps in knowledge and a perceived lack of recognition of this on the part of the government was compounded by a frustration at the lack of resources put into monitoring restoration: 'It's not a very sexy area of research, it requires long-term experiments that no one wants to pay for or support. We did have in this country some really good long-term experiments going on that have been stopped' (Consultant Ecologist A). Though monitoring is a condition of planning permissions where compensation has been offered, one ecologist explained: 'In practice it doesn't happen because the developer doesn't put up the money for that, the local authority hasn't the time to go back and check' (Consultant Ecologist B).

In recognition of these difficulties, Defra's proposals included a set of multipliers, among others to incentivize offsets which are as proximal to impacts as possible and to compensate for time lags in restoration, for calculating required offset units to hedge against such uncertainty, weighted more heavily for the most problematic habitats, and against the hardest practice of habitat creation. The Green Paper also suggested use of a financial insurance scheme for cases of total failure. The scientific underpinning of multipliers however remained of questionable validity in policy circles, and particularly open to dispute in practice during negotiations.

Pressures on ecological assessors

Ecologists' ability to make independent and impartial judgements during these contested negotiations is conditioned by the constellation of actors and relations of power through which they work, carried out at the interface between various vested interests, including governments, developers, landowners and the legal system, as well as conservation organizations and local communities. Professional ecologists also have their own direct interests, whose livelihoods may depend on maintaining relationships with several of these vested interests. The vast majority undertaking biodiversity assessments and making use of the metric would be private consultants, working for limited periods on clients' development projects in a competitive marketplace. According to various interviewees inside and outside the sector, the quality of work can vary. With existing arrangements, surveys can be carried out by untrained people for very low cost, which one consultant described as an increasing problem for the profession. One local non-governmental organization officer explained, with regard to a consultancy they often deal with: 'If an application comes in that has a report supported by them we pay special scrutiny to it. I'm not saying that they do anything wrong, but sometimes it's not quite as comprehensive as you might wish' (Conservationist B). Talking specifically in relation to offsetting, another discussed how: 'commercially, there is money to be made, there are jobs to be done. It's a very difficult environment for consultancies at the moment. Money is tight. Personally they might feel very uncomfortable about it, but they won't tell you, because what are they going to do? Walk out of their jobs?' (Consultant Ecologist B).

Most however focused on the pressure felt by consultants: 'Every delay costs money. Every proposal to mitigate or avoid is potentially going to cost money. So you can come under a lot of pressure, not to see things, find things, perhaps not to do such a thorough job as you should, or not to include it in your report. ... You often appear to be the bringer of bad news. Often biodiversity, and the ecologist's role are seen as a problem to be coped with' (Consultant Ecologist C).

Under such circumstances rigorous and independent assessments are always difficult, regardless of the values and conscientiousness of individuals, though many ecologists and conservationists expressed a compunction to actively work on offsetting projects, despite their reservations, to make sure it was carried out as well as was possible. Though Defra had suggested a formal accreditation scheme, most supporters still felt strong regulatory oversight was needed.

DISCUSSION

As the government showed signs of retreat in 2014, most interviewees reflected that it had been the wrong time for offsetting, at a juncture where national government had been particularly ill-equipped to initiate a scheme that was so complex and controversial. Factors included: the Conservative-led government's uncompromising position on growth and deregulation, as well as the shortcomings of the leadership; the political power of developers; political attacks on the inefficiencies of the planning system and environmental regulation; and the weak and diminishing capacities of planning authorities and regulatory agencies. Ultimately, the government's pursuit of reducing regulatory burden for business at all costs, in an effort to stimulate growth, remained non-negotiable and an

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insurmountable barrier to further progress. Coupled with a severe programme of austerity, under which public spending on institutional support for biodiversity-related regulation and research continues to decline, a mandatory offsetting system with the sufficient resources to deliver meaningful outcomes was never a serious possibility. This undermined the credibility of the system in the eyes of ecologists and conservationists in particular, but also for offsetting's advocates in the world of green business and environmental economics, who recognized the necessity of an interventionist state in navigating a complex social, political and ecological terrain, for the creation and integrity of a regulatory market. Defra's failure to enrol these groups, who showed little opposition to offsetting in principle, into the creation of a new market system, exposed the government's unwillingness and inability to intervene and regulate on the scale deemed necessary. As economic growth continued into 2014, and other revisions to planning and housing policies took effect, the government became less willing to take the political and economic risks now associated with its offsetting proposals.

The story of the UK government's tentative moves to roll out a national biodiversity offsetting programme is in many ways context specific, politically mediated through a series of contingent factors and events. It is possible a change of government might open up different possibilities or that the issues described in this paper simply reflect teething problems of a longer iterative journey. Looking beyond the immediate politics there is perhaps something more to learn from the UK, relating to the more structural constraints through which offsetting is conceived as a solution to biodiversity loss. Though the UK's particular brand of neoliberal governance and growth played a part, biodiversity offsetting's transnational appeal is predicated on and purports to deal with the conditions of those very political and social arrangements: a neoliberal world where perennially declining public resources for conservation are deemed inevitable; where government command and control regulation is judged to be inherently inflexible, inefficient and ineffective; where a notion of economic growth remains an essential condition of all forms of governance and prosperity; and where the expansion of economic and market logic is seen as the common sense solution to all perceived market or regulatory failures (Büscher *et al.* 2012; Davies 2014). It is in this context that offsetting's political attraction lies; in its pledge to deliver market solutions that address both the challenges of curbing biodiversity loss and complying with regulatory regimes at different scales on the one hand, and securing economic growth on the other.

When it comes down to the detail however, the promised reconciliation of economy and ecology remains elusive. Offsetting offers a way to leverage some financial compensation to move nature elsewhere, but the tensions and disparities embedded in existing socioecological relations of power, which constrained meaningful compensation regimes in the first place (market or otherwise) have not been resolved. The meeting of economy and ecology reverts to a political struggle in which well-meaning environmentalists try to claw something back for biodiversity, in a context where growth cannot be compromised. This is reflected in the pressure on consultant ecologists to give client the easiest and cheapest option to get their permit; in the overwhelming pressure on local planners to deliver housing above the interests of biodiversity; and the national state's non-negotiable attitude towards a particular form of economic development. In this sense, the UK is far from an exceptional case. Moves to develop an offsetting framework at the European level by the European Commission for instance have been following a similar path, in a context where many member states are undergoing deep austerity measures to reduce public deficits. Here too, offsetting is firmly situated and justified in a deregulatory climate in which environmental protections are under attack for undermining business competitiveness and economic recovery (Kaminski 2014; European Commission 2015). Quite apart from the implications for similarly positioned post-industrial societies, the UK experience raises wider questions over offsetting's potential in poorer parts of the world with significantly lower institutional and regulatory capacity.

In studies of the success of actually existing offsetting, the evidence seems to suggest that no net loss is rarely delivered (Maron *et al.* 2012; Curran *et al.* 2013). This is something most practitioners and all but the most zealous advocates admit, identifying effective monitoring, compliance and enforcement as the critical challenges. The authors of these studies however make a further claim regarding offsetting's governance: that realistically large multipliers to mitigate restoration failure rates would be 'an insurmountable institutional challenge' (Curran *et al.* 2013, p. 628) and 'politically and economically unacceptable' (Maron *et al.* 2012, p. 145). This raises an issue at the heart of debates around biodiversity offsetting and similar market-based instruments: are the problems which beset these systems issues of poor implementation or fundamental conceptual flaws? The question raised by this paper is not so much over the technical feasibility of offsetting, but the extent to which the technical complexities can be satisfactorily worked through the political milieu in which they are embedded and constituted. On the one hand, optimists believe implementation problems are merely issues of refining the metrics and rules, and garnering sufficient political will, while on the other many critics dismiss market instruments as anti-ecological or false solutions.

As Carton (2014) concluded in the context of carbon markets, empirically observable failures do not prove the inherent inadequacy of the market instrument in reducing carbon emissions, the success of which is more concretely dependent on the soundness of the emissions cap and the effective imposition of scarcity. Instead, Carton (2014, p. 1012) argued, 'the limits to carbon trading are defined by the broader economic framework within which it operates. As a market-based instrument, emissions trading has fully internalized the economic imperatives of market society'. Despite the differing technical challenges and institutional settings, this analysis would seem equally applicable to the case of biodiversity offsetting. Authors have for the most part

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failed to grasp the intimate nature of this relationship, and its implications for the design, implementation and contestations around putting offset programmes into operation between the divergent demands of deregulation and reregulation. This critical tension at the heart of biodiversity offsets needs to be more explicitly acknowledged in discussions over how to move forward. Though achieving no net loss through offsetting may be theoretically possible, it seems highly unlikely that the contemporary state could in practice mobilize at the required scale to deliver its stated objectives.

CONCLUSION

I have documented and analysed the difficulties encountered by the UK in its attempts to roll out a biodiversity offsetting programme for England. Biodiversity offsets are becoming an increasingly popular policy mechanism around the world, as policymakers seek solutions to the twin dilemmas of delivering economic growth while meeting mandated conservation goals. However, the troubled development of the policy in the UK should give pause for thought for both policymakers and advocates who maintain faith in the promise of market solutions delivering for both economy and biodiversity.

Market-based policies for nature conservation have traditionally proved difficult to put into operation, and the UK experience demonstrates many of the characteristic problems of environmental market-making and commodification identified in the critical literature. What is particularly revealing in this case study is how these dilemmas played out in the early stages of such a process, at a point where the tensions appeared at their sharpest, and the necessarily constructive role undertaken by the state as it tried (unsuccessfully) to resolve them. In particular, the analysis has highlighted the importance of the irreducible relationship between the successful roll-out and implementation of such market-based instruments, and their situation within broader political economic paradigms; in this case post-2008 variants of neoliberal capitalism. Special attention should be paid to this relationship, its historical specificity and the attendant limits placed upon environmental markets.

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