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Citation for published version:

Lovell, H & MacKenzie, D 2011, 'Accounting for Carbon: The Role of Accounting Professional Organisations in Governing Climate Change', *Antipode: A Radical Journal of Geography*, vol. 43, no. 3, pp. 704-730.
<https://doi.org/10.1111/j.1467-8330.2011.00883.x>

Digital Object Identifier (DOI):

[10.1111/j.1467-8330.2011.00883.x](https://doi.org/10.1111/j.1467-8330.2011.00883.x)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Peer reviewed version

Published In:

Antipode: A Radical Journal of Geography

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Accounting for Carbon: the role of accounting professional organisations in governing climate change

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This is the author's final draft as submitted for publication. The final version was published in *Antipode* by Wiley-Blackwell (2011) and is available online.

Cite As: Lovell, H & MacKenzie, D 2011, 'Accounting for Carbon: The Role of Accounting Professional Organisations in Governing Climate Change' *Antipode*, vol 43, no. 3, pp. 704-730.

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Made available online through Edinburgh Research Explorer

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Abstract

The paper investigates how accountants are positioning themselves as managers of carbon. Since the turn of the century accounting profession organisations have been involved in a number of debates about climate change, catalysed initially by technical discussions about the treatment of European carbon credits in financial accounts. International accountancy professional bodies are positioning themselves as leading on climate change, for example, through launching professional training courses, funding research, and initiating corporate workshops and seminars. The paper examines the role of the accountancy profession in governing the new carbon economy, seeking to answer questions about the significance of new alliances, coalitions, and resistances aimed at engaging, embedding or rejecting climate change. We review climate change related activities undertaken by accountancy professional bodies through drawing on primary empirical material, including interviews with accountants, accountancy standard-setters and professional bodies. A mix of theories about the role of calculation, measurement and expertise in governance are used to help explain and understand the situation, including ideas about accountancy and society, epistemic communities, and governmentality.

Keywords

climate change; accountancy; accounting profession organisations; measurement; epistemic community; governmentality.

Introduction

Climate change continues to be an important issue on national and international policy agendas (DEFRA 2007; IPCC 2007). To date the most prominent way the problem of climate change has been addressed is through the construction of markets in which standard units of greenhouse gas emissions are created and exchanged. A fuller understanding of both the potential and the weaknesses of carbon markets requires not just economics (the source of nearly all existing work on them) but also investigation of the implications of carbon markets for other disciplines and professional activities: interdisciplinary work on accounting is crucial in this respect, and to date has been somewhat overlooked by researchers in fields other than accounting (see MacKenzie 2006 for an exception). Practices of many kinds are needed to successfully commoditise carbon and make carbon markets work, and amongst these accounting is of particular importance. In this paper therefore we assess the role of the accountancy profession in governing the new carbon economy, focusing on the role of the main international accountancy professional organisations and the work they are engaged in in positioning accountants as managers of carbon.

We seek to answer key empirical questions about the governance of climate change by accountants: how has the accountancy profession been involved in the day-to-day governance of climate change to date? What is its significance? How is the authority of accountants as carbon managers being established? These questions are relevant in furthering our conceptual understanding of the new political and institutional challenges that flow from managing the new carbon economy, and in particular the new alliances, coalitions, resistances that are emerging aimed at engaging, embedding or rejecting it. These questions are also significant for the operation of carbon markets, since accounting makes economic items visible, and whether and how it does so is consequential. In a relatively new area of

policy such as climate change where societal responses are still in flux there is an excellent and valuable opportunity to better understand accounting decision-making processes before they become embedded and routinised.

The paper concentrates primarily on financial accounting (accounting for carbon in financial accounts, and the activities of financial accounting professional bodies and standard-setters in relation to climate change). This is because financial accounting is a central means by which firms in a capitalist society report on their activities. Where relevant, however, we also discuss the role of auditing and management accountancy. There is a somewhat ‘grey’ area between carbon financial accounting and non-financial (so-called ‘narrative’) disclosure of corporate climate impact and carbon benchmarking; it is the latter area of activities indeed where the term ‘carbon accounting’ has recently become most prevalent (see for example The Aldersgate Group 2007). For this reason debates and activities at the intersection of corporate reporting and financial disclosure (eg the work of the Climate Disclosure Standards Board) are relevant and considered here. Mainly, however, we concentrate on the role of financial accounting professional organisations, especially those such as the Canadian Institute of Chartered Accountants (CICA) and the Institute of Chartered Accountants in England and Wales (ICAEW) who have taken the lead in engaging with climate change. We draw on in-depth interviews (#20) with key industry players active in carbon accounting, including accountancy firms, standard setters (the IASB or International Accounting Standards Board, and the main US body, the Financial Accounting Standards Board, FASB), and financial accountants at large European companies active in emissions trading. These interviews have been transcribed and coded.¹ The paper is based on research funded by the UK Nuffield Foundation and is part of a wider project investigating precisely how carbon is being made fungible (i.e. standardised and interchangeable), using ideas from economic

sociology and political science.ⁱⁱ The paper builds on initial exploration of accounting for carbon in the EU ETS, investigating in more depth the preliminary findings and research themes identified by MacKenzie (2008). The role of accounting professional organisations in climate change governance was a finding that emerged somewhat unexpectedly out of interviews, which were focused at the outset more narrowly on EU ETS financial accounting practices.

The paper also draws on research conducted by Lovellⁱⁱⁱ funded by the Association of Certified Chartered Accountants (ACCA) and the International Emissions Trading Association (IETA) involving a survey of carbon financial accounting practices of top emitters in the EU ETS. Lovell also is a member of the Climate Disclosure Standards Board (CDSB) Technical Working Group, and uses some data and ideas from her role with the CDSB in this paper.

The theoretical frameworks judged to be most relevant and illuminating in relation to exploring the response of accountants to climate change centre on issues of measurement, calculation, and expertise, and are drawn variously from accountancy and society literatures (covering the history of accountancy and critical examination of the practices and culture of accountancy (Hopwood and Miller 1994; Miller 1994), Foucault's theory of governmentality (Dean 1999; Foucault 1991), and the policy network concept of 'epistemic communities' (Haas 1992). These diverse literatures are especially helpful in thinking about how authority is gained through promoting uptake of certain seemingly neutral practices and techniques (eg the application of financial accounting principles and techniques to climate change – double entry book keeping; quantitative and narrative formats etc.), and through discourse (eg the discursive positioning of accountancy as the 'natural home' for the professional management

of carbon). Concepts and ideas from these literatures are used as lenses to examine wider the political and institutional challenges of governing carbon for accountants and the accountancy profession.

The paper is structured as follows. First, relevant literatures are reviewed – as discussed – to interrogate the key governance issues for accountants and climate change. Second, in the main empirical section of the paper we give a short history of the involvement of accountants with climate change (‘Stage One’ – late 1990s to 2005) and then examine how and why accountancy professional organisations have more recently attempted to position themselves and the profession as well-placed to govern climate change (‘Stage Two’ – 2005 to present). In conclusion, we comment on the likely future directions of the carbon accounting debate and its implications for policy and theory.

How and Why Carbon is Measured

Conceptualising carbon accounting potentially cuts across a number of different theories and bodies of research. There is a range of relevant literatures to draw upon which offer useful insights into how and why accountants might be framing themselves as good and ‘rightful’ managers of carbon. Here we briefly consider three literatures judged to be most relevant. The first body of work - broadly termed ‘society and accountancy’ - examines issues of governance, power and knowledge (political economy approaches); the history of accountancy; and also ethnography or anthropology of the practices and culture of accountancy (Hopwood and Miller 1994; MacKenzie 2006). Second, we turn to the notion of governmentality to explore the relationship between discourse and practice or ‘techniques’ in effecting power and authority. Third, the policy network concept of ‘epistemic community’ is used to examine the nature of accounting expertise and its application to policy change.

These reviews are necessarily brief: it is not the authors' intention to provide a full summary, but rather to consider how they might lend insight to the work of financial accountants in relation to climate change. For this reason we limit our attention to ideas from these literatures about calculation, measurement and expertise: who defines the problem and its solutions (a process necessarily involving forms of measurement and calculation), and how they generate the authority and capability to do so. We note at the outset that these literatures have different framings and conceptions of what is most important to study, eg for governmentality it is the day-to-day practices and techniques of government, whereas the notion of epistemic communities is more concerned with how particular groups of experts bring about change. However, we view these different perspectives as complementary, rather than conflicting.

Accountancy and Society

Scholars examining the relationship between accountancy and society aim to extend beyond narrow conceptions of accountancy, arguing that accountancy is not only relevant within the boundaries of a particular firm, but plays a constitutive role in social processes more generally. It is a broad literature, and what is of interest to us here is these close connections that have been demonstrated between accountancy and social processes (see Hopwood and Miller 1994), suggesting with regard to climate change what is pertinent is not just analysis of how the accountancy profession might be responding to increasing societal concerns about climate change, but also the role accountants might be playing in influencing how the problem is made sense of and dealt with. As Miller (1994: 9) suggests, "Accounting could not and should not be studied as an organizational practice in isolation from the wider social and institutional context in which it operate[s]." In other words, social processes shape and are shaped by accountancy.

This strand of critical accountancy and society research emerged during the late 1970s and early 1980s (with for example, the foundation of the journal *Accounting, Organisations and Society* in 1976). Key research themes include: ethnography of accounting practices; political economy of accounting (eg looking at how power is exercised, at conflicting political and economic interests); and organisational design and environments (eg the notion of rationality which is pervasive in accountancy, but in reality accounting practice is much closer to *bricolage*, to 'organised anarchies') (Hopwood and Miller 1994; Miller 1994). Miller's work is of particular relevance, outlining three ways of viewing accounting as a social and institutional practice: first, in seeing accounting as a *technology* - a way of intervening, giving visibility to events and processes, and of governing people; second, focusing on the complex language and meanings of accountancy - its *rationales*; and third, examining how things are made knowledgeable in economic terms through accountancy, the *calculative* aspects of accountancy (Miller 1994). It is striking how Miller's framework has parallels with governmentality approaches – discussed below – in suggesting accounting governance and practice can best be understood through examining discourse and technologies; it also has links to the concept of epistemic communities, through highlighting the role of expertise and knowledge.

To date this extensive body of work on accountancy and society, though relevant, has not been widely applied to the issue of accounting and climate change (for exceptions see Cook 2009; Lohmann 2009; MacKenzie 2009). Such an approach would position carbon accountancy as intricately connected to wider societal debates about not just the environment, but also the relationship between markets and governments, the role of science and so on.

Further, it would view carbon accountancy as having the capacity to shape society itself. as Miller (1994: 1, emphasis added) explains:

".....accounting is, above all, an attempt to intervene, to act upon individuals, entities and processes to transform them and to achieve specific ends. From such a perspective, *accounting is no longer to be regarded as a neutral device* that merely documents and reports 'the facts' of economic activity. Accounting can now be seen as a set of practices that affects the type of world we live in, the type of social reality we inhabit, the way in which we understand choices..."

Accountancy is meant in theory (according to professional codes of conduct) only to reflect 'economic reality' and societal preferences and practices, but can in practice end up influencing them (Miller 1994; Miller and O'Leary 1994; Power 1994). The accounting and society literature is valuable therefore as a correction to the implicit assumption within the non-accountancy academic literature on climate change policy, politics and markets that accountancy is rule-based.

Accountancy and society perspectives might usefully highlight too the history of carbon accountancy, building on previous scholarship illustrating the path dependency and inertia in how accounting decisions are made, ie once certain accounting practices are established they tend to remain (see for example Miller and O'Leary 1994 on the rise of standard cost accounting in the 1930s; Thompson 1994 on the emergence of double-entry accounting). With carbon accountancy still in its formative stages – with many critical decisions to be made – close attention to current governance processes and decision making is likely to have significant theoretical and policy impact. Further, scholars have drawn attention to the often

subtle ways that power is expressed in decisions about detailed, technical accountancy rules (Miller 1994; Miller and O'Leary 1994; Thompson 1994). Accountancy can be a way of making things appear 'anti-political' (after Barry 2005) and seemingly uncontroversial, but the technical debates about accountancy rules and standards sometimes involve intense power struggles. Because carbon accountancy rules (once decided) will potentially have a huge influence on company profits, liabilities etc., it is no surprise that it has been a site of conflict, a point returned to in conclusion.

We therefore now turn to review briefly two further bodies of literature that draw together these ideas about accounting practices more strongly and directly with the politics of policy change, including attention to issues of international politics, discourse, and the role of expertise.

Governmentality

A Foucauldian governmentality approach is another fruitful lens to consider issues of governance and authority in carbon accounting because of Foucault's longstanding interest in how power is expressed and can be identified through day-to-day practices and routine activities (including, for instance, calculation and book-keeping) (Foucault 1991; 2007). According to Foucault since the mid-18th century 'government' - the self-regulation of behaviour, especially in the form of 'self-control' by apparently freely choosing autonomous subjects - has been the main way states have sought to control their populations (Foucault 1991). Whilst the majority of work on governmentality has concentrated on the self-regulation of individual behaviour (amongst the general public), there is a growing interest in testing the applicability of such ideas to institutions such as non-governmental organisations and corporations (Hughes 2001; Sending and Neumann 2006); and it is this sub-set of the

literature that we primarily draw upon here. The pervasiveness of financial accounting in modern society signals the potentially significant role it might play in 'government'.

According to governmentality theory scholars need to pay close attention: first, to how objects of government are defined and how problems are framed (termed 'rationalities'), and second, how they are governed through 'technologies' (Dean 1999). From a governmentality perspective, calculation and measurement are critical to governance processes, as Dean (1999: 11, emphasis added) explains:

"An analysis of government, then, is concerned with *the means of calculation*, both qualitative and quantitative..."

For Murray Li (2007) in her governmentality analysis of development projects in Indonesia, the role of government is also primarily about calculation: it is concerned with making things (problems) into technical programmes that can be managed. Similarly to Dean, Murray Li identifies two key practices that are required to translate a government 'rationale' or discourse into an explicit coherent policy programme: first, *problematization* - identifying the problem, the things that need to be rectified; and, second, *rendering technical* - a set of practices "concerned with representing 'the domain to be governed as an intelligible field with specifiable limits and particular characteristics... defining boundaries, rendering that within them visible, assembling information about that which is included and devising techniques to mobilize the forces and entities thus revealed.'" (Murray Li 2007: 7; quoting Rose (1999: 52)). The two practices are of course intricately linked, for identification of a problem is linked to the availability of a solution (see also Kingdon (2003)). A governmentality lens is especially relevant in thinking about carbon accounting because it brings to the fore the possibility that accounting technologies and practices can themselves influence wider

discourse; it is a two-way relationship. As Murray Li (2007: 6) explains, in the adoption of a governmental rationality:

"Calculation is central, because government requires that the 'right manner' be defined, distinct 'finalities' prioritized, and tactics finely tuned to achieve optimal results. Calculation requires, in turn, that the processes to be governed be characterized in technical terms. Only then can specific interventions be devised."

Through these ideas we begin to see how discourse, technologies and calculation are key to understanding the role of accountants and the accountancy profession in relation to climate change.

Epistemic Communities

The notion of an epistemic community was first elaborated upon by Haas (1992; 1992) and refers to a knowledge-based international community of experts, specifically a "... network of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within that domain or issue area," (Haas 1992: 3). The term was first used by John Gerald Ruggie in 1975, who coined it from Foucault's notion of an *episteme*, defined as "a dominant way of looking at social reality, a set of shared symbols and references, mutual expectations and a mutual predictability of interests". (Ruggie, 1975: 570, quoted in Verdun 1999). It was Haas who fully developed the concept, based on his observations of scientists working on the ozone hole and involved in developing the Montreal Protocol. According to Haas (1992) four defining features of epistemic communities are: a shared set of normative and principled beliefs; shared causal beliefs; shared notions of validity; and a common policy enterprise. What can be usefully

applied to the case of carbon accountancy is the idea of shared beliefs and values uniting a group of experts on a particular policy issue, which Haas and others (Gough and Shackley 2001; Litfin 1994) have argued stem from their professional culture and expertise. So an epistemic community perspective directs our attention to the professional culture and training of accountants, and the links between this culture and expertise and their beliefs about how to mitigate climate change, in turn reflected in detailed policy proposals. There is a notable contrast here with governmentality approaches which direct our attention more towards the day-to-day practices and techniques of government. Nevertheless the two theories are complementary through their shared interest in expertise – whether that be associated with routine, widespread practices (governmentality) or collective pooling and application of knowledge (epistemic communities).

A political scientist, Haas positioned epistemic communities against a range of other policy network theories, which he argued gave too much attention to power in their explanations of (international) policy change, and not enough to the role of knowledge and expertise.

Although there is a bias in the epistemic communities literature towards analysis of scientific communities, the definition of epistemic communities is sufficiently broad to encompass a range of types of professional expertise and knowledge, including accountancy. Indeed, there are some examples of the epistemic community concept being applied to financial policy making (see for example the paper by Verdun (1999) on European Monetary Union, which positions central bankers as an epistemic community). What is most important to our analysis here is Haas's ideas about the role of knowledge – how knowledge and expertise create personal connections - and how these in turn are applied to frame and solve particular policy problems: in this sense it applies well to accountants and the work they are doing in response to climate change, because of their highly specialised knowledge. Further, epistemic

communities are seen as most important in conditions of uncertainty; and with climate change being a relatively new issue for accountants, and with its implications for the professions still unclear, the concept appears likely to have traction.

The progressive narrowing or ‘framing’ of policy debates is a key function of an epistemic community, and there are links here with governmentality ‘rationales’ and ‘problematization’ (Dean 1999; Murray Li 2007). In his discussion of the ozone negotiations Haas sees the epistemic community (comprising mainly atmospheric scientists) as playing a vital role in setting the overall terms of the policy debate, drawing on its shared knowledge and expertise to identify and delineate the ozone hole problem and its solutions, as he explains:

“In the face of foreign policy decision makers’ uncertainty about the causes of the problem [ozone pollution] and the possible consequences of action, the epistemic community was largely responsible for identifying and calling attention to the existence of a threat to the stratospheric ozone layer *and for selecting policy choices for its protection.*”

(Haas 1992: 188, emphasis added).

More specifically Alder and Haas (1992) identify four mechanisms by which epistemic communities exert influence: first through *policy innovation* – in the initial framing of the issue; second, *policy diffusion* – whereby epistemic community members communicate ideas through their international contacts, by word of mouth and reports; third, *policy selection*, when policy makers seek out particular epistemic communities for policy ideas and support; and fourth *policy persistence* – the durability of ideas, beliefs and goals over time, which boosts an epistemic community’s authority and credibility. With reference to the case under discussion – accountants and climate change – it appears at this relatively early stage of

engagement we are only witnessing the first two mechanisms: policy innovation, and to a lesser extent policy diffusion. As we demonstrate in the main empirical section below, accountants have to date not been at the forefront of climate change action, but have nevertheless significantly increased their activities and interest in the problem in recent years and a number of international networks have emerged (eg the Climate Disclosure Standards Board, Accounting for Sustainability). Moreover, accountants have framed climate change in a way that makes their own expertise and knowledge (in calculation, measurement etc.) highly relevant to the policy solutions, and in so doing have contributed to a wider framing of the issue as a matter of reshaping and extending market processes and existing corporate reporting procedures (and not radically altering or disrupting those processes and procedures).

In summary, in this necessarily brief review of literature we have drawn together a diversity of concepts and theories which nevertheless have common themes with relevance for understanding carbon accountancy. First, we note that seemingly banal day-to-day practices and techniques can be central to processes of policy innovation and change, and highlight the ability of these practices (such as, for instance, double-entry financial accounting of assets and liabilities) to influence the framing of policy debates, typically quite narrowly framed. Second, the literatures emphasise the importance of professional expertise and knowledge in developing policy responses, especially in conditions of uncertainty. Third, our brief review has draw attention to the unusual current visibility of carbon accounting practices and techniques, because they are still being actively debated as climate change remains a relatively new policy problem – thereby demonstrating the value of this particular case study, to which we now turn.

Accountants and Climate Change

In this section of the paper we examine in detail precisely how accountants are engaging with climate change. We first provide a brief early history of carbon accounting (in the period from the late 1990s to 2005, termed ‘Stage One’), exploring how climate change first became a practical issue for financial accountants with the advent of the European Union Emissions Trading Scheme (EU ETS), and demonstrating how at the time these financial carbon accounting activities bore little connections with wider (prevalent) debates about valuing the environment. Second, we assess the recent engagement of accountants with climate change (Stage Two – 2005 to present). We examine the positioning of accounting as the natural professional home of carbon management, both in terms of how climate change has been defined by accountants, and the accounting technologies and techniques used to do this (how climate change has been ‘rendered technical’ by the profession).

Our analysis concentrates on the role of financial accounting professional organisations with a particular focus on those who have taken the lead in engaging with climate change. We have reviewed a range of relevant reports and internet sites, and explored the issues in depth through interviews (#20) with key industry players active in carbon accounting (particularly relating to the EU ETS; and the relaunch of the IASB/FASB Emissions Trading project).

Stage One: Late 1990s-2005 ‘Reluctant Engagement’

It was during the period around the turn of the century that climate change first became a technical issue for accountants. In the run up to the start of the EU ETS in 2005 a vigorous debate took place - amongst accounting specialists and largely ‘behind the scenes’ - about how to incorporate EU ETS carbon credits (termed ‘EUAs’) within financial accounts. This debate has been explored elsewhere (see Bebbington and Larrinaga-Gonzalez 2008; Cook

2008; MacKenzie 2008) and will not be rehearsed in detail here, but it is significant for our analysis because it was the first notable practical engagement of financial accountants with climate change (albeit it was restricted to Europe, and only of primary relevance to the companies active in the EU ETS, which covers 12,000 industrial installations in Europe), and second, because of how controversial and conflictual the process of reaching an agreement was (and continues to be - still, several years later, there is no official guidance on how to account financially for carbon allowances or credits).

In the run up to the advent of the EU ETS, accounting guidance was issued by the International Accounting Standards Board via its International Financial Reporting Interpretations Committee (IFRIC): *IFRIC Interpretation 3: Emission Rights* (known as IFRIC-3) was published in December 2004. Whilst the detailed accounting recommendations of IFRIC-3 need not be recapitulated here,^{iv} what is notable is the amount of the controversy the recommendations generated. IFRIC-3 was eventually withdrawn, because of negative reaction amongst major EU ETS participants (utilities, large industry emitters) on a number of grounds, including about where to account for carbon (with IFRIC-3 recommending some gains and losses to be reported in the income statement and some in equity, ie a 'mixed presentation model'), and how to balance assets and liabilities (with IFRIC-3 recommending some carbon credits to be measured at cost and others at fair value, ie a 'mixed measurement model' (see Cook 2008; MacKenzie 2008)). Since the withdrawal of IFRIC-3 there has been no international guidance on how to account for EU ETS credits, and a diversity of practices has emerged (Cook 2008; MacKenzie 2008; McGready 2008; PriceWaterhouse Coopers and IETA 2007). Since 2008, however, accountancy standard-setters have become active again through the joint IASB-FASB Emissions Trading project (see below), which aims to resolve the situation through issuing clear guidance.

The IFRIC-3 withdrawal illustrates, we suggest, how accountants at the time viewed their role in mitigating the problem as largely technical and non-strategic. This finding rather calls into question the assumption amongst governmentality scholars that new discourse and practices necessarily have a particular agenda, with knowing actors driving it. The debate about IFRIC-3 took place behind closed doors – wider input was not canvassed, and in the debate few links were drawn to the more fundamental long-term implications of climate change for the accountancy profession (Deloitte 2009; PriceWaterhouse Coopers and IETA 2007). Indeed, this is despite concurrent wider debates on the principle of valuing the environment and accounting for environmental assets and liabilities, green reporting and corporate social responsibility (Deegan and Blomquist 2006; Herbohn 2005; Villiers and van Staden 2006). During the period in question these two sets of debates – the wider societal debate about valuing the environment, and the detailed, technical debate about financial accounting and the EU ETS – did not intersect.

It is important, however, not to overstate the lack of engagement of accountants at the time with sustainability issues, including climate change. For example, the Institute of Chartered Accountants in England and Wales (ICAEW) in 2004 published a detailed report entitled '*Sustainability: the role of accountants*', as part of its 'Information for better markets campaign.' Whilst not focused specifically on climate change, the report nonetheless engaged directly with the problem in a number of ways, particularly in positioning accountants (and their skills) as being pivotal in its management and identifying climate change as one of a number of 'mega risks' that deserves attention (ICAEW 2004: 18). The report, for instance, concluded in a chapter devoted to the issue of tradeable permits:

“At present, very few professional accountants are familiar with the [tradeable permit] schemes... and there is a challenging opportunity for the profession to contribute to the development and implementation of policy at all levels, as well as standards for accounting and reporting... “

(ICAEW 2004: 66).

The ICAEW 2004 report did not, however, at the time of its publication generate much response from the profession, as the manager with responsibility for sustainability issues at ICAEW explained in interview:

“I suppose what we were doing with [the 2004 report] was carving out a role for the profession, trying to identify it...and saying to members ‘Look, here is a role for you, and *tell us what skills we need to build for you so you can occupy it*’

Interviewer: And what sort of a reaction did you get?

Well, I’d say four and a half years ago the reaction was puzzled bemusement! I think members struggled - and still do to an extent - to see what their role is.....”

(Interview, October 2009).

The interviewee clearly identifies here an absence of skills and techniques through which accountants can respond to climate change, indicating thereby that during this ‘Stage One’ of reluctant engagement the dominant process was of ‘problematization’ – discursive framing of the problem of climate change – with the second key stage of ‘rendering technical’ (the ‘how to do it’) yet to occur. Results from ICAEW’s 2003 survey of over one hundred accounting firms on Social and Environmental Issues reinforce the interviewee’s comments, with 63% of respondents at the time viewing environmental issues as largely irrelevant to the majority of

their clients, and 47% judging environmental issues as outside the accountant's realm (ICAEW 2003: 2).

The Canadian Institute of Chartered Accountants (CICA) was also active on environmental and climate change issues during the late 1990s and turn of the century. As early as 1993 CICA published a report on *Environmental Costs and Liabilities: Accounting and Financial Reporting Issues*. In 1997 it was a founding member of the Global Reporting Initiative (GRI) Steering Committee, and was heavily involved in drafting subsequent GRI Reporting Guidelines. Specifically on climate change accounting issues CICA took the lead in 2002 along with the International Emissions Trading Association (IETA) in sponsoring meetings of key industry and accounting players (the UK accounting standards board, the American Institute of Certified Public Accountants and FASB Emerging Issues Task Force and others) to consider greenhouse gas accounting in the run up to the EU ETS (Casamento 2005). The detailed activities of this network of organisations, including private accounting firms and accountancy standard setters as well as accounting professional bodies, has been well documented elsewhere (Bebbington and Larrinaga-Gonzalez 2008; Cook 2008; MacKenzie 2008). We note here that this specialist, select group of accounting professionals working on the financial accounting issues associated with greenhouse gas emission reduction units bears some similarities with the concept of an epistemic community: a group of technical experts working to address a particular policy problem. Nevertheless their climate change discussions did not have wider ramifications across the profession; their recommendations were not widely circulated or acknowledged, and in this sense the application of the epistemic community concept is limited. There was an initial framing of the issue by this group (the 'policy innovation' first mechanism in Alder and Haas's proposal for how

epistemic communities exert influence), but it appears to have stalled at the second mechanism, that of policy diffusion.

More broadly the response of accountants to the issue of climate change during the late 1990s and early 21st century fits with ideas from accountancy and society literature about the close links between accountancy and wider society. Arguably accountants and the accountancy profession were reflecting a lack of sustained, fundamental societal engagement with climate change at this time. There was consequently no proactive attempt within the accountancy profession to identify with the problem of climate change and ‘render it technical’. Indeed, on the question of how precisely to engage with climate change in Stage One (late 1990s-2005) the profession remained largely silent, even if a discourse about climate change was starting to emerge. Professional bodies should not be seen as always strategic: inertia, ‘tactics’, and *bricolage* are common: these short-term, piecemeal professional responses to the problem of climate change were by no means atypical. In the section below, however, we turn to consider in detail how more recently climate change has been ‘made knowledgeable’ in a more comprehensive and serious way by accountants.

Stage Two: 2005+ ‘Strategic Engagement’

Since around 2005 there has been a notable shift in the depth and pace of response of accountants to the problem of climate change. As well as the publication of a number of new climate change reports, newsletters and other initiatives by accountancy professional bodies, in 2008 the main global accountancy standard setter - the International Accounting Standards Board (IASB) relaunched its Emissions Trading Schemes Project, this time in conjunction with the US Financial Accounting Standards Board (FASB) (IASB 2008), in an attempt to resolve the longstanding ambiguity - since the withdrawal of IFRIC-3 - about how to account

for carbon credits. This new joint IASB-FASB project has a somewhat broader remit too: it is not just about the EU ETS but aims to address the accounting of all tradable emissions rights and obligations arising under any emission trading schemes – including New Zealand, Australia, and existing and proposed schemes in the United States - thus reflecting the international growth of emissions trading since the turn of the century.

In this section we consider in more detail precisely what work is being done by accountants – as experts, through discourse and techniques - to position themselves as managers of climate change, and to make carbon understandable to the profession. We explore how accountants have continued a process of defining and framing climate change, and the work the professional accounting bodies in particular are doing in positioning themselves as pivotal to delivering solutions to the problem. We then turn to consider the crucial next step in governmentality accounts of change: development of ‘technologies’, the techniques and practices promoted by accountants as suitable for managing climate change. It is this process of ‘rendering technical’ climate change that characterises Stage Two, and denotes a shift in the depth of seriousness of climate change to the profession.

Table One summarises a range of climate change initiatives (reports, programmes, activities) undertaken by international professional accounting bodies since 2005. As discussed, the theme of the role of professional accounting organisations’ growing engagement in climate change emerged out of research interviews originally more directly focused on the financial accounting of carbon. This emergent finding was further investigated through desk-based discourse analysis of key reports, targeted interviews with accounting professional organisations, plus participant observation by Lovell in her role as a member of the Climate Disclosure Standards Board (CDSB) Technical Working Group.

Name of organisation	Membership details, remit & geographical coverage	Examples of climate change activities – 2005+ (in date order)
<p>ACCA – the Association of Chartered Certified Accountants</p>	<p>Nearly 500,000 members and students globally, with an international network of 82 offices and centres. Originally formed in 1904 (as the London Association of Accountants), became known as ACCA in 1996.</p> <p>ACCA members are known as Chartered Certified Accountants, and are employed in industry, financial services, the public sector, or in public practice.</p>	<p>ACCA policy paper - <i>Going Concern? A Sustainability Agenda for Action</i>. August 2008. Section 3 devoted to climate change, entitled “Climate Change: how the accounting profession should respond” http://www.accaglobal.com/pdfs/technical/tech-gc-001.pdf</p> <p>Accounting and Climate Change Quarterly newsletter (April 2009+) provides information on: ACCA's own climate change work, media coverage; significant policy developments; conferences and training events etc. http://www.accaglobal.com/general/activities/subjects/climate/newsletter/</p> <p>The Carbon Jigsaw (2009+) – a web-based initiative to provide ACCA members with appropriate tools and information on climate change. Several short briefing papers published in 2009 on topics such as: Carbon Measurement, Reporting and Assurance (KPMG), and Carbon Law (Baker and Mackenzie) http://www.accaglobal.com/general/activities/subjects/climate/projects/carbon</p> <p>COP-15 position paper (Aug 2009) statement outlining recommended action at the international climate change conference in Copenhagen. http://www.accaglobal.com/pubs/about/public_affairs/unit/global_briefings/cop15_aug09.pdf</p> <p>Carbon Accountancy Futures (forthcoming 2010). The themes (currently under development) are: Access to finance, Carbon Accounting, Futures for audit and Narrative reporting. ACCA will fund research and encourage external partnering to do work under these themes. http://www.accaglobal.com/general/activities/subjects/climate/projects/accountancy-future</p>
<p>ICAEW – the Institute of Chartered Accountants in England and Wales</p>	<p>ICAEW is the largest professional accountancy body in Europe with 132,000 members and 9,000 students. Over 15,000 members live and work outside the UK and its activities span 165 countries. ICAEW was incorporated by Royal Charter in May 1880. Members of the Institute are entitled to the description ‘chartered accountant’</p>	<p>Sustainable Business Thought Leadership Programme (2008+) aims “...to explore the importance of information in decision making”, with a strong emphasis on climate change.</p> <p>Business Sustainability e-learning programme (2009) mainly focused on Corporate Social Responsibility (CSR), but with some climate change content.</p> <p>Environmental Issues and Annual Financial Reporting (2009) joint report with the UK Environment Agency; wide-ranging and comprehensive with particular attention given to the requirements of EU</p>

	and to the designatory letters ACA or FCA.	Directives, and with detailed advice and guidance for companies, financial report users, and auditors.
CIMA – Chartered Institute of Management Accountants	CIMA is the world’s largest professional body of management accountants (management accounting combines finance and management with more general business techniques). CIMA is mainly UK based (with head office in London), but also has offices in Australia, China, Hong Kong, India, Ireland, Malaysia, Pakistan, Singapore, South Africa, and Sri Lanka. CIMA was founded in 1919 and has approximately 70,000 members.	<p>Report <i>Emissions Trading and the Management Accountant</i>(2006) http://www1.cimaglobal.com/cps/rde/xbcr/SID-0AE7C4D1-81372D1C/live/tech_resrep_emissions_trading_and_the_management_accountant_2006.pdf</p> <p>CIMA Position paper ‘<i>Climate Change calls for Strategic Change</i>’ (March 2008) http://www2.cimaglobal.com/cps/rde/xbcr/SID-0A82C289-1DBAF8FB/live/tech_dispap_Sustainability_climate_change_Mar_2008.pdf</p> <p>Position Paper ‘<i>All Change</i>’ (June 2008) Editorial examining role of management accountants in strategic management of climate change, published in CIMA’s <i>Excellence in Leadership</i> report (2008) http://www.excellence-leadership.com/editorial/june08/CIM006-allchange.pdf</p>
CICA - The Canadian Institute of Chartered Accountants	The CICA has a link with the Bermuda Institutes/Ordre of Chartered Accountants, and together they have approximately 75,000 members and 12,000 students. The CICA has been active on sustainability issues for the last 20 years, and was a founding member of the Global Reporting Initiative.	<p>Report <i>Building a Better MD&A (Management Discussion & Analysis): Climate Change Disclosures</i> (2008). A report with detailed advice to companies about what sort of climate change information companies should be reporting on, with close attention to investor requirements. It builds on a general document CICA (2004) <i>Management’s Discussion and Analysis</i>, and was published in response to increasing demand for information about climate change (see Preface). http://www.cica.ca/research-and-guidance/mda-and-business-reporting/mda-publications/item12846.pdf</p> <p>Report <i>Climate Change Briefing: Questions for Directors to Ask</i> (2009). An in-depth report outlining the possible implications of climate change for businesses, and encouraging company directors to think strategically about their response to the problem. http://www.rmgbc.ca/abstracts-directors-series/item28951.pdf</p>
IAASB - International Auditing and Assurance Standards Board	The International Auditing and Assurance Standards Board (IAASB) is a standard-setting body designated by, and operating independently under the auspices of, the International Federation of Accountants (IFAC). International Standards on Auditing (ISAs) are used by over 100 countries worldwide.	Consultation Paper - Assurance on a Greenhouse Gas Statement (October 2009). Detailed consultation paper published with IFAC to seek views from practitioners and other stakeholders in order to develop an International Standard on Assurance Engagements (ISAE) for greenhouse gases. The IAASB intends to use the feedback from the consultation to develop an Exposure Draft of a proposed new assurance standard on GHG statements for release in 2010. http://www.ifac.org

Table One – Summary of international accountancy and auditing professional organisations’ climate change activities, 2005+

As the data in Table One demonstrates, over the last few years there has emerged considerable interest in climate change amongst international accounting and auditing professional bodies. A range of reports have been published, such as the recent Association of Chartered Certified Accountants (ACCA) position paper on the 2009 United Nations negotiations on climate change and the International Auditing and Assurance Standards Board Consultation Paper (October 2009). In these reports and briefings climate change has been framed by accountants quite narrowly as a corporate problem – as something that the business community is responding to and will increasingly need to respond to – with the help of accountants, as the outline to ACCA’s recent online ‘Carbon Jigsaw’ initiative explains:

“Increasingly, ACCA members will need to understand what is happening globally in order to report emissions, monitor reductions or increases, and purchase or sell carbon offsets under emerging trading regimes. ACCA members will need to understand how the carbon crisis will affect businesses, and whether there are investment opportunities to exploit.”

(ACCA 2009).

Notably, there are seen to be some positive aspects to dealing with climate change, such as the ‘investment opportunities’ mentioned above. In this framing of climate change it is mainly private actors, including accountants, who are positioned as influential in initiating and managing change, as an extract from ACCA’s material introducing the Carbon Jigsaw again clearly demonstrates:

“At some stage in the next 12 months... every major business can expect to be asked about its greenhouse gas emissions and its mitigation strategy. Those asking such questions will be a variety of global and influential organisations such as the Carbon Disclosure Project, the

Dow Jones Indices or FTSE Group, as well as governments and investors. *To respond to such questions and to demonstrate action, businesses will need to involve accountants. In the future, it will be the role of accountants to represent carbon-related actions in financial accounting terms in the annual reporting process.*”

(ACCA 2009).

Note that the onus here is put on accountants to answer these questions, ie to develop the methods and techniques to do so in the context of considerable ambiguity amongst the business community about how precisely to respond to climate change, a point returned to below.

Further, the profession has also sought to reassure others that accountants have successfully responded to similar types of problem in the past, and is therefore well-equipped to deal with climate change:

“... accountants are familiar with sustainability as a concept via a long history of dealing with capital maintenance. In wrestling with the concepts of income and capital, accountants have long been thinking in terms relevant to sustainability.”

(ICAEW 2004: 11)

and;

“The human race is at an important crossroad and will require all its famed ingenuity to continue to develop. Human history shows our ability to rise to challenges: think, for example of the programme of public health infrastructure in Victorian Britain, or the digital revolution

of the last three decades. *The accounting profession must play its part in correcting the greatest and widest-ranging market failure ever seen.*”

(ACCA 2008: 8, emphasis added).

It is perhaps questionable whether the issues and problems listed here bear any real comparison with climate change (the digital revolution, for example) and this highlights again the rather positive spin put on climate change governance: the accountancy profession in the main conceives of climate change as something solvable, albeit with careful application of existing (accounting) skills, knowledge and expertise.

It is not just financial accountants but management accountants too who have begun to engage with climate change. In 2006 the Chartered Institute for Management Accountants (CIMA) published a hard-hitting report - *Emissions Trading and the Management Accountant* – framing the role of management accountants as vital in delivering climate change solutions:

“... the European Union Emissions Trading Scheme (EU ETS) and the Kyoto Protocol are likely to demand new organisational competences to which management accountants will need to respond... *Management accountants will need to learn a new language associated with these initiatives if they are to be able to work alongside technical experts and to contribute to debates which are already affecting corporate agendas.*”

(CIMA 2006: 3, emphasis added)

CIMA’s report is notable in acknowledging the ‘new language’ of climate change that has emerged in the accountancy profession. The quotation above hints too at the objective of CIMA to stake a claim to the professional knowledge and expertise that accountants can

bring to climate change, but also suggests a sense of professional unease: that management accountants are not up to speed on the issue of climate change. Further, in noting the importance of working ‘alongside technical experts’ the powerful position of financial accountants, with their skills and expertise to develop technical practices to respond to climate change, is emphasised. There has been a fast pace of change in recognition of the problem of climate change and its implications, and an evident desire on the part of the accountancy profession to ‘catch up’. A number of accountancy professional bodies see an opportunity for accountants to take the lead in climate change, as demonstrated by these reports and via interviews. For instance, as the Secretariat to an international network of accounting organisations working on climate change explained:

“With climate change related disclosure being such a new discipline, that hasn’t really yet established its own body of professionals, there’s a rather fragmented approach within organisations where, you know, does it belong to the procurement department, the premises department, CSR [Corporate Social Responsibility]? It doesn’t belong anywhere.”

(Interview, October 2009);

thereby identifying a ‘gap’ in the professional governance (or ‘ownership’) of climate change, which accountants are viewed as the most appropriate or ‘logical’ profession to fill. These sentiments are echoed by the director of a charitable organisation set up to encourage accountants to be more involved in sustainability issues (including climate change), as she explains the reasons behind its establishment in 2006:

“Certainly the overriding aim in creating [the organisation] was twofold. Firstly recognition for sustainable development to be realised. Organisations really needed to be embedding it

into their DNA, so I guess the values driven side of things. But a part of that is *what kinds of tools and processes are needed to really support that embedding process*. And just thinking from the accounting community perspective, what was their role? How they could play a part in creating the right kind of systems that would really support sustainable outcomes” (Interview, October 2009).

Again, the references to identifying and developing appropriate ‘tools’ and ‘processes’ are striking: climate change has been successfully framed as a problem by the profession, now the focus is on developing new and modifying existing accounting practices in order to respond to it.

There are a number of international accounting and climate change networks emerging which might be viewed as epistemic communities, with members connected through their accounting expertise and shared professional culture and values. One such example is the Climate Disclosure Standards Board (CDSB), formed in 2007, whose Technical Working Group comprises accountants and representatives from the major international accountancy professional bodies (ACCA, ICAEW, CICA etc). The CDSB has the objective of developing a global framework for corporate reporting on climate change, and is pressing for climate change reporting to be integrated into mainstream financial reports (CDSB 2009). Another is the Prince’s Accounting for Sustainability Forum, an international network of accounting organisations, albeit with a broader sustainability agenda (A4S 2009). Additional new coalitions and alliances may yet emerge, as the accountancy profession seeks external links with other professions and disciplines. The situation remains in a state of flux.

As noted, critical to the acceptability and uptake of a particular discursive framing of a problem are the techniques, practices and ‘technologies’ that brought to bear on the problem. In other words, it is not just the discourse-society relationship that is important, but also the way accounting techniques and practices – modes of calculation – have shaped discourse, and profoundly influenced the accounting profession response. What distinguishes Stage Two from Stage One of the accounting profession’s response to climate change is that in Stage Two a range of accounting ‘technologies’ have begun to be associated with the prevalent accounting definition of climate change, and, as governmentality and epistemic community scholars would both argue, the response of the accountancy profession to climate change can only be fully understood by looking at discourse and technologies in tandem.

Accountants are seen as being in an influential position of authority within organisations, but also as having a very specific set of skills – numeracy, attention to detail, logic, understanding of assets and liabilities, corporate risks etc. - through which to manage climate change (in keeping with the narrow definition of the problem). Interestingly, in the main responding to climate change is seen to involve the application of existing accountancy skills, rather than requiring the development of new ones, as illustrated in a CIMA Editorial on climate change:

“Although significant change is needed [in response to climate change], these actions should ideally build on current business activities and skill sets. It is a matter of broadening the organisational mind set to encompass climate change issues, *applying existing skills and frameworks to address new challenges.*”

(Doody 2008: 9, emphasis added)

There is also a significant amount of ongoing activity and discussion about how to modify existing accounting software (which is critical to the day-to-day production of financial accounts – see Hatherly et al 2008) in order to incorporate relevant climate change information, as one interviewee explained:

“There is such a huge stakeholder group with interest here that, whatever information is put into the public domain, it has to be useable. This then raises other questions on standardisation of how do you make that information useable? What sort of technology is required? Again, AICPA [American Institute of Chartered Public Accountants] has written quite extensively on use of XBRL.^v And I know GRI [the Global Reporting Initiative] is looking at it. *Not only do you have to have the standards, you have to have the output, the presentation to translate that information into something that is actually useable.*”

(Interview, Secretariat to an international network of accounting organisations working on climate change, October 2009).

Accounting professional organisations view themselves as key players in identifying and modifying existing accounting technologies and practices in response to climate change, with the objective of making climate change understandable and relevant to their members.

Summary and Conclusions

In this paper we have analysed a number of professional accountancy organisation reports and drawn on interviews to illustrate how climate change has been framed as a particular type of problem by the accounting profession, with strong relevance for their skills and expertise. To date the dominant framing of the problem (and solutions) has been narrow: climate change is seen as a corporate problem, which is solvable with careful application of existing

accounting approaches and techniques. We have shown how the accounting profession was initially rather slow to respond to the problem of climate change, with no significant engagement until the mid-2000s (albeit with a few notable exceptions – e.g. CICA and ICAEW). But the profession is now attempting, through the work of a number of accounting professional bodies, to rectify the situation and ‘catch up’, positioning accountants as relevant, indeed crucial, actors in governing carbon.

We have explored how the problem of climate change has been moulded to fit within existing accounting discourse and practices, and in this sense climate change is not a distinctive problem: the new carbon economy represents ‘business as usual’ for accountants. Further, we question to what extent the early actions taken by accounting organisations were strategic and deliberate, in the sense highlighted by governmentality perspectives, where discourse and practices are viewed as having a particular agenda, with knowing actors driving them. We suggest what occurred in Stage One around the turn of the century maybe more akin to ‘bricolage’ – a more muddled and haphazard process. The significance of Stage Two (2005+), therefore, is the beginning of a more strategic engagement of the accounting profession with climate change, with signs of increasingly deliberate and careful positioning of accountancy skills and techniques as relevant. There is as of yet no clear epistemic community of accountants working on climate change, with the possible exception of the early group of experts working on emissions trading financial accounting issues (Stage One), but whose wider policy influence was limited (Casamento 2005; MacKenzie 2008). But there are signs that new accounting coalitions and alliances not solely focused on financial accounting may now be emerging, akin to prototype epistemic communities. For example, the Climate Disclosure Standards Board – with its Technical Working Group mostly comprising accountants – is in the process of developing an international voluntary carbon

reporting standard, and further unexpected coalitions and alliances may result, in what is a new policy ‘space’ for accountants generated by climate change.

We now turn to consider how this case of accountancy professional organisations fits with wider debates about carbon markets. Much of the criticism of carbon markets is not about the idea of putting a monetary value on carbon per se, but about whether it is better to control greenhouse gas emissions through setting emission standards (and then allowing trading, so-called ‘cap and trade’), or by charging the appropriate pollution taxes (Hepburn 2006). Weitzmann in his much-cited 1974 article ‘Prices vs. Quantities’ makes a compelling economic case for pollution taxes (Weitzmann 1974). But as we have argued elsewhere (MacKenzie 2007), the emergence of the cap and trade EU ETS was the only possible political option at the time in Europe. The key issue for this paper is that any economic mechanism for mitigating climate change (whether it be cap and trade or a tax) needs to pass through the filter of accountancy, and carbon accountancy therefore deserves close attention, both in policy and academic spheres.

We stress too that it is important to differentiate between different types of carbon market, something that critiques of market-based solutions to climate change often fail to do (FoE 2009; Smith 2007). Accounting climate change debates emerged, as we have shown, from the initial engagement of accountants with the EU ETS, and it is the EU ETS that has continued to influence the accounting profession as they have become progressively more engaged. Despite recent upsets (VAT carousel fraud, the ‘recycling’ of CERs), the EU ETS appears to be working relatively well. We would suggest, however, that there is a much more compelling case for radical reform and overhaul of the other major global carbon market, the United Nations Clean Development Mechanism (CDM), mostly because of the damaging

(political and atmospheric) inclusion of the industrial gas HFC-23 in the CDM, leading to perverse outcomes (Warra 2007).

The IFRIC-3 launch and subsequent withdrawal (Stage One) highlights how there is likely to be conflict in these technical accounting discussions when corporations feel strongly about an issue, typically when it affects their profits. It is interesting that with the relaunch of the IASB-FASB Emission Trading Schemes project conflict seems less evident. Indeed, recent interviews with accountants at major EU ETS companies have suggested a readiness for clear guidance from the standard setters (along the lines of IFRIC-3) because of a strong desire to make carbon accounting easier (reducing choice, thereby eliminating the current necessity of following a range of different national, international and corporate guidelines), and so that companies can be fairly compared with their competitors, creating a level playing field.

This situation in financial carbon accounting, where conflict appears to have eased, points to the possible benefits of continuing voluntary measures in the carbon disclosure (non-financial) aspects of carbon accounting. Conflict has not been evident there yet: what the CDSB and their counterparts are proposing is voluntary rather than mandatory corporate reporting. The accounting standard setters (IASB and FASB) will perhaps do well to take heed from the case of IFRIC-3 as to the dangers of rushing in too soon with mandatory guidance: ideally a transition to mandatory rules and practices will come at a point when corporations feel ready to welcome this clarity.

Acknowledgements

The authors would like to thank the Nuffield Foundation for supporting this research through an Early Career New Development Fellowship (2008-2011) 'Fungible Carbon' held jointly by Dr Lovell and Professor MacKenzie. We would also like to thank all those who kindly agreed to be interviewed as part of this research for their time and valuable insights.

Dr Lovell would also like to thank the Association of Certified Chartered Accountants (ACCA) and the International Emissions Trading Association (IETA) for jointly funding research into the accounting of emission allowances in the EU ETS, and her colleagues on this project – Professor Jan Bebbington, Dr Carlos Larringa, and Dr Thereza Aguiar – for all their valuable input. She would also like to thank members of the CDSB Technical Working Group, in particular the Secretariat Lois Guthrie.

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ⁱ Coding of interview transcripts and documents has been done in an inductive way, following initial leads arising from the data, and refining these over time into themes. All transcripts and documents have been analysed using the qualitative software 'Atlas', which facilitates this type of 'bottom up' coding. Examples of codes include: 'expert knowledge', 'carbon managed by accountants', 'carbon as difficult to classify', and 'uncertainty and discretion'.

ⁱⁱ The research project is called *Fungible Carbon*, and is a three-year Nuffield Foundation New Career Development Fellowship (2008-11) – held jointly by Dr Heather Lovell and Professor Donald MacKenzie - investigating the tensions in developing a carbon commodity.

ⁱⁱⁱ Conducted jointly with Professor Jan Bebbington (St Andrews University), Dr Carlos Larringa (University of Burgos), and Dr Thereza Aguiar.

^{iv} IFRIC-3 recommended that assets (in this instance the EU ETS allowances, EUAs) should be treated independently to the liabilities (i.e. obligations under the EU ETS). Accordingly, 'netting off' of carbon assets and liabilities was not permitted. More specifically, IFRIC-3 gave guidance to the effect that emission allowances are intangible assets (whether allocated for free by government or purchased) and therefore fall under International Accounting Standard (IAS) 38. Further, allowances that are allocated for less than fair value should be measured initially at their fair value (i.e. market price), and the difference between the amount paid and fair value should be classified as a government grant and therefore accounted for under IAS 20 (Government Grants and Disclosure of Government Assistance). This 'grant' should initially be recognised as deferred income in the balance sheet, and then subsequently recognised as income over the compliance period. In terms of liabilities, it was judged that a liability should be recognised as emissions are made, and that it should be a provision, falling under IAS 37 (Provisions, Contingent Liabilities and Contingent Assets). The liability should be measured at fair value, i.e. the best estimate of the expenditure required to settle the present obligation at the balance sheet date.

^v XBRL (extensible Business Reporting Language) is a formal data standard designed for application to financial accounting.