Institution: The University of Edinburgh

Unit of Assessment: 19 Business and Management Studies

Title of case study: Improving carbon accounting to drive better corporate carbon performance

1. Summary of the impact

Research conducted at the Business School's Centre for Business and Climate Change since 2008 has:

- Shaped the emerging understanding and practice of carbon accounting and carbon performance measurement internationally;
- Influenced the development of carbon indexes and benchmarks, and motivated their use by some of the world's largest index providers, investors and companies to measure and drive improvements in corporate carbon management; and
- Helped governments, businesses and investors change the ways they allocate funds, supporting a shift towards lower-carbon alternatives.

This impact has been of international significance, reaching international standard setters, investors, corporations and other stakeholders. For example, 26 multinational companies paid to participate in carbon benchmarks conducted by a spin-out company created by the Centre and based on methods it developed. 90 global investors with US$7tr of assets have launched a shareholder action initiative inspired by the Centre's research. The world's leading carbon accounting standards body has adopted a conceptual framework developed by the Centre.

2. Underpinning research

The underpinning research was conducted by former practitioners Craig Mackenzie (University of Edinburgh, 2008-current) and Francisco Ascui (University of Edinburgh, 2009-current). The motivating research questions were, broadly:

- What is carbon accounting, how is it done and who is involved?
- How can the climate change performance of firms be measured and compared?
- Do sustainability benchmarks and indices help drive performance improvements by companies? And do they provide an effective basis for investor engagement on these topics?

The research has involved systematic literature review and documentary analysis, expert interviews, stakeholder workshops, quantitative analysis of emissions and performance data, and innovative statistical analysis of the impacts on benchmarking using natural experiments. The research was in part carried out with the support of funding from the ESRC and a number of companies (Mackenzie) and NERC, UKERC and Scottish Power (Ascui). In addition to the two named researchers, research collaborators include Dr Heather Lovell (School of Geosciences, UoE), Ms Tatiana Rodionova and Professor Bill Rees (UoE Business School) and a team of six researchers working for Mackenzie, via ENDS Carbon, a University spin-out company created for the purpose of carrying out carbon benchmarks. The carbon accounting research all took place between 2009 and 2013. The key elements of the benchmarking research took place between 2008 and 2013.

Key insights and findings from the research include the following primary contributions from Ascui and Mackenzie:

- That there is no consistent understanding of what carbon accounting is. This leads to diversity of practices, inconsistency and incomparability of carbon related information [3.1];
- That there are at least five major "frames" of carbon accounting, associated with different communities of practice [3.1, 3.2];
- Publication of one of the first definitions of carbon accounting [3.1];

- Development of new methods for benchmarking corporate carbon performance through carbon benchmarking and indices [3.5];
- Statistically rigorous empirical demonstration that sustainability performance indices are a powerful way to drive improvements in environmental management by large multinational corporations [3.3].

3. References to the research

Research Grants:

- ESRC Centre for Climate Change Economics and Policy (Mackenzie, Co-I, £150k out of £5m, 2009 to 2014)
- NERC Knowledge Exchange project, 'Forest-Finance risk network: towards a stable investment environment for forestry' (Ascui, Co-I, £1.6k out of £99k, 2011-2012)
- UKERC/Scottish Power project, 'Carbon Capture and Storage: Realising the Potential' (Ascui, Co-I, £2.6k out of £425k, 2010-2012)
- Stanislaw Research Award (Ascui, PI, US$10k, 2009-2010).

3.1 Ascui, F and Lovell, H (2011) 'As frames collide: Making sense of carbon accounting', *Accounting, Auditing and Accountability Journal*, 24 (8): 978-999 (DOI: 10.1108/09513571111184724)
3.2 Ascui, F and Lovell, H (2012) 'Carbon accounting and the construction of competence', *Journal of Cleaner Production*, 36: 48-59 (DOI: 10.1016/j.jclepro.2011.12.015)
3.3 Mackenzie, C, Rees, W and Rodionova, T (2013) 'Do Responsible Investment Indices Improve Corporate Social Responsibility? FTSE4Good's Impact on Environmental Management, *Corporate Governance: An International Review*, 21 (5): 495-512 (DOI: 10.1111/corg.12039)
3.4 Mackenzie, C. and Ascui, F. (2009) *Investor Leadership on Climate Change: An analysis of the investment community's role on climate change, and snapshot of recent investor activity.* UN Global Compact (UN document http://tinyurl.com/qbo94j7).
3.5 Mackenzie, C., Hikisch, D. and Ivory, S. (2009) *UK Supermarkets: 2009 benchmark report.* ENDS Carbon (Report http://tinyurl.com/pzdjyae).

4. Details of the impact

Impact has been achieved through the Centre's high level of engagement with key policy-makers, index bodies, companies and investors. Additionally, opportunities for impact have been generated by the fact that carbon accounting and performance measurement is such a new field, with massive financial implications (for example the International Energy Agency estimates that responding to climate change will require approximately US$1tr/year of additional investment).

1. **Carbon Accounting.** Recognising that carbon accounting is framed differently by different communities of practice has helped to enable collaboration between communities to propose more effective solutions to carbon accounting problems. The concept of five key frames of carbon accounting (Ascui and Lovell, 2011) was enthusiastically endorsed by the Executive Director of the Climate Disclosure Standards Board (CDSB) in 2011, and now features in the opening slide of the standard CDSB presentation template [5.1]. For example, it has been used to introduce debate at a meeting of the All-Party Parliamentary Group on Climate Change in November 2011 on the topic of "Consistency in Climate Change Disclosure for Better Decision Making" [5.2].

In January 2012, the Executive Director of the CDSB wrote to Ascui providing feedback on a draft of Ascui and Lovell (2012), noting the CDSB's interest (as suggested in the paper) of moving from climate risk reporting into carbon financial accounting [5.8]. In January 2013, Lovell, Ascui and other academics, with the CDSB and the International Emissions Trading Association (IETA), hosted a two-day joint academic-practitioner workshop at the UoE Business School, aimed at helping to resolve one of the problems identified in Ascui and Lovell (2011), namely that there is currently no international standard for carbon financial accounting. The workshop included representatives from the International Accounting Standards Board, European Commission and the Institute of Chartered Accountants of Scotland, all of whom expressed strong interest in the research presented. A key outcome from the workshop was a 7-page submission, by the organising academics, CDSB and IETA, to a consultation by the European Financial Reporting Advisory Group (EFRAG) on a possible new international standard for carbon financial accounting [5.3].

2. **Carbon benchmarking.** Mackenzie's research has built the evidence base that sustainability benchmarking can drive corporate performance improvements. This research has been greatly strengthened during the period Mackenzie has worked at the Centre, both methodologically (Mackenzie, Rees and Rodionova, 2013) and in terms of impact. A key impact is carbon benchmarks for supermarkets and mobile telecoms, funded by major companies in the respective sectors (see above), leading in 2009 to the creation of ENDS Carbon, a University spinout company backed by £300k of investment from Haymarket plc. ENDS Carbon has now benchmarked over 1,000 companies for 20 corporate clients; a market-leading trade publication (Brand Republic); and FTSE Group, the international index provider [5.4].

3. **Benchmark-driven investor activism.** Mackenzie's work demonstrating that performance ratings and investment indices influence corporate environmental management (published in Mackenzie, Rodionova and Rees, 2013) has directly encouraged their use by investors as the basis for their investor activism. In 2010, the Carbon Disclosure Project, the world's leading initiative encouraging voluntary corporate carbon disclosure, launched the "Carbon Action" initiative, based partly on Mackenzie's benchmarking research [5.5]. The initiative has recruited over 90 global institutional investors with $7tr of assets, and last year engaged with 50 large international companies to reduce carbon emissions.

The Chief Executive of the UN Principles of Responsible Investment (UN PRI), a network of 1,200 investors (with $35tr in assets under management), credits Mackenzie's work as a key inspiration for the PRI's corporate engagement focus. His research has prompted a new PRI initiative testing the effectiveness of shareholder engagement strategies using a randomised trial of engagement with 2,200 companies. According to UN PRI, this work "will allow the PRI Secretariat to more effectively inform the collaborative engagement process in the future." [5.6]. Mackenzie and Rees are involved in the analysis. Mackenzie was also appointed to chair the committee designing the UN PRI's own benchmark for its 1200 investment institution members.

4. **Additional impacts.** In 2009, Mackenzie and Ascui were invited by the UN Global Compact to write an executive briefing paper, in the lead-up to the Copenhagen climate summit, on investor leadership on climate change. Their definition of climate bonds, included in the paper, was adopted by the Climate Bonds Initiative in their briefing papers on the subject [5.7].

Mackenzie and Ascui's research has also informed the Business School's carbon finance executive education programmes delivered to 28 senior decision-makers from 17 countries over 2009 and 2010, and a Foreign and Commonwealth Office funded training programme on carbon policy delivered in 2012 to the largest group of directors from China's National Development and Reform Commission (NDRC) and provincial DRCs ever to travel overseas as a single delegation. NDRC is the most influential government department in China. A final, and more general, indicator of the utility of the research is the fact that large UK and international companies have invested over £500k in its further development and application. This includes £25k from Tesco, Waitrose and Marks and Spencer in 2008, £42k from Vodafone, Deutsche Telecom, Telefonica and France Telecom in 2009-10, £300k from Haymarket in 2009, and £80k from Brand Republic, the UK's leading marketing website, in 2010.

5. Sources to corroborate the impact

5.1. Climate Disclosure Standards Board – illustrating the standard presentation template used by Ascui and Lovell to incorporate the concept of five frames of carbon accounting (2011) (http://tinyurl.com/pbaa8me)
5.2. Agenda, All-Party Parliamentary Group on Climate Change meeting, November 2011 (corroborating the event at which above presentation [5.1] was used) (http://goo.gl/aQdZd http://tinyurl.com/pnsz7r4)
5.3. CDSB/IETA response to EFRAG consultation, 2 May 2013 (http://goo.gl/6ts37U or http://tinyurl.com/qdldb4o or http://tinyurl.com/qzgbs3a) (illustrating Ascui as a contributor)
5.4. ENDS Carbon (now ENDS Analytics) website: http://goo.gl/iJEF1h (corroborating claims about carbon benchmarking of companies)
5.5. Carbon Action Initiative: http://goo.gl/KhiBw or http://tinyurl.com/ndn7trm (demonstrating investor action to encourage carbon reductions)
5.6. UN PRI intranet article, 27 June 2012 http://tinyurl.com/nu74asu (corroborating Mackenzie's influence on PRI investor engagement)
5.7. Climate Bonds Initiative – refers to Mackenzie and Ascui (2009) in defining climate bonds: http://goo.gl/r5O8t4 or http://tinyurl.com/poqn6j9 .

Individual users/beneficiaries who could be contacted by the REF team to corroborate claims:

5.8. Executive Director, Climate Disclosure Standards Board – (can corroborate claims about impact of the research on CDSB work on Carbon Accounting in section 4.1 – factual statement available from HEI)
5.9. Chair, Carbon Disclosure Project (can corroborate claims about impact of the research on CDP's "Carbon Action" initiative in section 4.3 – contact details available from HEI)
5.10. Chief Executive of the UN Principles of Responsible Investment (PRI) (can corroborate claims about impacts of the research on PRI's corporate engagement work in section 4.3 – contact details available from HEI)