Is there room at the bottom for CSR? Nanotechnology and corporate social responsibility in the UK

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Abstract

This paper analyses the role which corporate social responsibility (CSR) currently plays in influencing the activities of companies involved in the nanotechnologies industry in the UK, and how CSR may contribute to building the material and social sustainability of the industry as part of a regime of adaptive and anticipatory governance. The paper employs a conceptual framework in which a model of continuous improvement and a classification of "modes" of CSR ("do no harm", "positive social force") are used to evaluate the extent to which nanotechnology companies (largely micro companies and SMEs) report on their impact and risk management activities (based on an online survey of 78 companies), and to interpret attitudes towards CSR (drawing on 15 semi-structured interviews with company representatives). It is argued that the general level of CSR reporting is low, although companies themselves often demonstrate awareness of the requirements of a "do no harm" model of CSR. It is suggested that, if CSR is to be positioned as contributing to an adaptive and anticipatory governance framework for nanotechnology in the UK, serious shortcomings and obstacles need to be addressed in order to move closer to the "positive social force" mode of CSR.

Keywords

Uncertainty, risk, nanotechnology, CSR, corporate social responsibility, ELSI.

Introduction

Corporate social responsibility, as a commitment on the part of companies to deal with the wider social impacts of their activities, is often argued to have the potential to contribute both to the environmental and social sustainability of business. Where the businesses in question are involved in emerging technologies, the role of such commitments in both anticipating and managing wider impacts may be particularly important.

Nanoscale science and technology (NST) is increasingly thought of as providing a host of enabling technologies which may lead to radical and even revolutionary innovations across a host of industrial sectors (from healthcare through electronics to sustainable energy) in the near or further future (see e.g. Berube 2006). Much attention has therefore been paid to possible environmental and health risks of NST, but also to concerns over its potential ethical, legal and social impacts – through its possible contributions to, for example, human enhancement, military and surveillance technology (Renn and Roco 2006). Comparatively little work has been done, however, on the extent of efforts within the industry to extend efforts in corporate social performance (CSP) to address emerging concerns surrounding the specific characteristics of nanotechnologies. There remain significant knowledge gaps, for example, about the possible negative health and environmental effects of nanomaterials, mainly due to the potential for nano-engineered substances to manifest properties which are not shared by their bulk equivalents (Uskokovic 2007). Properties such as enhanced reactivity, for which nanomaterials may be prized, may conceivably also lead to negative consequences in cases of accidental release and exposure.

The relationship between CSR and NST, and the nature of attitudes among companies to the role of "beyond compliance" measures have not been entirely unaddressed in scholarship.

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There have been a number of surveys on EHS practices in companies, including some data on life cycle issues such as how often guidance is given by manufacturers to customers on how to dispose of nanomaterials waste safely (Australian National Nanotechnology Strategic Taskforce (ANNST) 2005; Conti et al. 2008; Gamo and Kishimoto 2006). In addition, some research has been done in the EU on the extent of formal practices of risk assessment and management among NST companies which occupy various positions in the supply chain (Helland et al. 2008), and the degree of attention paid in nanomanufacturing to life cycle risk issues (Meyer et al. 2008). No in-depth study has been performed to date, however, which combines an in depth examination of how far CSR in this emerging sector is communicated, with an equally in-depth exploration of how companies themselves see the role of CSR in their industry. We provide below an account of just such a study, undertaken by BRASS in the UK in 2008-09, and funded by the UK Government's Department of the Environment, Food and Rural Affairs (Groves et al. 2009).

Conceptual Framework

The goal was twofold: to look at how voluntary regulation might help address key issues of wider impact surrounding NST as it develops in the UK, and to map current practices, spotting opportunities and obstacles on the way. Various competing understandings of what CSR is exist in the academic literature, as well as in practice, but perhaps the baseline is that CSR implies that a company is a social entity, not just a private one. It therefore has a responsibility to comply with certain norms of behaviour beyond the expectation that it should make profits for its shareholders. A company can have a range of impacts on society through its profit-seeking activities, and therefore it has certain duties to contribute to the management of these impacts.

The existence of such duties does not necessarily mean that companies have, at some level, to be purely altruistic. The idea that business can see CSR as of benefit to itself has been recognised in the literature as a major motivation for pursuing it. Achieving this kind of dynamic approach to CSR, it has been suggested by some researchers, can enable companies to minimise their business risks, may act as a stimulus to innovation, and may also reinforce the company's license to operate, so long as its efforts are viewed as trustworthy. In the context of NST and emerging technologies more broadly, where there may be great uncertainty about the potential for negative downstream impacts – whether these relate to health & environmental risks or to wider socio-economic effects – voluntary regulation may have a particular appeal to industry and to government as a means of making risk governance more adaptive and anticipatory (Lee and Jose 2008). For example the "Nanotechnology Action Plan" (EC 2005) adopted by the European Union stresses the importance of respecting ethical principles and integrating societal considerations into the development of nanotechnologies at every stage of development.

In thinking about what companies actually *do* to fulfil their wider duties, the concept of corporate social performance (CSP) is often used to produce models of how companies might utilize performance standards and develop practices in order to meet societal expectations (Wartick and Cochrane 1986). One might isolate three steps to continuous improvement in the business practices by which these impacts are looked after :

a. ensure compliance with legislation to the fullest extent;
b. proactively manage impacts beyond the level of compliance with existing regulation;
c. ensure that reporting (ideally externally audited) on these activities takes place

One way of thinking normatively about how this might operate (which informs the BRASS study of online CSR reporting in the nanotech industry) is to see a need to develop a dynamic ongoing relationship between high level values, concrete policies and regular reporting on key performance indicators.

To understand CSR it's not enough to talk about process, about continuous improvement. The substantive goal of CSR – what counts as "fulfilling" a company's wider duties – can be defined in two contrasting ways, yielding different directions in which CSR values, policies and reporting can be developed. The recent EU-funded RESPONSE study of firms' attitudes to CSR has identified two main orientations of CSR – towards minimisation of risks both to the business and to society across the spectrum of a company's activities on the one hand – "do no harm", and towards adding added positive dimensions of extra social value to the company's business activities, implying a conception of the company as a positive social force beyond making profits and paying taxes (Pedersen 2010). For example, a drug company might seek to minimize health and environmental risks associated with its products, or it might seek to ensure that its patents are shared with manufacturers in the developing world to manufacture cheaper drugs. One of the key findings of the RESPONSE study was that most firms who engage in CSR see it as a tool to reduce risks and operational cost; only firms with very high social performance rankings – a subset for the most part of the set of all large and multinational firms – think about CSR in terms of enhancing social values beyond those with a financial dimension.

As well as issues of how to improve performance in meeting expectations, and how what counts as fulfilling these expectations is understood, there is one further question: how can we characterize the wider impacts relevant to NST? In the project's literature review, we identified a set of material issues that could be taken to adequately represent the broader impacts of NST innovation on society. These included health and environmental impacts, as well as wider economic, social, legal and ethical dimensions (see Table 1 below).

Table 1: Material CSR Criteria for NST

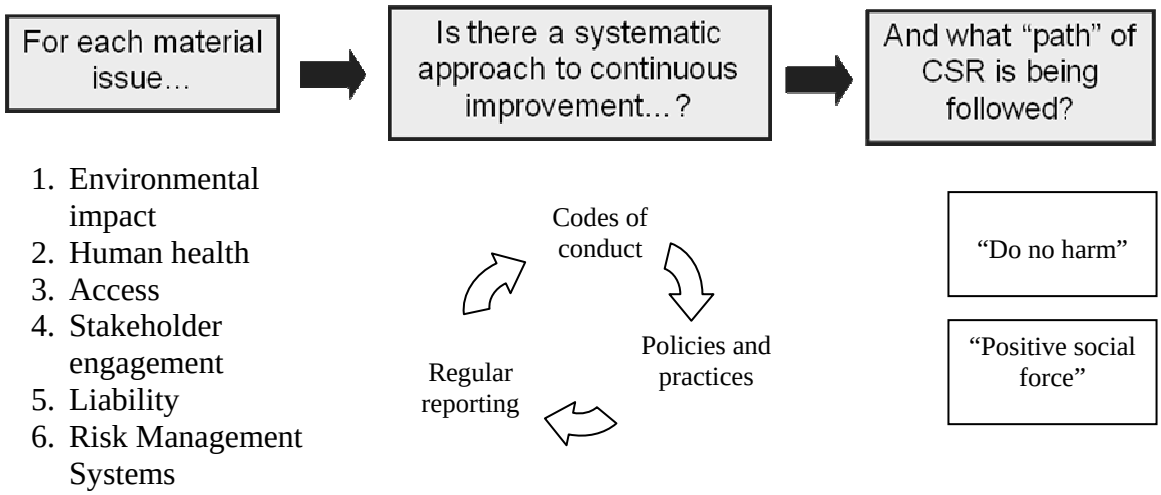
Environmental Impacts	***Access***	***Liability***
▪ Statements around specific environmental impacts of current activities ▪ Definitions and programmes of sustainable development	▪ How far is the management of intellectual property and its benefits to both company and society a concern? ▪ Are upstream commitments made to technology sharing or helping to promote development?	▪ What declarations are made about compliance with legal statutes, regulatory regimes etc.? ▪ Are issues concerning long-term responsibility (orphan products, chronic health impacts etc.) considered?

Human health	*Stakeholder engagement*	*Risk Management*
▪ What measures are undertaken to safeguard the safety of workers and the safety of consumers? ▪ What forms of e.g. toxicological investigation and risk assessment are undertaken?	▪ To what extent are a range of internal and external stakeholders included consulted and/or informed about the company's activities and future plans? ▪ How "upstream"/ "downstream" are these activities? ▪ How far are wider social impacts of technologies considered?	▪ To what extent are systematic life-cycle analysis, product stewardship, precautionary approaches? ▪ Are any nano-specific requirement of risk management systems explicitly discussed?

These were then used as a focus for our investigation, which comprised two main phases: an online survey of reporting on CSP by UK-based companies engaged in NST, and a series of semi-structured interviews with senior representatives of such companies to explore attitudes and practices in depth.

The conceptual framework outlined above – performance, substantive goals, material criteria – yields an analytical model for looking at CSR in the NST industry with three components (see Figure 1 below). For each company, we sought to examine whether, for each material issue, a systematic approach to continuous improvement in CSP existed, and what model of CSR ("do no harm" or "positive social force") was being followed. It is arguably the case that a positive social force model of CSR would provide a more adequate basis for managing the impacts included under criteria such as "access", "stakeholder engagement" and "risk management".

Figure 1: A three-component analytical model of CSR in the UK NST industry



Overview of results

Online survey of CSR documents

Our sample of online documents concerning CSR issues covered 78 companies of all sizes and from across many nanotech industry sectors. At the time of our study, the websites of 43 featured published documents, with a total of 68 documents being published across all these

websites. The documents with which we were concerned were classified into three varieties, corresponding roughly to the three components of continuous improvement in corporate social performance shown in

Figure 1 above:

- Codes of conduct (high level normative commitments, value-based)
- Policy statements (translate codes of conduct into practical action, in some cases including performance targets)
- Annual reports (designed to measure performance targets).

A quantitative content analysis of these documents was carried out. The unit of analysis for the study was explicitly taken to be individual sentences within documents, as sentences typically form the unit of analysis for studies of CSR statements even when this is not explicitly stated (Tilt 2001, 196). Declarative statements containing information either about general commitments, specific policies or quantifiable goals and measures of progress were counted for each of our six material criteria (see Table 2 below). The classification of these statements was further broken down to indicate whether they applied specifically and explicitly to NST-related activities or were more general in scope, and whether they applied mainly to the company on whose behalf the statement was made, or whether the information provided concerned the supply chain with which the company does business. Statements which referred to quantifiable measures of progress were ignored if they were merely historical (i.e. if they referred only to a point in the past and were not involved in making a comparison with present activities or future targets).

Table 2: Examples of Declarative CSR Statements

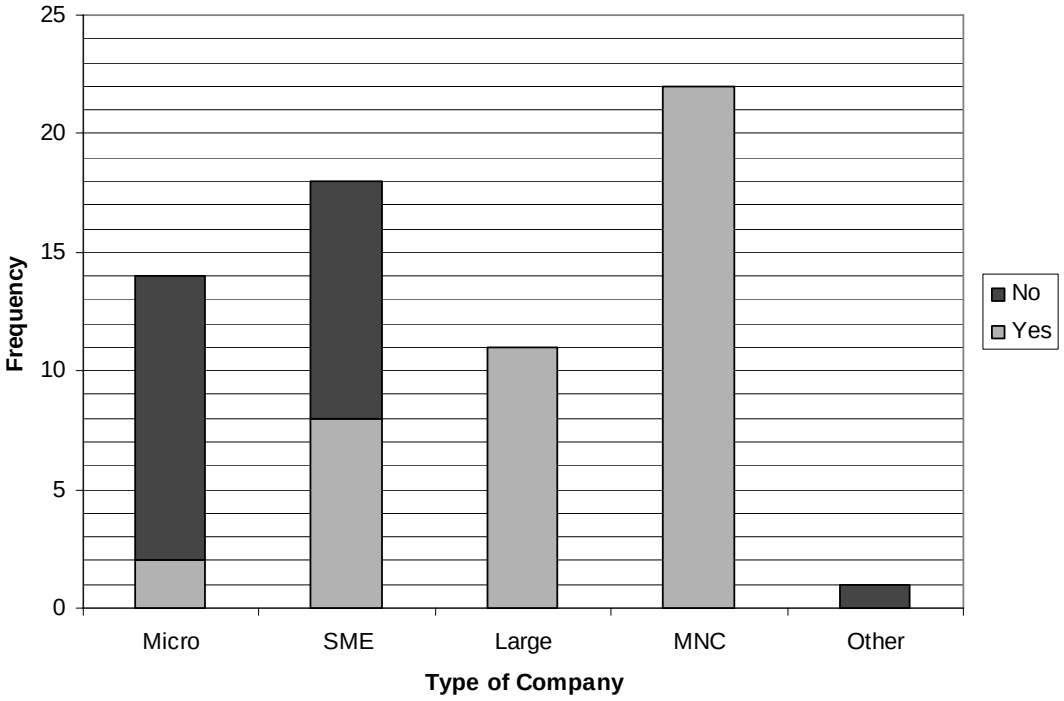
Examples of *general* declarative CSR statements	"We support efforts to improve access to medicines around the world, in both developing and developed countries." (*Access*) "We are committed to reducing our impact on climate change." (*Environmental Impacts*)
Examples of *specific* declarative CSR statements	"To help us better understand patient needs we have set up advisory boards in the US and Europe with representatives from a wide range of patient groups." (*Social Acceptance and Understanding*)
Examples of *quantified* declarative CSR statements	"We set new targets to reduce our climate change impact (CO_2 equivalent emissions) and energy use in operations, and transport from 2006 levels by 20 per cent per unit of sales (based on a constant exchange rate) by 2010 and by 45 per cent by 2015." (*Environmental Impacts*)

Taken together, frequency statistics for these three categories of statement have been used to provide "profiles" for different categories of company across the various material CSR

concerns. We report below on some of these profiles for several key CSR criteria, as detailed in our final report.

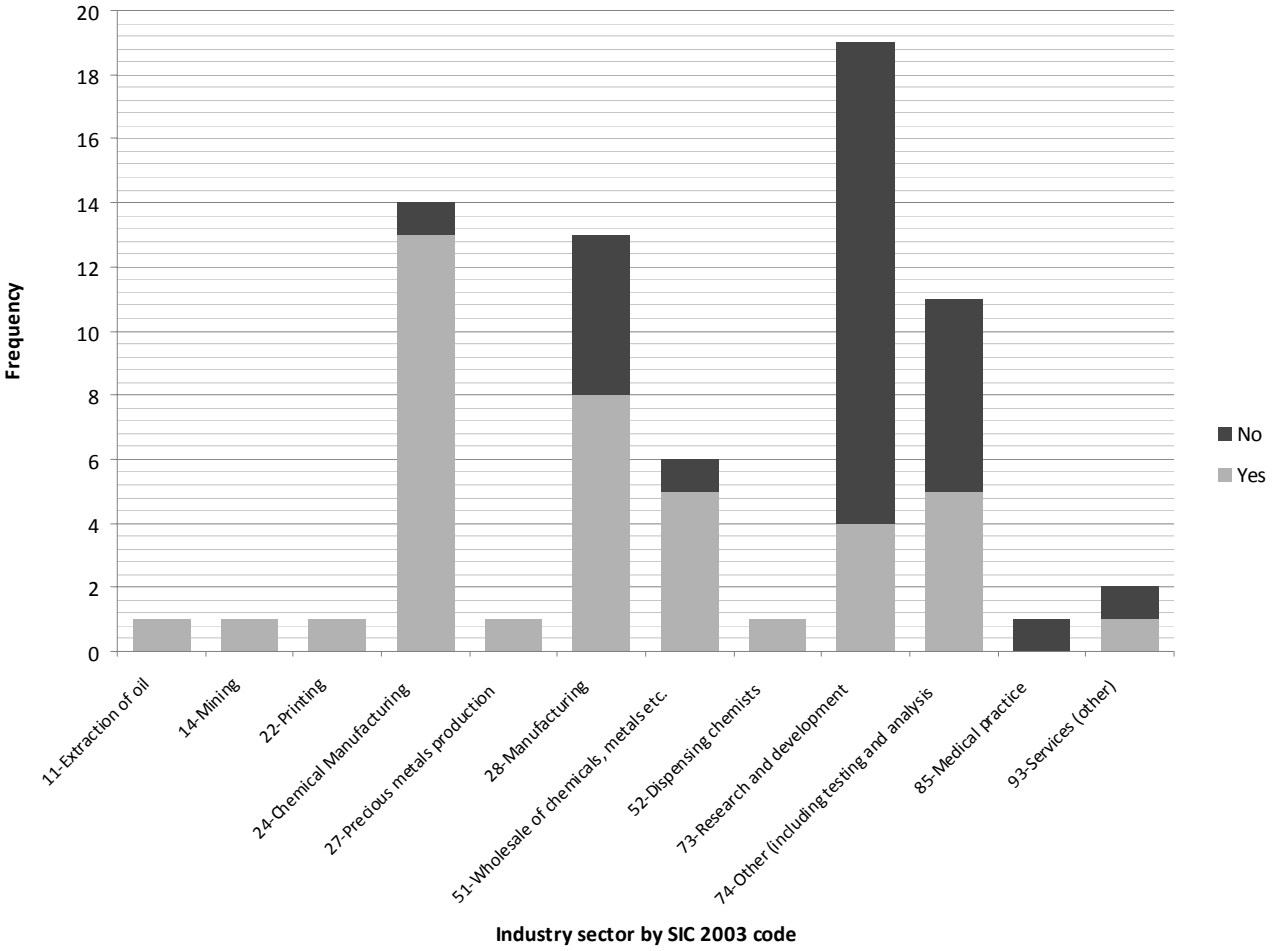
The first point to note with respect to the online statements we examined was that very few statements which could be placed in any of our three categories of document were made by either micro companies or SMEs. 86% of micros and 73% of SMEs failed to provide either a code of conduct, policy statement or annual report that addressed one or more of the areas of CSR material concern identified previously. By contrast, all large and multinational companies surveyed provided one or more of these documents

Figure 2: CSR Statements Available Online by Company Type (n=78)



The sectoral profile (by SIC 2003 division) of the reporting sample shows that the lowest level of reporting was among companies engaged primarily in R&D, including research on nanomaterials and nanostructures. This sector sees a particularly heavy representation of SME and micro companies.

Figure 3: Provision of CSR Documents by Industry Sector (n=71)



There are significant differences in levels of reporting between large/multinational and SME/micro companies on a set of material issues. In relation to some criteria, there are significant differences even between multinational and large firms. Further, some material issues are associated with low levels of reporting on measurable performance targets, even among MNCs.

Figure 4: Stakeholder Engagement Profile by Company Type (n=68)

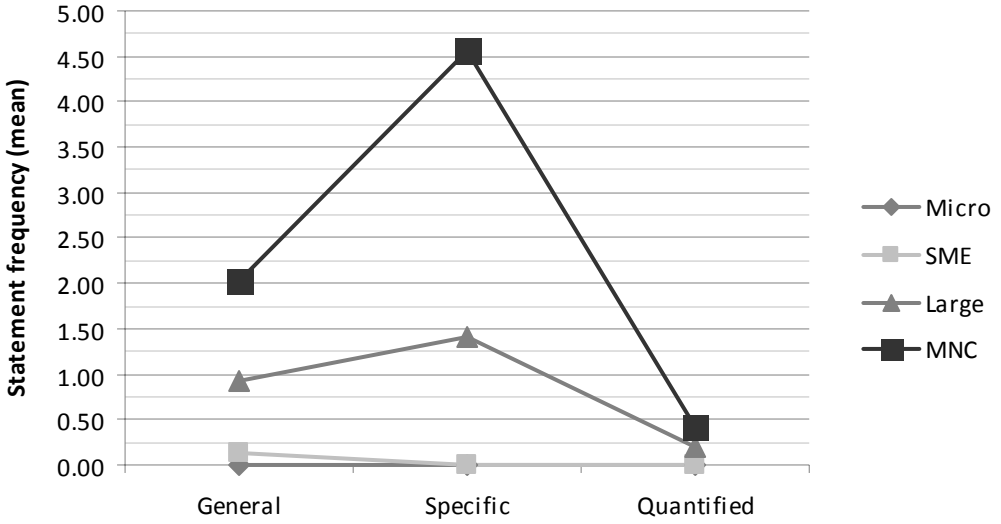
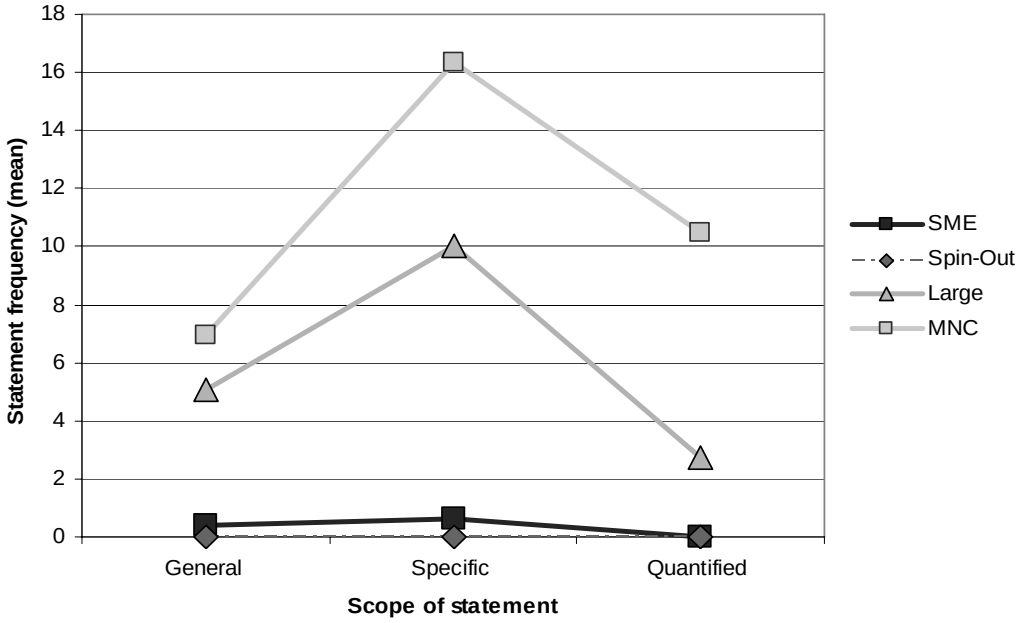
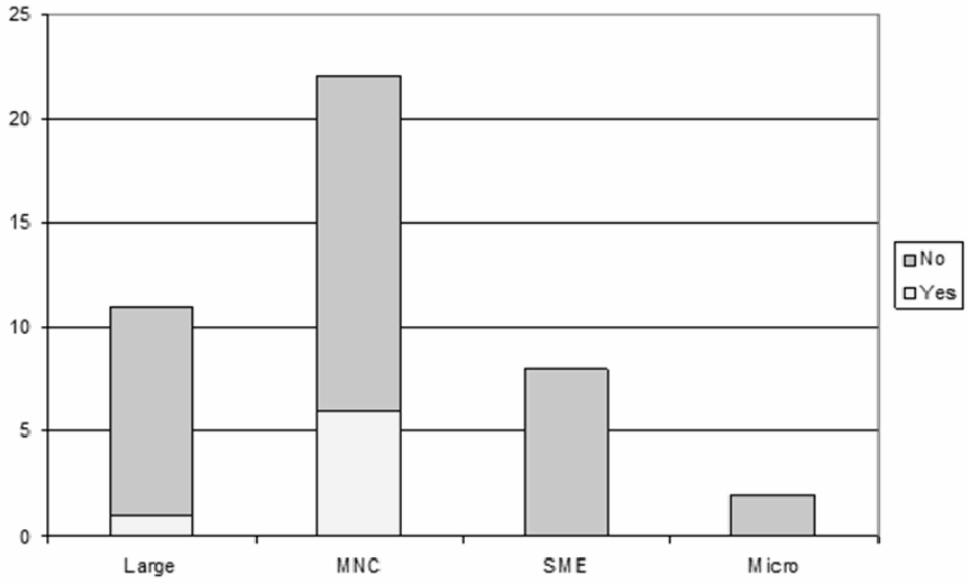


Figure 5: Environmental Impact by Company Type (n=68)



When it comes to the auditing of reporting on performance targets, it is evident that only large and multinational companies typically refer to external CSR standards in reporting, and only a minority of companies (7 out of 43 total) have their CSR statements externally audited.

Figure 6: Companies with externally audited CSR reports (n=43)



Overall, the survey of online documents reveals that SMEs/micros are much less likely to report attitudes towards CSR and activities on corporate social performance. Where they do, level of reporting is low, and generally consists of general policy statements, with no annual reports and no codes of conduct being found. ON the other hand, it is also evident that, for some CSR issues, setting/reporting on performance targets is uncommon even among MNCs, and that there are, in general, low levels of external auditing of CSR documents even among MNCs.

Interviews with company representatives

Interviews with 15 industry representatives were undertaken, covering a range of industry sectors and sizes of firm. This sample was the result of initially contacting 50 companies, who were identified through the online CSR study, research on current commercial NST innovations, and personal contacts. Some difficulties were encountered with access: business confidentiality was widely cited as reason for not participating, as well as the time and costs of participating for SMEs and micro companies. Some companies insisted that they were not actually involved with nanotechnology, indicating that the meaning of the term itself remains highly contested. When coding and analyzing interview transcripts, particular attention was given to tracing which model of CSR – do no harm, or positive social value – was represented by the practices described by companies.

Table 3: Companies interviewed

Company Identifier	Category	Role	Sector	SIC (2003) Code
A	SME	Instrumentation	Process technology	2956
B	MNC	Nanoproducts w. supplied NMs	Pharma/Consumer Health	5146
C	MNC	Nanoproducts w. supplied NMs	Pharma/Consumer Health	2452
D	SME	Nanomaterials manufacturer	Coatings and Composites	7310
E	SME	Nanomaterials manufacturer	Speciality Chemicals	2466

F	SME	Characterisation services	Food	9305
G	SME	Nanoproducts w. supplied NMs	Speciality Chemicals	5151
H	MNC	Nanomaterials manufacturer	Speciality Chemicals	7430
I	MNC	Nanoproducts w. supplied NMs	Food	2466
J	MNC	Nanoproducts w. supplied NMs	Coatings and Composites	2911
K	SME	Nanomaterials manufacturer	Speciality Chemicals	7340
L	Micro	Nanomaterials manufacturer	Speciality Chemicals	2466
M	SME	Nanomaterials manufacturer	Speciality Chemicals	7310
N	Micro	Nanoproducts w. supplied NMs	Medical and Diagnostics	7310
O	SME	Nanoproducts w. supplied NMs	Medical and Diagnostics	3310

Overall, it is evident that the UK NST industry remains in an early stage of development, with a lot of production for nanomaterials going towards industrial R&D carried out by larger firms. Reinforcing the results of our online survey of reporting, we found evidence that attitudes towards CSR are significantly affected by company size, sector and position in the supply chain. Companies involved primarily in activities which do not have direct contact with consumers are much less likely in general to be involved in thinking about access, stakeholder engagement or longer-term risk management issues. However, smaller B2B companies involved in R&D arrangements with larger companies are often very sensitive to the need to manage health and environmental impacts, thanks to the influence of their larger partners.

This awareness of some CSR issues was represented by some small companies as built into their values – perhaps embodied in, for example, the views of CEOs or a board of directors, or in the practices adopted by senior staff who had come from a scientific background. To some extent, issues such as workplace precaution and, for many SMEs able to draw on relevant scientific expertise, characterisation of materials and their toxicological profiles, are seen as part of the company's "DNA". It is more formal approaches to CSR that are seen as imposing costs, particularly where models of continuous improvement that include reporting are concerned. Reporting on CSR in particular is undoubtedly seen by many smaller companies as outside their competence, too expensive, and often having little impact in comparison to more coordinated attempts to promote transparency via government or institutions like the Royal Society.

Beyond these issues among SMEs, a number of other obstacles were noted, relating to a range of material CSR issues and to CSR in general. Many companies felt that it was difficult to find out all the information they felt they needed to know in order to make sure they complied with existing regulations. This was not limited to just micro companies and SMEs. Companies of all sizes noted that anticipatory and proactive management of risk might be difficult given the persistent data gaps that obstruct life cycle analysis of nanoproducts, and the extension of existing approaches to product stewardship to such products. Beyond the simple fact that the use of nanomaterials is still in its infancy, so there is little data, access to relevant LCA and toxicological expertise was seen as problematic, and generally based on adventitious relationships between firms. Further, there was felt to be not enough effective sharing of information to support full life cycle analyses.

Another common assumption among interviewees appeared to be that stakeholder engagement should primarily be regarded as a means of communicating comparisons of the expected benefits of products with the relative absence (at least, at the present time) of risks. Experiments with upstream public engagement have demonstrated, however, that public concerns are generally about the extent to which experts are prepared to admit to the extent of scientific uncertainty about risk and potential benefits, and how far both industry and regulators can be trusted to handle any unanticipated problems that do arise.

Conclusions

Interviews confirm widespread acceptance of some basic CSR principles relevant to NST and other emerging technologies, such as e.g. precautionary approaches to health/environmental risk directly connected to business activities:

> *I mean what we have done is just, from the very beginning we've just said right let's just assume it's like asbestos. Let's just assume the worst. (Company M).*

It is also evident from the online survey and interviews that the model followed is largely "do no harm". There is also evidence that SMEs - who tend to be both at the forefront of scientific innovation yet often have reduced capacity to undertake anticipatory and temporally extended assessment and management of the risk of negative impacts arising from their business – present conflicting attitudes to CSR and CSP. On the one hand, they often state that responsibility is "in their DNA". Nonetheless, they have little appetite either for reporting or addressing the wider impacts of innovation (in relation, for example, to the criteria of access, liability, and stakeholder engagement), due to perceptions of costs and a lack of capacity: "so where the risks are greatest they have the least capacity to engage" (Company G). When it comes to these wider impacts, it is evident that companies of all sizes face difficulties in orienting themselves to the kind of positive social force model of CSR which we have suggested above may provide a more adequate basis for the kind of anticipatory and adaptive regulation which, it has been suggested, NST and other emerging technologies require.

In March 2010, the previous UK government published its NST strategy for 2010-2014. This was criticized for, amongst other things, failing to adequately address issues relevant to adaptive regulation, such as the role of public engagement and of voluntary regulation in contributing to addressing the wider health, environmental and social impacts of NST. To start to address the failure of the 2010 strategy to develop a supportive stance towards adaptive, CSR-driven regulation, we recommend that the incumbent government should take initial steps to include:

1) Promoting an effective industry code of conduct: by, for example,
   a) Setting out requirements that any such code should include (both in procedural terms, e.g. being developed by multiple stakeholders, and substantive terms, e.g. to include reporting requirements, regular external auditing, adoption of proactive and systematic models of stakeholder engagement);
   b) Focusing on encouraging adoption by larger companies in order to exploit their supply-chain influence on smaller companies.
2) Facilitating access to CSR and wider technical expertise: it is essential that benchmarking against any such code should be adequately incentivised for smaller companies, with access to regulatory information, CSR consultancy expertise, toxicological/risk

management expertise, and possibly financial assistance being part of such a package. Private/public bodies such as the Nanotechnology Knowledge Transfer Network (NanoKTN) could conceivably play a key role in encouraging the sharing of expertise.

3) Encouraging sharing of CSR expertise within existing supply chains: it is not only pressure to be benchmarked against codes of conduct that should be exploited by regulators. Transfer of CSR knowledge and experience down the supply chain, with sharing of resources, should also be encouraged. Exemplar models of practice should be formulated.

As part of such an approach, the sharing and provision of technical and regulatory information, and CSR expertise can be used as incentives for companies to participate in engagement activities and in being benchmarked against an approved code of conduct. The promotion of an effective, inclusive and integrated approach to stakeholder and public engagement within the industry as a way of shaping future innovation (influenced perhaps by the work of organizations such as ForumNano[2] in Germany) needs to be a short to medium term goal.

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