



The Centre For Business Relationships,
Accountability, Sustainability and Society

WORKING PAPER SERIES No. 23

Dichotomy between Attitudes and Environmental Performance: a Case of European SMEs



Samarthia
Thankappan,
David Hitchens
and Mary Trainor



Dichotomy between attitudes and environmental performance: a case of European SMEs

Samarthia Thankappan, David Hitchens & Mary Trainor

Abstract

Most small firms see no reason to address the environmental aspects of their businesses. Any action taken is often a response to legislative and regulatory pressures rather than positively seeking new opportunities from environmental management. Largely firms work within conditions of uncertainty, and a sizeable part of company behaviour is probably governed by habit and following a set of routine rules. Hypothesising the significance of the role of top management is important, and in convincing the small businesses to choose cleaner technologies, this paper discusses the relationship between the role played by the management and the culture of the small businesses in adopting environmental initiatives. Face-to-face interviews were carried out across three manufacturing sectors and four Member States. Results indicate that, regardless of the fact that managers exhibited concern towards the environment, most small firms do relatively little about the environment in practice.

About the BRASS Centre

In 2001, Cardiff University won £3.1 million in research funding from the Economic and Social Research Council to develop a Research Centre for Business Relationships, Accountability, Sustainability and Society (BRASS). The Centre is a joint venture between the University's Schools of Business, City and Regional Planning, and Law. It brings together the three Schools' existing research expertise on issues of sustainability, business ethics, company law, corporate reporting and business communication.

The Centre started work in October 2001 under the leadership of Professor Ken Peattie of the Business School, Professor Terry Marsden of the Department of City and Regional Planning and Professor Bob Lee of the Law School. The funding of the Centre covers an initial five-year period, but this should just mark the beginning of BRASS' contribution to creating more sustainable and responsible businesses locally, nationally and globally.

Published by

The Centre for Business Relationships, Accountability, Sustainability & Society
(BRASS)
Cardiff University
54 Park Place
Cardiff CF10 3AT
United Kingdom
<http://www.brass.cf.ac.uk>

© BRASS Centre 2004

ISBNs 1 904393 50 0 (print)
1 904393 51 9 (web)



Contents

1.0 SMEs and Environment	5
2.0 SMEs and Management	6
3.0 Methodology	9
4.0 Results	12
4.1 Pro and Anti Environmental Attitudes	12
4.2 Environmental Strategy and Environmental Attitude	13
4.3 Concern for the Environment	15
4.4 Degree of Environmentalism	17
4.5 Benefits of adopting environmental initiatives voluntarily	18
4.6 Government Policy	19
4.7 Firm Attitudes, Environmental Performance and Size	21
4.7.1 Environmental Performance	21
4.7.2 Firm Size and Environmental Attitudes	22
4.7.3 Organisational Structure and Culture	22
4.7.3.1 Organisational Structure	22
4.7.3.2 Organisational Culture	23
5.0 Conclusion	24
References	28
Annex	33

List of Tables

Table 1. Percentage of firms adopting a pro-environmental attitude	13
Table 2. Environmental strategy and environmental attitude, furniture sector	14
Table 3. Environmental strategy and environmental attitude, textile sector	14
Table 4. Environmental strategy and environmental attitude, fruit and vegetable processing sector	15
Table 5. Average number of initiatives (eco-points) adopted by attitude to environmental legislation	16
Table 6. Average number of initiatives (eco-points) adopted	17
Table 7. Degree of environmentalism (as % of firms)	18
Table 8. Benefits of adopting environmental initiative voluntarily (as % of firms)	19
Table 9. Percentage of firms in each organisational model	23
Table 10. Percentage of firms in each culture category	24

List of Figures

Fig. 1. Percentage of firms agreeing strongly with investing public money to encourage companies in energy saving and waste reduction	20
Fig. 2. Percentage of firms agreeing strongly with increasing taxes for firms consuming excessive energy or producing more waste	20
Fig. 3. Percentage of firms agreeing strongly with reducing taxes for firms consuming less energy or producing less waste	21

1.0 SMEs and environment

Small and medium sized enterprises (SMEs) are important to all European economies. They create jobs (Birch, 1979), build effective networks and make a positive contribution towards social inclusion. They are a source of innovation and competition, create a dynamic, healthy market economy and preserve a stable economic base (Morris and Brennan, 2000; Gray, 2000). Their work is strongly customer-oriented and they are a source of innovation and entrepreneurial spirit, as they create competition and are the seed for future businesses (Hillary, 2000). SMEs represent a significant part of the European industrial landscape, accounting for 99.8% of the total number of companies in the Union; Two thirds of employment; and 60% of value added.

The relative contribution of SMEs to the total industrial environment impact though is unknown, but their sheer numbers may mean that their impact on the ecosystem could be substantial. The Marshall Report (1998), which originally endorsed proposals for a climate change levy, estimated that as much as 60% of carbon dioxide emissions from businesses result from the activities of SMEs. Most research in this area, though, has focussed on large firms and their impact on the environment, the impact of small firms continues to be an under-researched area (Hillary, 2000; Noci and Verganti, 1999).

Some SMEs have already taken the lead in managing their own environmental and social impacts in a well structured way. They have environmental management systems in place, they report on environmental and social performances, train and qualify their staff on environmental ethics and work in cooperation with other firms along the supply chain to reduce the environmental impacts of products and services. However, a majority of SMEs are still characterised by their lack of awareness of their environmental and social impacts and the management of such issues.

For the benefit of the environment and the wider societal context, SMEs still need to be involved in the drive towards sustainability. They are an essential contributor to attaining reduction targets set by the “Kyoto Protocol to the United nations

Framework convention on Climate Change” (see e.g. Ott & Oberthur, 1999); or to reaching policy targets like “Factor 4/10” (Weizsacker *et al.*, 1997).

Despite considerable efforts by governments to inform SMEs of the potential economic benefits from positively managing their environmental performance and investing in clean technologies, most SMEs see no reason to address the environmental aspects of their businesses. Any action taken is often a response to legislative and regulatory pressures rather than positively seeking new opportunities from environmental management (Gerstenfeld and Roberts, 2000; Hutchinson and Hutchinson, 1997).

The message does not even get through on the need to comply with environmental regulations. This can partly be explained by the fact that SMEs are unreceptive or unable to interpret the relevance of the legislation to their business (Hillary, 1995; Gerstenfeld and Roberts, 2000; Hutchinson and Chaston, 1994). SMEs perceive that legislative compliance is expensive (Petts *et al.*, 1999) and therefore regulation is resisted due to its impact on profits; moreover, owners of small businesses tend to favour economic interests over social or environmental considerations (Tilley, 2000).

SME owners feel limited responsibility towards the environment, due to their belief that their contribution towards environmental impact is negligible (Hillary, 1995; Holland and Gibbon, 1997; Smith and Kemp, 1998; Rutherford and Spence, 1998). Furthermore, small businesses lack the time and money to investigate their environmental performance or access the high cost consultancy support network (Hillary, 2000, p.140). Research conducted by Tilley (2000) and Ludevid (2000) shows that SMEs resist voluntary initiatives that promote self-regulation due to fears of ‘free riders’ and a lack of ‘level playing field’.

2.0 SMEs and management

In most small businesses, management and ownership of the firm are frequently synonymous. As a result, the owner/manager has a major impact on the performance of the business (Storey 1994). The significance of the role of top management is important and an understanding of how they become convinced to choose cleaner technologies given the competitive position of the enterprise is crucial (O’Connor

1997). Research shows some managers are more likely than others to take steps to avoid negative environmental outcomes even when these are purely external (Gray, 2000; Morrison, 2000; Mitra and Matlay, 2000). Such management behaviour could result from an ethical allegiance to valuing the environment *per se* (Etzioni 1988) and/or a market structure, which relax the constraint on firms to maximise profits and therefore allow the pursuit of a wider range of management goals.

Due to their size and number of employees many SMEs have simple structures and systems. Mintzberg (1999) describes simple structures as follows:

“... It (structure of SMEs) has little or no staff, a loose division of labour and a small managerial hierarchy. Little of its activity is formalised, and it makes minimal use of planning procedures or training routines. ... Power tends to focus on the chief executive, who exercises a high formal profile. ... The creation of strategy is, of course, the responsibility of the chief executive, the process tending to be highly intuitive.”

The approach that firms use to deal with environmental issues is a growing area of contemporary management research (Fineman 1997; Welford 1995). Gerrans and Hutchinson (1998), Merritt (1998) and Ludevid (2000) have shown that many small business owners/managers have a high awareness of their role in environmental remediation, and have a desire to take action. However, most studies have reported that there is often a great deal of difference between the stated attitude of owners/managers and the actual environmental performance of the firms. Tilley (1998), Hutchinson and Chaston (1994) and Petts *et al.* (1999) have all reported a similar dichotomy between attitudes and environmental performance amongst small business owners/managers in the United Kingdom and continental Europe. This gap has been termed the *small business problem* in environmental management (Merritt 1998; Tilley 1999).

Hodge (1995) has pointed out that the solution to environmental problems requires analysis and understanding of

‘...incentive and choices at the very microeconomic level. Why do individuals and firms make particular choices and how can we persuade them to act differently? Even at this scale, the factors are many and complex’.

Petts *et al.* (1998) argued that the relationship between behaviour and attitudes, and the discrepancy between what managers say and do about environmental matters, needs more investigation and explanation.

The fact presented in this working paper is part of a major EU- funded study. The aim of the study was to identify and evaluate the importance of factors that help and hinder the adoption of environmental initiatives by SMEs across four member states. The countries selected for the study were the United Kingdom (UK), the Republic of Ireland (ROI), Germany and Italy. The justification for this set of sample countries is provided by the extent to which they vary with respect to both environmental regulation and productivity. There was broad coverage in all countries except Italy where the investigation concentrated in the North-East¹, particularly the three regions of Veneto, Friuli-Venezia Giulia and Trentino Alto-Adige (usually defined as Triveneto). The UK data (including Northern Ireland) and the ROI were aggregated since there was insufficient variation in economic performance and environmental requirements to justify treating them as separate jurisdictions.

SMEs commonly dominate resource and emission intensive trades such as metal finishing, textile manufacturing, printing and dyeing, food processing and chemical production etc. (Hobbs, 2000). The three industrial sectors that were selected for investigation were furniture, textile finishing, and fruit and vegetable processing. These three sectors have environmental characteristics that cut across the majority of areas where environmental protection is relevant. They were also industries where SMEs are important and industries which have a significant EU presence in each of the chosen countries. Simultaneously these countries represented variations in environmental regulatory stringency and enforcement, and economic performance² of the sectors studied.

¹ The economy of North-East Italy is characterised by traditional manufacturing industry including textiles, clothing, foot wear, leather and furniture.

² Germany is the leading furniture producer in Europe, followed by Italy and both countries are among the top 10 furniture exporters in the world. The largest textile industry in the European Union (EU) is in Italy. Food and drink is the largest industrial sector in the EU with production equal to approximately €600 bn. The importance of the EU fruit and vegetable processing and preserving sub-sector is small relative to other sub-sectors in the industry. Germany had the largest output share of the EU member states in 1997 accounting for 18.4% of total EU production, followed by the UK with a share of 17.1%, Italy had a 14.7% share and Ireland had the lowest output share accounting for only 0.55%.

One of the hypotheses of the research was that the internal 'culture' of the firm is important in effecting environmental decision-making and environmental performance. The significance of the role of top management is important and an understanding of how managers become convinced to choose cleaner technologies given the competitive position of the enterprise.

This paper focuses on the characteristics and experience of the above average environmental performers, in comparison with the average performers in the industry, and more specifically the relationship between the role played by the management and the culture of the small businesses in the take up of environmental initiatives.

3.0 Methodology

To assess the influence of the internal culture of the firm as regards environmental values, a questionnaire³ was designed to measure management attitudes to environmental issues. This questionnaire was completed by the 294 managers of the companies that participated in the face-to-face interviews from across the four countries and three manufacturing sectors. On an average 66 percent of the total firms across the three sectors and four countries, responding to the survey fell in the category of 1-10 employees, and 34 percent in the category of 101-500 employees.

A series of questions were asked in order to evaluate management's attitude to issues such as environmental concerns, government policy towards the environment and the effect of environmental policy on the individual firm. Attitudes were measured in a number of ways to cross check on the consistency of responses and there was no attempt made to ascertain the rationale for the attitude held.

A cultural score was calculated based on the degrees of agreement or disagreement indicated by each firm's response to 15 statements from this set of 4 questions. For each statement a maximum score of 4 (for those who fully agreed) and a minimum of 1 (for those who fully disagreed) were allotted. The sum of scores for the 15 statements made up the cultural score. Firms who partially agreed to the statements

thus scoring 3 for each statements were set as the borderline firms for pro-environmental attitude, hence the figure of 45 (for the 15 statements) as the cultural score was arrived at. Firms with a cultural score of 45 and above were classed as *pro-environmental* and firms with a score less than 45 were classed as *anti-environmental*. Information gathered from the cultural questionnaire was classified initially under four categories viz. (i) Pro-environmental; (ii) Partially pro-environmental; (iii) Partially anti-environmental and (iv) Anti-environmental. However, due to fewer responses under categories (ii) and (iii), categories (i) and (ii) were grouped together to form the pro-environmental group and categories (iii) and (iv) were grouped to form the anti-environmental group.

Firm culture was measured by considering the responses to eight questions and determining if the firm adopted a pro-environmental or anti-environmental attitude. The responses to the first four questions (Q1 to Q4) measured on the Likert scale (1–4, Likert 1932), in the cultural questionnaire played a key role in determining the attitude of the firm (see Annex for questions 5-8).

Q1: To what extent do you personally agree with the following statements?

- a. People worry too much about the fact that economic development damages the environment.
- b. Economic development cannot be supported by the natural resources available.
- c. Nowadays, full employment is more important than environment protection.
- d. It is right to increase taxation for industries which pollute.

From statement a, the two degrees of agreement (fully agree and partially agree) denoted an *anti-environmental* attitude while the two degrees of disagreement (partially disagree and fully disagree) in the same statement indicated a *pro-environmental* culture. However, with the objective of checking the coherence of the responses, the scale in statement b was inverted whereby the levels of agreement signified a position of pro-environmentalism while the degrees of disagreement indicated anti-environmentalism.

³ Questionnaire could be requested from the authors.

In statement c, the position of anti-environmentalism is demonstrated by the degrees of agreement while that of pro-environmentalism by the expression of degrees of disagreement. In statement d, the position of pro-environmentalism is very delicate because it means justifying an increase in taxes to achieve ecological objectives. In fact sometimes firms that had earlier indicated a pro-environmental attitude expressed a position of anti-environmentalism by recording their disagreement with this statement.

The responses to question Q2, which concentrates on energy conservation, and to question Q3, which focuses on waste reduction, were classified in a straightforward manner. Fully or partially agreeing to the statements represented a pro-environmental viewpoint whilst fully or partially disagreeing indicated an anti-environmental attitude.

Q2: There are various strategies by which government could encourage companies to use less energy. To what extent do you agree with each statement?

- a. To invest public money in information campaigns, to encourage companies to use less energy.
- b. To increase periodically taxes on energy consumption.
- c. To increase taxes for companies which use an excessive amount of energy.
- d. To reduce taxes for companies with low-energy production cycles.

Q3: There are various means by which the government could try to encourage companies in your sector to produce less waste so as to protect the environment. To what extent do you agree with each statement?

- a. To invest public money in information campaigns to reduce waste.
- b. To prohibit an excessive use of packaging for products, even if they become less attractive for the customer.
- c. To increase taxes for companies which do not collect the products at the end of the life-cycle.
- d. To reduce taxes for companies using recyclable materials.

The attitude of the firm to environmental legislation and its implementation was sought in question 4. Agreement with the first statement indicated a pro-

environmental attitude. In the second statement, the opposite is true i.e. the declaration of agreement that environmental legislation does not adequately take into account the problems that can arise for firms from their adoption implies a position of (grudging) anti-environmentalism. In the final statement, disagreement signified that, other things being equal, implementation of environmental legislation does not have a serious impact on the preservation of jobs in the firm i.e. a pro-environmental attitude.

Q4: To what extent do you personally agree with each of these statements?

- a. In a firm like yours it is easy enough to adapt the production cycle to meet the requirements of environmental legislation.
- b. In a firm like yours, environmental legislation does not consider the problems connected with the actual implementation of the rules.
- c. In a firm like yours, it is impossible to achieve the two objectives of job preservation and respect of environmental legislation.

The measure of environmental performance was carried out by asking the SMEs to select from a list of 11 industry specific initiatives those that they undertook. Using a simple count of the number of initiatives undertaken three performance groups were formed: *compliance only* for firms that undertook 0–2 initiatives; *compliance plus* for firms that undertook 3–5 initiatives; and *excellence* for firms that undertook 6 or more initiatives.

4.0 Results

Based on the responses received from respondents to the cultural questionnaire the relationship of the firm's attitude was measured, in terms of, a) the degree of pro and anti environmental attitudes b) the relationship between the environmental strategy adopted and the attitude towards the environment c) environmental concerns d) government policy towards the environment and its effect on the individual firm e) organisational culture and structure etc.

4.1 Pro and anti-environmental attitudes

Furniture sector: a higher proportion of firms in the UK/ROI were pro-environment than their German and Italian counterparts (Table 1). The percentage of compliance

plus firms that were pro-environment was slightly greater in the UK/ROI than in Germany, where an equal proportion of compliance plus and excellence firms were pro-environmental. In Italy, a majority of the compliance only firms were pro-environmental compared to compliance plus firms.

Textile and finishing sector: compared to the UK/ROI and German firms, a greater percentage of Italian firms were pro-environment, of which, compliance plus firms were more pro-environmental in comparison to the other performance groups. In the UK/ROI, a greater percentage of compliance only firms were pro-environmental while in Germany, a greater proportion of pro-environmental firms belonged to the compliance plus and excellence group.

Fruit and vegetable processing sector: As in the furniture sector, there were a higher proportion of pro-environmental firms in the in the UK/ROI, compared to Germany and Italy. On average, more compliance plus firms were pro-environmental in the UK/ROI, while in Germany, there was little difference between compliance plus and excellence firms. In Italy a majority of the excellence firms were pro-environment compared to the other performance groups. However no statistically significant relationship could be established between the attitudes and the environmental performance of the firms.

Table 1. Percentage of firms adopting a pro-environmental attitude

	UK/ROI	Germany	Italy
Furniture	68.0	65.5	49.9
Textiles	60.0	45.0	69.6
Fruit and vegetable processing	65.0	56.0	38.0

On the whole, across the industrial sectors and the countries, compliance plus firms were more pro-environmental except in the case of the UK/ROI's textile firms. However, the results were not statistically significant between the groups.

4.2 Environmental strategy and environmental attitude

The cultural scores were compared with the environmental strategy of the firms in all three sectors across sample countries (see tables 2-4).

Furniture sector: more pro-environmental firms in the UK/ROI adopted an environmental strategy focused on regulation, whilst the pro-environmental firms with a high cultural score adopted either a strategy of focus on environmental performance or on eco-products. In Germany, pro-environmental firms with a high cultural score adopted an environmental strategy of regulation and eco-products. None of the Italian firms had a score greater than 45 so could not be classed as pro-environmental.

Table 2. Environmental strategy and environmental attitude, furniture sector

Environmental strategy	Average cultural score Pro-environment firms			Average cultural score Anti-environment firms		
	UK/ROI	Germany	Italy	UK/ROI	Germany	Italy
Regulation	47	46	–	39	39	33
Eco-efficiency	47	–	–	39	38	41
Env-performance	49	–	–	–	36	–
Eco-products	50	46	–	39	43	–
New eco-markets	–	–	–	–	–	–
Public perception	–	–	–	–	–	–
Total	48	47	–	39	38	34

Textile and finishing sector: in the UK/ROI, comparatively more firms that were pro environmental adopted an environmental strategy driven by regulation. However, firms having the highest cultural score adopted a strategy of using environmental performance to differentiate them. In Germany, firms with the highest cultural score adopted a strategy focusing on eco-products, while in Italy they adopted a strategy that focused on new eco-markets .

Table 3. Environmental strategy and environmental attitude, textile sector

Environmental strategy	Average cultural score Pro-environment firms			Average cultural score Anti-environment firms		
	UK/ROI	Germany	Italy	UK/ROI	Germany	Italy
Regulation	50	–	45	37	37	36
Eco-efficiency	45	–	–	35	37	37
Env-performance	63	48	–	38	36	39
Eco-products	–	52	–	44	31	32
New eco-markets	–	–	45	–	–	36
Total	50	50	45	37	36	36

Fruit and vegetable processing sector: in the UK/ROI, a greater number of pro-environmental firms adopted an environmental strategy with a focus on eco-efficiency. In Germany more pro-environmental firms adopted an environmental strategy of eco-efficiency and eco-products, while in Italy more pro-environmental firms adopted an environmental strategy focussing on eco-efficiency.

Table 4. Environmental strategy and environmental attitude, fruit and vegetable processing sector

Environmental strategy	Average cultural score Pro-environment firms			Average cultural score Anti-environment firms			From the data present ed in the above
	UK/ROI	Germany	Italy	UK/ROI	Germany	Italy	
Regulation	47	45	46	41	35	38	
Eco-efficiency	47	46	46	43	30	44	
Env-performance	45	–	46	38	42	44	
Eco-products	55	47	46	–	36	–	
New eco-markets	–	45	–	–	44	–	
Public perception	49	–	–	–	–	–	

tables, it is clearly evident that the relationship between environmental strategy and environmental attitude varied across the countries and the sectors, and there was no clear evidence of a significant relationship between the environmental strategy adopted by firms and their environmental attitudes.

4.3 Concern for the environment

There was however, a concern for the environment as evidenced by the pro-environmental stance taken by many compliance plus firms. The level of importance for this concern can be judged to a certain extent by examining the views expressed by the respondents about the various strategies by which government could encourage firms to use less energy and produce less waste.

Responses allowed a three-way classification of firms as *pro-environmental*, *anti-environmental* or *innovator*. In this case the cultural score did not determine the class, i.e. whether a firm is pro or anti environmental, instead the statements asked gauged the attitude. Pro-environmental firms were those that considered legislation as an incentive, leading to improvements that benefited society as a whole while anti-environmental firms were those that consider legislation as an impediment to overall

competitiveness. The firms categorised as innovators, considered legislation as leading to higher efficiency through increased cost savings.

In the UK/ROI, more of the compliance plus firms in the furniture sector attributed the main impact of environmental legislation to the improvement of the good of society in general, while more of the compliance only firms in Germany and Italy did so (Table 5). A reasonable proportion of firms in all the countries, associated the impact of environmental legislation with encouraging increased efficiency of production, hence they were innovator firms. In general, few firms indicated that environmental legislation operated as an obstacle to market competitiveness.

Table 5. Average number of initiatives (eco-points) adopted by attitude to environmental legislation

	Innovators	Pro-environment	Anti-environment	All firms
<i>Furniture</i>				
UK/ROI	3.88	6.58	5.91	6.28
Germany	18.38	14.94	16.00	15.89
Italy	6.75	6.07	5.16	5.86
<i>Textiles</i>				
UK/ROI	10.54	5.44	8.53	8.53
Germany	15.83	18.03	17.53	17.37
Italy	6.18	3.56	3.75	4.45
<i>Fruit and vegetable processing</i>				
UK/ROI	12.19	10.25	10.50	11.15
Germany	17.18	17.76	14.81	15.95
Italy	13.82	7.71	–	12.60

In the textile sector, firms across the sample countries indicated that the main impact of environmental legislation was to improve the good of the society in general. It was however notable that a substantial percentage of German firms were of the opinion that environmental legislation operated as an obstacle to market competitiveness.

As regards the fruit and vegetable processing sector, in the UK/ROI, more of compliance only firms attributed the main impact of environmental legislation to the improvement of the good of society, while it was more of the compliance plus or excellence firms in Germany and Italy that did so. Again as observed in the textile sector, a reasonable proportion of firms across the countries associated the impact of environmental legislation with encouraging increased efficiency of production.

There was no significant difference in the environmental performance between the pro-environmental and anti-environmental firms in the three industrial sectors. German innovator firms in the furniture sector took up, on average, more initiatives than the other two groups (Table 6). In the UK/ROI and Italian fruit and vegetable processing sector, innovator firms undertook, on average, more initiatives than the other two groups of firms. The reason is because innovator firms are often product or process innovators and this is reflected in their adoption of new technologies.

Table 6. Average number of initiatives (eco-points) adopted

	Pro-environment	Anti-environment
<i>Furniture</i>		
UK/ROI	6.18	5.91
Germany	16.21	16.00
Italy	6.17	5.16
<i>Textiles</i>		
UK/ROI	9.01	8.53
Germany	17.20	17.53
Italy	4.55	3.75
<i>Fruit and vegetable processing</i>		
UK/ROI	10.93	10.50
Germany	17.37	14.81
Italy	12.59	–

The trend in the results shows no clear indication of any positive relationship between good performers and pro-environmental attitudes among the surveyed firms.

4.4 Degree of environmentalism

The degree of environmentalism was judged from the responses received asking why the firm had adopted environmental initiatives.

For the furniture sector, a majority of German firms had adopted environmental initiatives because it is in the interest of everyone to live in a cleaner environment, demonstrating they were strong environmentalists. A larger percentage of firms in the UK/ROI and Italy indicated that legislation was the main driver for adopting environmental initiatives, thus exhibiting a much lower degree of environmentalism (Table 7).

In the case of the German textile firms, there was an almost equal distribution between the various degrees of environmentalism, indicating the same emphasis on clean environment, market and regulation. In the UK/ROI, 52% of the textile firms show a lower degree of environmentalism by stating that they adopt environmental initiatives because of regulation. In Italy, 51% of the textile firms showed a strong environmental position while 42% showed a low degree of environmentalism.

Responses from the fruit and vegetable processing firms show that a majority of German and Italian firms had adopted environmental initiatives because it is in the interest of everyone to live in a cleaner environment, showing, they were strong environmentalists. A greater percentage of firms in the UK/ROI indicated that legislation was the main driver for adopting environmental initiatives. Also a significant number of UK/ROI firms and Italian firms pointed out that market was a major driver to adopting environmental initiatives.

Table 7. Degree of environmentalism (as % of firms)

	Strong	Medium	Compliance	Other
<i>Furniture</i>				
UK/ROI	20	8	48	24
Germany	72	14	13	–
Italy	9	–	82	3
<i>Textiles</i>				
UK/ROI	32	4	52	12
Germany	35	21	42	3
Italy	51	3	42	3
<i>Fruit and vegetable processing</i>				
UK/ROI	27	19	46	8
Germany	73	9	15	3
Italy	47	37	17	–

4.5 Benefits of adopting environmental initiatives voluntarily

While it is clear from the above section that most German firms exhibited strong environmentalism, UK/ROI firms show lower environmentalism and Italian firms exhibited both strong and low environmentalism. Firms were asked whether they profited by adopting environmental initiatives voluntarily (Table 8). Except in the case of Italian compliance only firms, most furniture firms in the UK/ROI and Germany felt they did not accrue any benefits by adopting environmental initiatives voluntarily. In the textile sector, the UK/ROI and German firms stated benefits to be ‘low’ or ‘moderate’. In the fruit and vegetable processing sector, more firms in the

UK/ROI and Germany stated that they accrued, little or no benefit at all. Italian firms on the other hand stated they benefited from adopting environmental initiatives voluntarily.

Table 8. Benefits of adopting environmental initiative voluntarily (as % of firms)

	High	Moderate	Low	None
<i>Furniture</i>				
UK/ROI	–	12	8	76
Germany	–	3	17	80
<i>Textiles</i>				
UK/ROI	4	24	32	40
Germany	–	28	20	52
<i>Fruit and vegetable processing</i>				
UK/ROI	–	2	42	46
Germany	8	6	12	71
Italy	33	47	–	3

No data was available for the Italian furniture and textile sector.

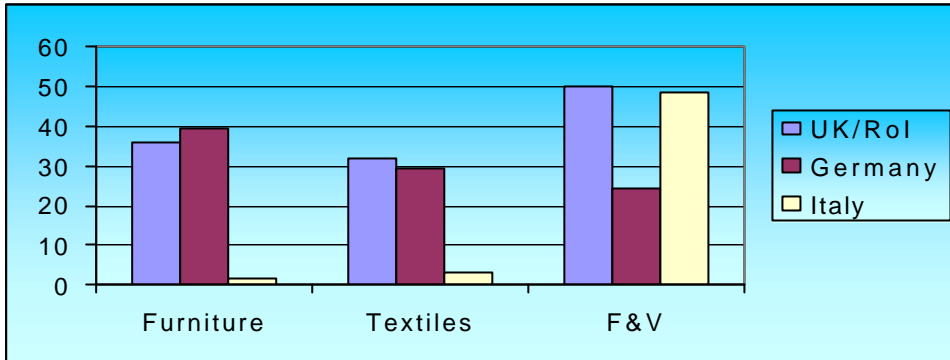
The results for Germany are not consistent with the results obtained in the previous section, where a majority of German firms, exhibited a strong environmental position. However, a firm conclusion cannot be drawn because the questionnaire did not ask for the nature or extent of benefits accrued by the firm.

4.6 Government policy

Firms were asked to state their agreement/disagreement to a set of statements on what were the various strategies that government could use to encourage companies to save energy and produce less waste.

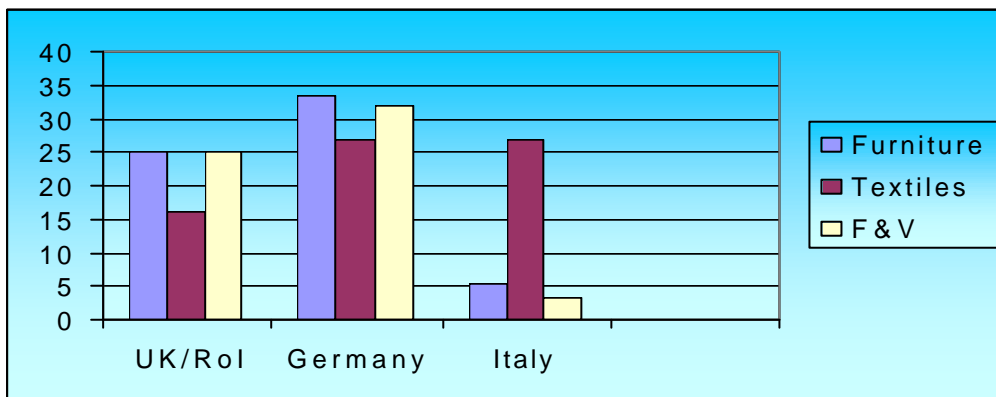
Analysis of the responses indicated that generally firms in the UK/ROI preferred that public money is invested in information campaigns to encourage firms to save energy and produce less waste. In Germany 31% and in Italy 18% were in favour of such a strategy. This strategy was more favoured in the fruit and vegetable processing sector in the UK/ROI and Italy compared to the other sectors (Fig.1).

Fig. 1. Percentage of firms agreeing strongly with investing public money to encourage companies in energy saving and waste reduction



German firms in general strongly favoured taxing companies that generate more waste and utilise excessive energy compared to the UK/ROI and Italian firms. An analysis by sector for each country is shown in Fig.2.

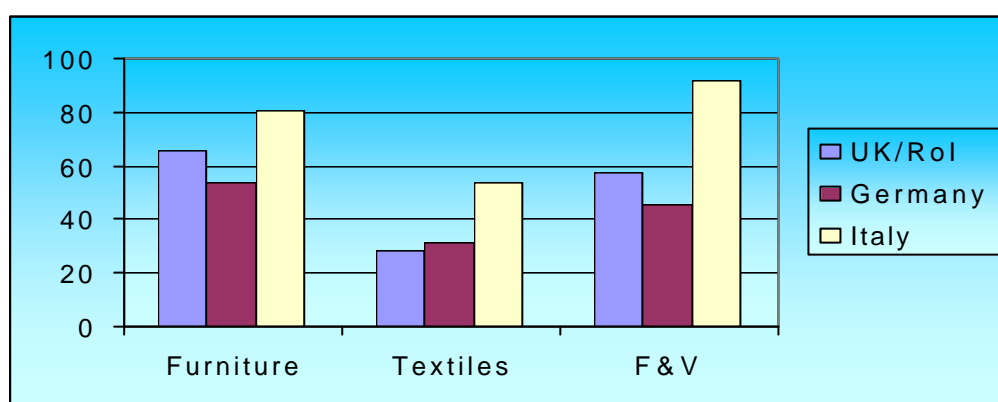
Fig. 2. Percentage of firms agreeing strongly with increasing taxes for firms consuming excessive energy or producing more waste



All three sectors in Germany strongly preferred to encourage firms to use less energy and produce less waste by taxing those who use more energy or produce more waste. This kind of response in Germany may be due to the wide acceptance of the eco-tax system. In the UK/ROI, views expressed on this issue by the furniture and fruit and vegetable processing sector were stronger compared to those of the textile firms. While in Italy, textile firms seemed to be more in favour of taxing firms compared with firms in the other two sectors.

When views about the reduction of taxes for firms using less energy and producing less waste was gathered, it was observed that 76% of the Italian firms were in favour of this strategy, followed by 51% of UK/ROI firms and 43% of German firms. Analysis of the responses by sector shows that, on average, a greater percentage of furniture and fruit and vegetable processing firms in all the countries in favour of a reduction in taxes for firms using less energy and producing less waste compared to textile firms (Fig. 3).

Fig. 3. Percentage of firms agreeing strongly with reducing taxes for firms consuming less energy or producing less waste



The results of the analysis show that firms in the UK/ROI and Italy prefer a governmental policy that is less harsh compared with Germany where firms are most strongly in favour of raising taxes on polluting firms.

4.7 Firm attitudes, environmental performance and size

4.7.1 Environmental performance

Analysis indicated that pro-environmental firms were better environmental performers (based on the evidence that more of the compliance plus firms had a pro-environmental attitude). However, with the exception of the Italian fruit and vegetable processing sector, there was no correlation between environmental attitude and environmental performance. Hence, the cultural attitudes of the firms did not have a direct influence on the adoption of environmental initiatives. Firms adopted environmental initiatives for reasons such as regulation or the market rather than an actual concern for the environment, though in the case of Germany more firms

seemed to adopt environmental initiatives due to a general concern for the environment. However, a statistically significant relationship between attitude and performance could not be established with the better environmental performing firms.

4.7.2 Firm size and environmental attitudes

The relationship between size and environmental attitudes was examined for firms in each sector across the sample countries. There was no evidence of a size effect on the environmental attitude of the firms.

4.7.3 Organisational structure and culture

The cultural questionnaire included questions that enabled us to determine the organisational model the firm followed and hence investigate whether there was an association between the organisational structure and the environmental attitude of the firm. The firms were also grouped into three culture categories groups based on their responses to a set of statements.

4.7.3.1 Organisational structure

By examining the level of responsibilities within the firm an insight into the organisational structure existing in the firm can be obtained. Based on the responses received firms were categorised into belonging to one of a possible three models.

Organisations having an *authoritarian* model would generally have a low regard for environmental issues where employees conscientiously fulfil the tasks assigned to them; while firms with a *participatory* model would be at the opposite end of the spectrum, where individual responsibility is taken at each level of production. A neutral or mid-way environmental position was held by firms following a *technocratic* model that the best technical solution is always the target.

In both the furniture and textile sectors, over half of the firms in the UK/ROI and Italy adopted a participatory structure, (generally analogous with good firm culture). In Germany, furniture firms were almost equally divided between the participatory model and the technocratic structure (associated generally with medium environmental attitude). Textile firms, in Germany, showed a fairly high proportion

(32%) adhering to the authoritarian structure. In the fruit and vegetable processing sector, firms in the UK/ROI and Germany adopted either a participatory structure model or an authoritarian model while in Italy firms were equally divided between all three models (Table 9). On the whole, firms were inclined to adopt a participatory structure, which is associated with a good firm culture. However, interviews with the various sources of advice revealed that a top management commitment to the environment is important in enabling firms to adopt cleaner technology and this is normally based on an authoritarian style of leadership.

Table 9. Percentage of firms in each organisational model

	Participatory	Technocratic	Authoritarian
<i>Furniture</i>			
UK/ROI	54	42	4
Germany	45	48	7
Italy	58	12	30
<i>Textiles</i>			
UK/ROI	74	17	9
Germany	42	26	32
Italy	69	28	3
<i>Fruit and vegetable processing</i>			
UK/ROI	65	–	35
Germany	59	9	32
Italy	33	37	30

4.7.3.2 Organisational culture

Based on the responses received, on the degree of agreement/disagreement to a set of statements firms were allocated to one of three categories. *Mixed culture*, where culture was a combination of customer, employee and management values. *Shared culture*, where company culture was formed by the values of director/owner and management. *Embedded culture*, where company culture depended on the market place in which the company operated.

The majority of the furniture firms in the UK/ROI indicated a shared culture while in both Germany and Italy a mixed culture dominated. In the textile sector, in all the countries, there was a preference for a shared culture closely followed by a mixed culture where all stakeholders could make an impact. In the fruit and vegetable processing sector, the vast majority of the Italian firms indicated a mixed culture

while in Germany and the UK/ROI the preference was for a mixed approach closely followed by a shared culture. It was apparent that the embedded culture was not very widespread in any of the industrial sectors or countries sampled.

Analysis revealed that manufacturing firms in the sampled sectors across the countries, on average, adopted the participatory organisational structure. This highlights the fact that the firms believed that the success of the firm was based on the individual responsibility taken at each level, reflecting a good firm culture. A similar trend was observed regarding organisational culture in the fruit and vegetable processing sector, where the majority of firms adopted a mixed culture. This probably was due to the nature of the fruit and vegetable processing sector which is primarily market driven (Table 10).

Table 10. Percentage of firms in each culture category

	Mixed	Embedded	Shared
<i>Furniture</i>			
UK/ROI	28.0	12.0	60.0
Germany	51.7	13.8	34.5
Italy	45.5	18.2	36.4
<i>Textiles</i>			
UK/ROI	36.0	16.0	48.0
Germany	31.0	20.7	48.3
Italy	34.4	25.0	40.6
<i>Fruit and vegetable processing</i>			
UK/ROI	42.3	26.9	30.8
Germany	44.1	14.7	41.2
Italy	70.0	10.0	20.0

5.0 Conclusion

The major aim of the research was to identify and evaluate the importance of factors that help and hinder the adoption of environmental initiatives by SMEs across four member states: Germany, Italy, Republic of Ireland and the United Kingdom across three sectors: furniture, textile finishing and fruit and vegetable processing. The significance of the research was primarily to help increase the focus of both industrial and environmental approaches to improve their effectiveness and efficiency in obtaining goals like ‘sustainability’ and to enable a better mix of industrial/regional policy at national and EU levels.

The key variables used to measure the competitive performance of firms included: size; productivity; employment growth; destination of sales; age of machinery; labour force qualification. Environmental performance measures used were based on environmental inputs and environmental management practices.

The research showed that firms with an average economic performance were just as likely to adopt environmental initiatives as their high-performing competitors. The ability to take on initiatives was not related systematically to research & development capacity or skills. The reasons for adopting environmental initiatives though were similar across the three industries but varied across countries. In Italy regulation predominated, in the UK & Republic of Ireland cost was important and in Germany market pressures were important in bringing forth environmental initiatives.

One of the objectives of this study was to test the hypothesis that culture is important in an organisation and the role played by top management is important for an understanding of how firms are convinced to choose clean technologies given the competitive position of the firm. The management attitudes were measured for example by determining the degree of pro-environmental attitudes and the concern for environment ; the relationship between the environmental strategy adopted and attitude towards environment; government policy towards the environment and its effect on the individual's firm and the influence of organisational culture and structure.

Results show that attitudes towards environment were on average positive. A greater number of respondents in the sample countries voiced their concern about environment. Also their concerns emanate in the responses to some of the questions asked to them. However, there is little relationship between these attitudes and environmentally responsible behaviour of the firms who were interviewed. Personal attitudes of the firms did not translate directly into environmental performance. In most of the small businesses, whilst recognition of the importance of the environment was high, the capacity to act was low because there has been no sustained pressure to improve. Pieters *et al.* (1998) state that although many people view themselves as 'environmentalists', they do not translate their attitudes into pro-

environmental behaviour. One reason may be that the choice between acting in a pro-environmental way and not doing so often involves a conflict between immediate individual and long-term collective interests.

The majority of the sources of advice interviewed in all the countries agreed that management attitudes could play a vital role in the adoption of clean technologies. However, analysis of the responses reveal that environmental attitudes did not have any significant impact on the environmental performance of the firms, except in the case of Italian fruit and vegetable processing sector, where a significant correlation between environmental performance and environmental attitudes could be found.

There was a prevalence of shared culture in the textile firms across the sample countries and in the UK/ROI furniture firms. Advisory bodies interviewed in this research, also strongly believed that culture and the role of management are very important, in the adoption of environmental initiatives. Fairbairn (1997) pointed out that a role culture, which is epitomised, as the traditional hierarchical structure wherein the firm culture is formed by the values of the director/owner of the firm is perhaps the most appropriate culture.

Likert (1961), suggests that a *link pin* in a participative management can assume a leadership role and help in creating an atmosphere of co-operation within a firm, further, prompting them to interact with one another. This suggestion invariably emerged from the interviews we had with the sources of advice.

Differences in the preferences of the respondents, for example, firms were more likely to favour reducing taxes for environmentally friendly firms than increasing taxes on environmentally harmful behaviour, were observed in the UK/ROI and Italy. While in Germany, respondents were more in favour of increasing taxes on polluting firms. These national differences may be accounted for by variations in educational and income levels between the countries, or differences in the extent to which some environmental issues have spread beyond the concerns of the elite. Previous work has shown that such background factors are important in shaping environmental attitudes (Witherspoon and Martin 1992; Ester 1991; Heath *et al.* 1991). However, Schaper (2002) points out that demographic variables e.g. age

gender and educational level are not related to firm's actual performance. On the other hand key external variables e.g. amount of time available for owners to undertake discretionary business activity and the level of environmental information available to business owners shows a significant positive relation to a firm's 'green' activities. In this research it did emerge that lack of management time was a constraint on the part of small businesses in the take up of cleaner technologies, however enough research could not be carried out to link this constraint with the firm's pro-environmental attitude.

From the analysis of the environmental orientation of the firms it is evident that firms are not sceptical about the role of modern science nor feel that there is too much emphasis given to the environment. A complex picture emerges out of this research, on management culture and environmental performance. There are positive attitudes towards the environment. These differ between countries. There is only scattered evidence of a relationship between positive environmental attitudes and environmental performance. There is a difference between the stated attitude of owners/managers and the actual environmental performance of the firms.

Previous researchers such as Van Lange *et al.* (1992), Komorita and Parks (1995), Dahlstrand and Biel (1997), Eek (1998) and Biel (2000) have found that a significant number of people perceive a conflict between their disposition at a personal level to carry out pro-environmental behaviour and the situational conditions they perceive that affect that performance of such behaviour. It has been demonstrated that strong feelings of moral obligation for carrying out a pro-environmental behaviour are only determinant for that behaviour when favourable attitudes towards the realisation of responsible behaviours do not enter into conflict with high situational inhibition. Similarly, low feelings of moral obligation do not necessarily imply an absence of pro-environmental behaviour, because the physical conditions influencing such behaviour may be perceived as facilitatory (Corraliza & Berenguer, 2000). Therefore to stimulate people's pro-environmental behaviour, a better understanding of psychological factors that influence their willingness to act in a pro-environmental manner is important. Further, a more detailed analysis at the microeconomic level is therefore required to explain these patterns of behaviour.

References

- Biel, A. (2000). 'Factors promoting co-operation in the laboratory, in common-poll resource dilemmas, and in large-scale dilemmas: similarities and divergences'. In: M. Van Vugt, Snyder, M., Tyler, T. R. and Biel, A. (eds), *Cooperation in modern society. Promoting the welfare of communities, states and organisation* . (London: Routledge), pp 25-41.
- Birch, D. (1979), 'The job creation process' Final Report to Economic Development Administration. Cambridge, MA: MIT Program on Neighbourhood and Regional Change.
- Corraliza, J.A. and J. Berenguer (2000). 'Environmental values, beliefs and actions: a situational approach'. *Environment and Behaviour*, **32**, 832-848.
- Dahlstrand, U. and Biel, A. (1997). 'Proenvironmental habits: propensity levels in behavioural change'. *Journal of Applied Social Psychology*, **27**, pp 588-601.
- Eek, D. (1998). 'To work or not to work? A social dilemma analysis of health insurance'. *Göteborg Psychological Reports*, **28**.
- Ester, P. (1991). 'Environmental concern in the Netherlands', in T. O'Riordan, and R.K. Turner (eds), *Progress in Research Management and Environmental Planning* Volume 3, (London: John Wiley and Sons).
- Etzioni, A. (1988). *The moral dimension*. New York : Free Press.
- Fairbairn, B. (1997). ISO9000 and organizational culture. Paper presented at the Institute of Quality Assurance, 4 February 1997, Manchester.
- Fineman, S. (1997). Constructing the green manager. *British Journal of Management*, **8**, 31-38

Gerrans, P.A., and W.E. Hutchinson (1998). 'EMS and SMEs: Current and likely impact of environmental management systems (EMS) on small to medium enterprises (SMEs)'. Paper presented to the 43rd ICSB World conference on Entrepreneurship, Nanyang Technological University, Singapore, 8–10 June.

Gerstenfeld, A. and Roberts, H. (2000). 'Size matters: barriers and prospects for environmental management in small and medium sized enterprises'. In: R. Hillary ed. *Small and medium sized enterprises and the environment: business imperatives.*, Sheffield, UK: Greenleaf Publishing.

Gray, C. (2000), 'Formality, intentionality, and planning: features of successful entrepreneurial SMEs in the future?' (Conference Paper: presented at the ICSB World conference 2000, Brisbane, Australia, June 2000).

Heath, A., R. Jowell, J. Curtice, G.Evans, J. Field and S.Witherspoon (1991). 'Understanding Political Change: The British Voter 1964-1987', Oxford : Pergamon Press.

Hillary, R. (1995). *Small firms and the environment: a Groundwork Status Report.* Birmingham: Groundwork.

Hillary, R. (2000). *Small and medium sized enterprises and the environment: business imperatives.*, Sheffield, UK: Greenleaf Publishing.

Hobbs, J. (2000). Promoting cleaner production in small and medium sized enterprises. In: R. Hillary ed. *Small and medium sized enterprises and the environmental business imperatives.*, Sheffield, UK : Greenleaf Publishing.

Hodge, I. (1995). *Environmental economics.* London: Macmillan.

Holland, L. and Gibbon, J. (1997). SMEs in the metal manufacturing, construction and contracting service sectors: environmental awareness and actions. *Eco-management and Auditing* **4**, 7-14.

Hutchinson, A. and Hutchinson, F. (1997). *Environmental Business Management: Sustainable Development in the New Millennium*. London: McGraw-Hill.

Hutchinson, A., and I. Chaston (1994). Environmental management in Devon and Cornwall's small and medium sized enterprise sector. *Business Strategy and the Environment*, **3**,15–22

Komorita, S. and Parks, C.D. (1994). *Social Dilemmas*. (Madison: Brown and Benchmark).

Likert, R. (1932). 'A technique for the measurement of attitudes'. *Archives of Psychology*, **140**.

Likert, R. (1961). *New patterns of management*. New York : McGraw Hill.

Ludevid, A.M. (2000). 'Small and medium sized enterprises, perceptions of the environment: A study from Spain'. In R. Hillary (ed) *Small and medium sized enterprises and the environment*. (Sheffield : Greenleaf), pp 61–74

Marshall Report. (1998), *Economic Instruments and the Business use of Energy*. London:Stationery Office.

Merritt, J.Q. (1998). 'EM into SME won't go? Attitudes, awareness and practices in the London Borough of Croydon'. *Business Strategy and Environment*, **7**, 90–100

Mintzberg, H. 1999. The entrepreneurial organization. In: H.Mintzberg, Quinn J.B., Ghosshal S. (ed) *The strategy process*. London: Prentice Hall.

Mitra, J. and Matlay, H. (2000). 'Towards the new Millennium: The growth potential of innovative SMEs'. (Conference Paper: presented at the ICSB World conference 2000, Brisbane, Australia, June 2000).

Morris, R. & G.Brennan (2000), 'Creating a seamless Local Government and small business interface for better Regional Economic Development outcomes' (Confer-

ence Paper: presented at the ICSB World conference 2000, Brisbane, Australia, June 2000).

Morrison, A. (2000). *International professional development program: Quality and Impact Assessment*. Scottish Tourism research unit, University of Strathclyde.

Noci, G. and Verganti, R. (1999). Managing 'green' product innovation in small firms. *R&D Management*, 29, pp, 3-15.

O'Connor, M. (1997). 'The internalisation of environmental costs: Implementing the Polluter Pays Principle in the European Union'. *International Journal of Environment and Pollution*, 7, 450-482

Ott, H.E. and Oberthur, S. (1999). *The Kyoto Protocol- International Climate Policy for the 21st Century*, (Heidelberg, Berlin: Springer Verlag).

Petts, J., A. Herd and M. O'Eocha (1998). 'Environmental responsiveness, individuals and organizational learning: SME experience'. *Journal of Environmental Planning and Management*, 41, 711-731.

Petts, J., A. Herd, S.Gerrad, and C. Home (1999). The climate and culture of environmental compliance within SMEs. *Business Strategy and Environment*, 8, 14-30.

Pieters, R., T. Bijmolt, F. van Raaij and M. de Kruijk (1998). 'Consumers' attributions of pro-environmental behaviour, motivation and ability to self and others'. *Journal of Public Policy and Marketing*, 17, 215-25.

Rutherford, R. and Spence, L.J. (1998). 'Small business and the perceived limits to responsibility: environmental issue?' (Conference paper: presented at 21st Institute of Small Business affairs, National Small Firms Policy and Research, 1998, Durham).

- Schaper, M. (2002). 'Small firms and environmental management: Predictors of green purchasing in Western Australian pharmacies'. *International Small Business Journal*, **20**, 235–251
- Smith, A. and Kemp, R. (1998), *Small firms and the environment 1998: a Groundwork Report*. Birmingham: Groundwork.
- Storey, D.J. (1994). *Understanding the small business sector*. London: Routledge.
- Tilley, F. (2000). 'Small firm environmental ethics: how deep do they go?' *Business Ethics: a European Review*, **9**, pp 31-40.
- Tilley, F.J. (1998). 'The gap between the environmental attitudes and the environmental behaviour of small firms: With an investigation of mechanical engineering and business services in Leeds'. PhD thesis, Leeds Metropolitan University, UK
- Tilley, F.J. (1999). 'The gap between the environmental attitudes and the environmental behaviour of small firms'. *Business Strategy and Environment*, **8**, 238–448.
- Van Lange, P. A. M., Liebrand, W.B.G., Messick, D.M. and Wilke, H.A.M. (1992). Introduction and literature review. In: W. Liebrand, Messick D.. and Wilke, H. (eds), *Social Dilemmas: Theoretical issues and research findings* (Oxford: Pergamon), pp 3-28.
- Weizsacker, E., Lovins, A. B. and Lovins, L. (1997). *Factor 4 doubling wealth - Halving resource use*, London: Earthscan.
- Welford, R. (1995). *Environmental strategy and sustainable development: the corporate challenge for the 21st Century*. London : Routledge.
- Witherspoon, S. and Martin, J. (1992). 'What do we mean by green?' In: R Jowell *et al.* (eds), *British Social Attitudes: The 9th Report*. (Darmouth: Aldershot), pp 1–26.

Annexe 1

The following question provided an insight into the attitude of the firms as regards environmental legislation and its implementation.

Q5: What in your opinion was the main impact of environmental legislation:

- a. An incentive to improvement for the good of society.
- b. A hindrance to market competitiveness.
- c. Encourages increased efficiency of production.

Pro-environmentalist firms were those that considered legislation as an incentive, leading to improvements that benefited society as a whole while anti-environmentalist firms were those that consider legislation as an impediment to overall competitiveness. A third category, innovators, considered such legislation as leading to higher efficiency through increased cost savings or market opportunities.

On the basis of question 6 it was possible to distinguish between the different degrees of environmentalism depending on the motivation for adopting environmental initiatives. Firms with a strong environmental ethos adopted environmental norms because they believed in the common interest (statement 2). Medium environmentalist firms regarded the market as the main driver for the adoption of the environmental initiatives while firms that adopted initiatives to comply with legislation were considered to have a low motivation for undertaking such initiatives.

Q 6: Many companies have contributed to a greater respect for the environment through energy savings, waste recycling, the non-use of pollutant substances and so on. Your firm adopted environmental initiatives because:

1. Of legislation.
2. It is in our interest to live in a clean environment.
3. Of new types of consumption now fashionable among our customers.

The organisational structure of a company and its relationship with environmental attitudes were derived from the following two questions. Question Q7 is related to

the perception of the organisational model in the firm and question 8 gives an insight into the organizational culture of the company.

Q7: Which of the following principles do you believe to be more important for the success of your firm?

1. That employees conscientiously fulfil the tasks assigned to them.
2. That the best technical solution is always the target.
3. That individual responsibility is taken at each level of production.

Organisations with an authoritarian model (point 1) would generally have a low regard for environmental issues while firms with a participatory model (point 3) would be at the opposite end of the spectrum. A neutral or mid-way position was held by firms that have a technocratic model (point 2).

Q8: To what degree do you personally agree with each of these statements (scoring as on the Likert scale).

1. Company culture is formed by the values of the director/owner, management, shared by his/her assistants and employees.
2. Company culture depends upon the marketplace in which the company works.
3. Company culture is a combination of customer, employees and management values.

The recognition of management values as the principal cultural factor of the company (statement 1) may indicate an authoritarian organisational model. However, it is possible that the individual attitudes of management were an important factor in the adoption of environmental initiatives particularly in the context of the entrepreneurial firm. Company culture that depends on the market to drive the implementation of environmental initiatives usually corresponds with positive environmental attitudes since pressure from consumers and competition within the market, are strong innovative factors at an environmental level. The final statement conforms to a participatory organisational model and indicates the possibility of several sources of cultural environmental attitudes (family, school, and so on).

Previously published in the BRASS Centre Working Paper series:

1. *The power to panic: the Animal Health Act 2002*
David Campbell and Bob Lee
2. *Governance and sustainability: an investigation of the role of policy mediators in the European Union policy process*
Andrew Williams
3. *Exploring the 'limits to growth' in UK organics: beyond the statistical image*
Everard Smith and Terry Marsden
4. *Shouldering the burden of corporate social responsibility: what makes business get committed?*
Heledd Jenkins and Frances Hines
5. *The politics of divestment: passing the buck along the railway line*
Everard Smith
6. *Linking the environmental and social dimensions of corporate social responsibility*
Andrew Williams
7. *The SRI dilemma for pension fund trustees: some perceptions of their evolving role*
Aris Solomon and Jill Solomon
8. *Waste policy in Wales: the case of construction and demolition waste*
Caroline Cohen, Andrew Flynn and John Ryder
9. *Living differently?: an assessment of the first four years of the Welsh Assembly Government's sustainable development duty*
Andrew Flynn
10. *A sustainable development agenda for the second term of the Welsh Assembly Government*
Andrew Flynn
11. *System innovation in the automotive industry: achieving sustainability through micro-factory retailing*
Andrew Williams
12. *An annotated bibliography of the accountability of multinational corporations: a review of international human rights law*
Tamara Egede and Celia Wells

13. *Manufacturing and trade in Wales: briefing paper for the Welsh Affairs Committee*
Jane Bryan, Calvin Jones, Max Munday and Annette Roberts
14. *In search of ethical business leadership: time to mix our metaphors?*
Ken Peattie
15. *The food supply chain and innovation: a case study of potatoes*
Natalia Yakovleva and Andrew Flynn
16. *Communities and their quality of life: how local government is delivering sustainable development*
Andrew Flynn and Alan Netherwood
17. *The battle for the consumers: building relationships in a new phase of contested accountability in the UK food chain*
Samarthia Thankappan, Terry Marsden, Andrew Flynn and Robert Lee
18. *Corporate social responsibility: engaging small and medium sized enterprises in the debate*
Heledd Jenkins
19. *Trade and sustainability: promoting closer co-operation between the trade and environment regimes*
Andrew Williams
20. *Innovation and the food supply chain: a case study of chicken*
Natalia Yakovleva and Andrew Flynn
21. *The Food Standards Agency: making a difference?*
Andrew Flynn, Lisa Carson, Robert Lee, Terry Marsden and Samarthia Thankappan
22. *Measuring sustainability: the role of ecological footprinting in Wales, UK*
Andrea Collins and Andrew Flynn

ISBN 1 904393 51 9