



---

## **MANAGING ENVIRONMENTAL RISK IN SMALL BUSINESS: AN AGENDA FOR RESEARCH**

*A paper for the Small Enterprise Association of Australia and New Zealand 16<sup>th</sup> Annual  
Conference, Ballarat, 28 Sept-1 Oct, 2003.*

**Dr Diana Rajendran**

Family and Small Business Research Unit  
Monash University  
Churchill 3842 Victoria  
Australia

**Dr Rowena Barrett**

Family and Small Business Research Unit  
Monash University  
Churchill 3842 Victoria  
Australia

Ph: 61 3 9902 6619

Fax: 61 3 9902 7154

Email: [Rowena.Barrett@BusEco.monash.edu.au](mailto:Rowena.Barrett@BusEco.monash.edu.au)

### **Abstract**

In recent times the call for corporate social responsibility has become louder and protecting the environment is one aspect for organisations to address if they are to behave in a socially responsible manner. Environmental management is a continuous process but those businesses that develop and implement an Environmental Management System (EMS) reap long-term sustainable competitive advantage. ISO 14001, the international standard that specifies the requirements for a firm's environmental management system, is examined in this paper and in particular the research on the costs and benefits of this standard for small business is addressed. The lack of available Australian research on this issue in relation to small business leads to a recommendation for research and an agenda for pursuing that research.



## **MANAGING ENVIRONMENTAL RISK IN SMALL BUSINESS: AN AGENDA FOR RESEARCH**

### **INTRODUCTION**

To achieve and maintain competitive advantage firms need to be appropriately positioned within their industry (Porter, 1980) and focus on the development and use of firm specific core competencies (Barney, 1991). Organisational learning is important to ensure these competencies do not become static and therefore outdated or replicable by others. Further, synergistic cooperative, networking relationships between firms can also lead to competitive advantage by supporting firms' strengths and overcoming weaknesses (Simonin, 1997). 'Going green' or the adoption and use of an environmental management system can be a source of competitive advantage (Abounaga, 1998; Boiral and Sala, 1998), while environmental initiatives can be used to leverage a firm's innovative capability (Roy and Vezina, 2001).

An environmental management system (EMS) is based on the concept of continuous improvement in all aspects of the firm's environmental performance. ISO 14001, which was introduced in September 1996, specifies the requirements for an EMS and it applies to those environmental aspects over which the firm either has control or could be expected to have an influence. ISO 14001 follows the Plan-Do-Check-Act model and shares a number of features in common with ISO 9000, hence firms already certified to ISO9000 can find synergies between the standards. Proponents of ISO 14001 argue that it can act as a framework for significantly improving organisational performance (Stapleton, Glover and Davis, 2001), but although the number of certified firms has grown these firms are more likely to be larger than small (Bansal, 2002). The International Standards Organisation (ISO) (2002) reports that 1,370 Australian firms were certified ISO 14001 in December 2001, representing around 3% of the world total of certified firms.

The purpose of this paper is to examine the available research on the costs and benefits of ISO 14001, but in order to do this it is first necessary to outline the requirements of the standard. In particular this paper seeks to examine these issues in relation to small firms (those employing less than 20 people) as they represent around 96% of all private sector business in Australia (ABS, 2002). In essence this paper seeks to understand the circumstances under which small firms decide that 'going green' pays. By understanding the costs and benefits of implementing ISO14001 in small firms, suitable policies, strategies or programs to minimise the costs and publicise the benefits of certification can be developed.



## ENVIRONMENTAL MANAGEMENT SYSTEMS AND ISO 14001

An Environmental Management System (EMS) is an organisational approach to environmental management that incorporates quality improvement principles of Edward Deming [The Quality Guru]. Although many firms adopt voluntary practices to protect the environment, often there is a tendency to cure problems that have arisen rather than prevent them from arising in the first place. An EMS provides a firm with a highly structured framework for developing its own environmental policy (Boiral and Sala, 1998). ISO 14001 and the EMAS (Eco-Management and Audit Scheme) – the European standard, provide guidelines for designing own organisational policies to improve a firm's environmental management practices so that they may become a model corporate citizen. There are also several other standards in the series, which include ISO 14004, ISO 14011 and ISO 14012, however these serve only as documents to help in the certification process. An EMS, certified to ISO 14001 or EMAS, is considered to be an administrative vehicle that is expected to systematically align a firm's specific outcomes, activities and metrics with a general framework of sustainability (Robert, 2000).

ISO 14001 is the international standard that reflects a new and better understanding of the expectations of environmental management. ISO 14001 is, therefore, built on total quality management (TQM) concepts, in particular it follows Deming's Plan-Do-Check-Act cycle.

ISO 14001 is a set of guidelines by which a facility – a single plant or a whole organization – can establish or strengthen its environmental policy, identify environmental aspects of its operations, define environmental objectives and targets, implement a program to attain environmental performance goals, monitor and measure effectiveness, correct deficiencies and problems and review its management systems to promote continuous improvement (Weaver, 1996 cited in Morrow and Rondinelli, 2002: p161).

ISO 14001 does not specify absolute requirements for firms but the specifications are based on the traditional management principles (Boiral and Sala, 1998). In particular commitment from all levels of the organisation to environmental sustainability and management is essential. Various authors (EPA, 2002; Bansal and Bognar, 2002; Boiral and Sala, 1998; Kwon, Seo and Seo, 2002; Morrow and Rondinelli, 2002; Robert, 2000; Sullivan and Wyndham, 2001; Zutshi and Sohal, 2002a, b) identify the principles underpinning ISO 14001 as including:

- *Policy*: This is where management translates their environmental commitment into a plan and series of actions the business is to take through their EMS objectives, targets, and environmental programs.
- *Planning*: All environmental aspects which includes all the processes, products and services, of the firm's operations are identified and used to frame the goals and targets for the EMS. Planning also includes the documentation of responsibilities.
- *Implementation and Operation*: At this stage responsibilities are assigned and training needs are identified. Through effective communication, appropriate documentation procedures are completed, while emergency preparedness and appropriate response programs for crises management are outlined and communicated through relevant training. Periodic revision of documents carried out should be circulated to provide details of the individual environmental responsibilities.
- *Checking and corrective action*: When plans are implemented, they are to be monitored to measure their impact. If any problems and/or deviations are identified they are rectified through corrective action and to prevent future occurrence. At this stage the compatibility of EMS goals are checked as record keeping procedures for their ability to contribute to the environmental audit program.



- *Management Review and Continual Improvement:* This is the stage where management audits the EMS, its adequacy, suitability and effectiveness and strive for continuous improvement in environmental performance.

Advocates of ISO 14001 propose many reasons for certification which include: improved regulatory compliance; increased market share; responsiveness to customer pressures; access to global markets; cost reduction from improved efficiency; and enhanced reputation (Tibor and Feldman, 1996, Harington and Knight, 1999, Woodside, 2000 in Fryxell and Szeto, 2002). Other drivers for ISO 14001 certification include: potential energy savings; green marketing efforts; overall reduced resource usage; reduced waste disposal costs; requirements from parent company or trading partners; desire to display environmental leadership; desire to 'be a good neighbour'; incentives and pressures from government regulations; and a desire to reduce liability and/or insurance premiums (Raines, 2002). However, Schaltegger and Synnestvedt (2002) argue that the relationship between the environmental effort and the benefits may vary according to the legislative practices in the country, the size of the business, the culture, customer behaviour, the type of industry and the time span. They argue that the best environmental practices are moderated by managerial qualities resulting in not so specific economic performances. They also cite Christmann (2000) and Kanagozoghu and Lindell (2000) to argue that superiority in performance does not lead to competitive advantage.

Despite this, various overseas examples can be cited to illustrate potential benefits of ISO 14001. For example, an Irish printing firm in the SME sector with 360 full time employees (Printech), was accredited to BS 7750 and in 1996 was certified for ISO 14001 (Gallagher, 1997). The firm claims that as a direct result of their EMS their emission control levels are well below the legislative levels and their energy costs have been reduced. For this firm certifying their EMS to ISO 14001 is a source of competitive market advantage. Another firm, this time from France, an automobile sales and repair garage with 21 employees (Garage Maurice), became involved in environmental programs that were launched by industry associations and state organisations. The firm, seeing the advantages to the industry of ISO 14001, is now involved in the development of an environmental charter for garages in its region (INEM Case Book, 1999). In Japan, manufacturers tend to incorporate environmental goals in their decisions. They see the benefits of ISO 14001 certification in terms of profit maximisation and utility maximisation assumptions (Nakamura, Takahashi and Vertinsky, 2001).

Despite the benefits of ISO 14001 the level of adoption is low worldwide. Kolln and Prakash (2002) examined the variations in firm-level adoption of ISO 14001 and the European Union's Eco-Audit and Management Scheme (EMAS) in the UK, Germany and US. They argue that the costs and benefits for a firm of certifying their EMS are largely determined by domestic factors, such as dissemination of information in that country which they call as 'supply aspects' and the constellation of stakeholders which they refer to as 'demand aspects'. Kolln and Prakash (2002) also suggest that governments and interested stakeholders can encourage firms to adopt voluntary environmental codes by finding the right mix of incentives in a specific national context, and they attribute this as the key to success. In a similar vein, Townsend (1998) argues that greater environmental performance will come about through regulatory and commercial considerations. This is supported by Kwon *et al* (2002) who investigated the impact of ISO 14001 on Korean companies complying with environmental regulations. They suggested that it provides a practical workable framework to control environmental risks, thus preventing accidents and violation of environmental regulations. They show that the environmental violation rates were reduced in Korea from



3.5% to 1% for certified companies during the study period of 1997-98 (Kwon *et al*, 2002). Supply chain management also can increase the ISO 14001 adoption rate: large firms certified to ISO 14001 may require their suppliers to be certified (Boiral and Sala, 1998). Such a process, Boiral and Sala (1998) claim, would not only enhance globalisation of trade but would also build business relationships between organisations.

Despite the benefits for firms of certifying their EMS to ISO 14001, much of this evidence pertains to large rather than small firms and much of the evidence originates from Europe or the US. Furthermore, where evidence is cited to show benefits to small firms it also largely emanates from Europe or the US where ‘small firms’ (usually defined as less than 200 or 500 employees respectively) are much larger than Australian small firms (less than 20 employees). If one assumes that like European small firms, Australian small firms are significant contributors to environmental pollution (ECOTEC, 2000), then what they are doing to manage that environmental risk is not particularly well understood.

### **SMALL FIRMS, EMS AND ISO 14001**

In Australia small firms (those employing less than 20 people) represents around 96% of all private sector business and employs nearly 50% of the private sector workforce, and makes a significant contribution to Australia’s economic performance on a range of measures (ABS, 2002). The magnitude of pollution does not necessarily depend upon firm size. Lord (1990) suggests a number of ways small firms impact on the environment through their usage of raw materials (power, water, fuel etc) and other inputs into the firm and production process. In addition, equipment purchase and use, packaging, and waste disposal are ways small firms can affect the environment.

To this extent, small firms do contribute substantially to environmental pollution. Experiences in other countries like Sweden, Germany, Ireland, Austria, Netherlands, etc, have shown that small firms do benefit from implementing environmental measures and gain consequent benefits. However, much of the evidence of the costs and benefits to small firms is anecdotal (Morrow and Rondinelli, 2002). Further, while there is information targeted at small firms about EMS and ISO 14001, this does not necessarily accommodate the Australian context and experience.

What is known is that small firms face a number of barriers to adopting ISO 14001 and these can arise internally as well as externally. For example a component of ISO 14001 is a planning process that identifies all environmental aspects of the firm’s operations (Rondinelli and Vastag, 2000). Given that research shows that only around 14% of small firms have a documented business plan (DIST, 1997) then the likelihood of undertaking the detailed planning process required by ISO 14001 is very low. Furthermore planning takes time and research, as indicated by Gerstenfeld and Roberts (2000), Grombault and Versteeg (1999) and Verhaul (1999). These authors all point to time as a determinant of the implementation of environmental projects. Owners and/or managers of small firms are often said to be too busy working in their business to work on their business. This can be problematic as an EMS is an outcome of working on the business.

Other ISO 14001 components – documentation, training, internal and external communication about ISO 14001, monitoring, measuring and reviewing procedures – also place higher standards of business practices than would normally exist in many small firms. Moreover these practices are costly in both a financial and time sense. Palmer (2000) argues that a lack



of financial resources inhibits environmental progress however Schaper's (2002) study of environmental management in the WA pharmacy industry found no significant relationship between access to capital and environmental performance.

Hillary's (2000) examination of the impact of EMS on small firms leads him to argue that small firms have little knowledge and interest in environmental questions. Furthermore, small firms do not always comply with compulsory external regulatory requirements (for example industrial relations regulations) and therefore the voluntary nature of implementing an EMS may act against small firms seeking certification. Increasing small firm's knowledge of environmental issues would enable small firms to improve their performance and encourage them to act in an environmentally responsible way (Schaper, 2002).

Hillary (2000) argues that demands from customers may force small firms to network and adopt ISO 14001 certification. Similarly Boiral and Sala's (1998) claim that large firms can drive their suppliers to adopt ISO 14001 can be illustrated with an Australian example. Ford Motors has made it mandatory for all its global suppliers to 'go green' and obtain ISO 14001 certification by July 2003, while most of their suppliers are small to medium firms.

A range of authors (Babakri, Bennett and Franchelli, 2003; Jensen, 1998; Rondinelli and Vastag, 2000; Zutshi and Sohal, 2002a, b) identify some of the problems and/or challenges of ISO 14001 for small firms, which are said to include the following.

- A lack of documented policies concerning environmental concerns.
- An unwillingness of firms to apply for certification.
- That few employees are unable to understand the requirements of the certification.
- An inability for firms to cope with the change.
- An inability for management to visualise the economic benefits and justify the market value of certification.
- Compliance with legal formalities.
- That certification is viewed as 'another bill to pay'.
- A lack of external support.
- That the time span for obtaining ISO 14001 certification can be too long.
- That EMS documentation procedures are complicated and cumbersome (not user friendly).
- That the cost of certification and audit is too high.
- That the cost of training and documentation is too high.
- That firms have a preference for investing in less restrictive activities leading to a more obvious or more immediate result in the area of environmental improvement.

Clearly there are multiple problems or challenges small firms face with implementing ISO 14001. In a sense many of these relate to the issue of sunk costs: that is once the business is up and running the cost of implementing an EMS and then certifying it to ISO 14001 is very high. For this to be overcome the potential economic, social and competitive benefits of an EMS and ISO 14001 certification needs to be made apparent. Below we are proposing a research agenda that begins this process in the Australian context.

## **A RESEARCH AGENDA**

Research has begun to look at the costs and benefits of adopting ISO 14001, leading Bansal and Bogner (2002) to note that "the costs for ISO 14001 are very real, the economic and institutional benefits are often long term, diffused and sometimes invisible". In Australia,



where small firms are very small by international standards, the costs and benefits of certifying a firms' EMS to ISO 14001 is not well understood.

A research agenda that looks at the costs and benefits of ISO 14001 for small Australian firms is proposed. We suggest that research needs to focus on the drivers for EMS in the Australian context and in particular to examine whether these drivers differ between small and large firms. Further we suggest that research needs to consider the array of certification 'types' available for an EMS and this is related to the motivation to adopt ISO 14001 or not.

In particular we are proposing research to examine the motivations to adopt an EMS (operating costs, firms' image, market trends, firm performance, and environmental conservation for example) and intend to compare these motivations between small and large firms. In order to ensure some comparability the analysis will be restricted to one industry sector. A series of case studies will be undertaken constructed from interviews with senior management to examine the motivations for adopting an EMS and the process of implementation. Motivations to be examined include: competitive advantage; customer or market pressure; conformance to vendor requirements; improvement of corporate image; employee environmental awareness and commitment to the environment; hazardous waste handling; pollution prevention and integration of pollution prevention programs, amongst others.

Information about the costs (including, initial start up costs, training costs, documentation costs, changeover or process modification costs, operating costs, compliance costs, waste disposal and pollution prevention costs) will also be sought as will how firms quantify the benefit or effectiveness of the EMS (for example in terms of increased investor confidence, customer satisfaction or loyalty, conservation of materials or energy, prevention of negative environmental impact, adherence to industry codes or legislative requirements, decreased costs, process and product innovation, amongst others).

Such a research agenda is necessary for an understanding and analysis of a variety of trade-offs and their implications on the real and perceived costs and benefits of implementing an EMS in small firms. This significant step can bring about suitable policies, user-friendly strategies or programs to minimise the costs and publicise the benefits of ISO 14001 certification and thus the environmental credibility of SMEs in Australia.



---

## REFERENCES:

- Aboulnaga, I. (1998) 'Integrating quality and environmental management as competitive business strategy for the 21<sup>st</sup> century', *Environmental Management and Health*, 9, 2, 65-71.
- Australian Bureau of Statistics (2002) *Small Business in Australia 2001*. Catalogue Number 1321.0. Canberra: ABS.
- Babakri, K., Bennett, R., and Franchetti, M. (2003) 'Critical factors for implementing ISO 14001 standard in United States industrial companies', *Journal of Cleaner Production*, 11, 7, 749-752.
- Bansal, P. (2002) 'The corporate challenges of sustainable development', *Academy of Management Executive*, 16, 2, 122-131.
- Bansal, P., and Bogner, W. (2002) 'Deciding on ISO 14001: Economics, institutions and context', *Long Range Planning*, 35, 269-290.
- Barney, J. (1991) 'Firm resources and sustained competitive advantage', *Journal of Management*, 16, 99-120.
- Boiral, O., and Sala, J. (1998) 'Environmental management: Should industry adopt ISO 14001', *Business Horizons*, Jan-Feb, 57-64.
- Christman, P. (2000) 'Effects of best practices of environmental management on cost advantages: The role of complementary assets.' *Academy of Management Journal*, 43, 663-681.
- Department of Industry Science and Tourism/Productivity Commission (1997) *A Portrait of Australian Business: Results of the 1995 Business Longitudinal Survey*. Small Business Research Program, Canberra: AGPS.
- ECOTEC, (2000) *Report on SMEs and the Environment for the European Commission, Directorate General Environment*. ECOTEC Research and Consulting, Brussels.
- EPA (2002) *Practical Guide to Environmental Management for Small Business*, The EPA Small Business Division, Washington D.C., U.S. Environmental Protection Agency,
- Fryxell, G., and Szeto, A. (2002) 'The Influence of motivations for seeking ISO 14001 certification: An empirical study of ISO 14001 certified facilities in Hong Kong', *Journal of Environmental Management*, 65, 223-228.
- Gallagher, N. (1997) 'Environmental management system implementation at an Irish printing company', *INEM Casebook: Case Studies in Environmental Management in Small and Medium-Sized Enterprises*, [http://www.inem.org/htdocs/case\\_studies/printech.html](http://www.inem.org/htdocs/case_studies/printech.html)
- Gerstenfeld, A., and Roberts, H. (2000) 'Size matters', in R. Hillary (ed) *Small and Medium Sized Enterprises and The Environmental Business Imperatives*. Sheffield: Greenleaf Publishing.
- Gombault, M and Versteeg, S. (1999) 'Cleaner production in SMEs through partnerships with (Local) authorities: Successes from the Netherlands', *Journal of Cleaner Production*, 7, 4, 249-261.
- Harrington, H. and Knight, A. (1999) *ISO 14000 Implementation – Upgrading your EMS Effectively*. New York: McGraw-Hill.
- Hillary, R. (2000) (Ed) *Small and Medium Sized Enterprises and The Environmental Business Imperatives*. Sheffield: Greenleaf Publishing.
- INEM (1999) *Case studies in Environmental Management*, [http://www.inem.org/htdocs/inem\\_casestudies.html](http://www.inem.org/htdocs/inem_casestudies.html)
- ISO (2002) *The ISO survey of ISO 9000 and ISO 14000 Certificates: Eleventh Cycle*. <http://www.iso.ch/iso/en/iso9000-14000/iso14000/iso14000index.html>
- Jensen, P. (1998) 'What problems do SMEs have with ISO 14001 and how can we help them? SMEs and ISO 14001: Problems and Solutions'. [http://www.inem.org/htdocs/inem\\_casestudies.html](http://www.inem.org/htdocs/inem_casestudies.html)



- Kanagozogh, N. and Lindell, M. (2000), Environmental Management: testing the win-win model, *Journal of Environmental Planning and Management*, 43, 817-830.
- Kolln, K., and Prakash, A. (2002) 'EMS-based environmental regimes as club goods: Examining variations in firm-level adoption of ISO 14001 and EMAS in UK, US and Germany', *Policy Sciences*, 35, 1, 43-67.
- Kwon, D-M., Seo, M-S., and Seo, Y-C. (2002) 'A Study of compliance with environmental regulations of ISO 14001 certified companies in Korea', *Journal of Environmental Management*, 65, 347-353.
- Lord, B. (1990) *The Green Workplace: A Practical Guide to An Environmentally Safe Workplace*. Melbourne: Information Australia.
- Morrow, D., and Rondinelli, D. (2002) 'Adopting corporate environmental management systems: Motivations and results of ISO 14001 and EMAS certification', *European Management Journal*, 20, 2, 159-171.
- Nakamura M., Takahashi T., and Vertinsky I. (2001) 'Why Japanese firms choose to certify: A study of managerial responses for environmental issues', *Journal of Environmental Economics and Management*, 42, 23-52.
- Palmer, J. (2000) 'Helping SMEs improve environmental management', in R. Hillary (ed) *Small and Medium Sized Enterprises and The Environmental Business Imperatives*. Sheffield: Greenleaf Publishing.
- Porter, M. (1980) *Competitive Strategy*. New York: The Free Press.
- Raines, S. (2002) 'Implementing ISO 14001: An international survey assessing the benefits of certification', *Corporate Environmental Strategy*, 9, 4, 418-426.
- Robert, K-H. (2000) 'Tools and concepts for sustainable development, how do they relate to a general framework for sustainable development, and to each other?', *Journal of Cleaner Production*, 8, 243-254.
- Rondinelli, D., and Vastag, G. (2000) 'Panacea, common sense or just a label? The value of ISO 14001 Environmental Management Systems', *European Management Journal*, 18, 5, 499-510.
- Roy, M., and Vezina, R. (2001) 'Environmental performance as a basis for competitive strategy: Opportunities and threats', *Corporate Environmental Strategy*, 8, 4, 339-347.
- Schaltegger, S., and Synnestvedt, T. (2002) 'The link between 'green' and economic success: Environmental management as the crucial trigger between environmental and economic performance', *Journal of Environmental Management*, 65, 339-346.
- Schaper, M. (2002) 'Small firms and environmental management: Predictors of green purchasing in Western Australian pharmacies', *International Small Business Journal*, 20, 3, 235 –251.
- Simonin, J. (1997) 'The importance of collective know-how: An empirical test of the learning organisation', *Academy of Management Journal*, 14, 1, 150-174.
- Stapleton, P., Glover, M., and Davis, S. (2001) *Environmental Management Systems: An Implementation Guide for Small and Medium Sized Organisations (second edition)*. US: NSF International.
- Sullivan, R., and Wyndham, H. (2001) *Effective Environmental Management: Principles and Case Studies*. NSW: Allen-Unwin.
- Tibor, T and Feldman, I. (1996) *ISO 14000: A Guide to the New Environmental Standards*. Chicago: Irwin.
- Townsend, M. (1998) *Making Things Greener: Motivations and Influences in the Greening of Manufacturing*. Aldershot: Ashgate.
- Verhaul, H. (1999) 'How social networks influence the dissemination of cleaner production technologies to SMEs', *Journal of Cleaner Production*, 7, 3, 213-219.



- Zutshi, A., and Sohal, A. (2002a) Environmental management system adoption by Australasian organisations Part 1: Reasons, benefits and impediments', *Technovation*, {Article in Press}
- Zutshi, A., and Sohal, A. (2002b) 'A study of the environment management system (EMS) adoption process within Australasia organisations Part 2: Role of Stakeholders. *Technovation*. {Article in Press}