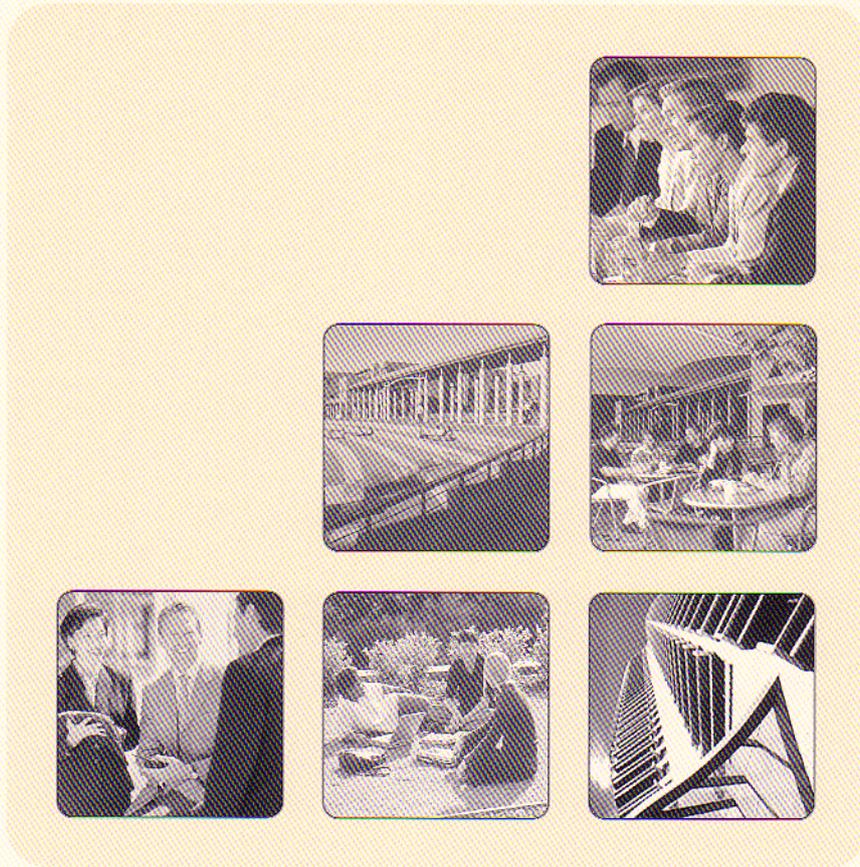


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## The Environmental Performance of Home-Based Businesses in Western Australia

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## **Abstract**

The role and impact of very small firms is usually overlooked by most research into the environmental performance of businesses. This is due in part to their relative invisibility: most of these so-called “micro-enterprises” employ no staff, work from home, and are concentrated in the services sector of the economy. In contrast, most existing studies have examined larger firms in the manufacturing, retail and industrial sectors, where inputs, waste and resource usage are both more easily observed and more frequently measured.

In Australia, a micro-enterprise is defined as a business which has less than five employees, or else no staff at all. Of the 1.2 million businesses in the country, more than one million firms are classified as micro-enterprises. The vast majority of these (780,000) are home-based businesses located at the owner’s residence.

This paper is a report of a recent (May 2002) study into the environmental performance of home-based micro-business in the state of Western Australia. 550 businesses were surveyed, with 95 useable responses received. Six areas of environmental performance were evaluated: donations towards environmental groups and causes; recycling of office paper; lighting usage; the purchasing of environmentally friendly office products; connection to renewable energy options; and the use of low-impact transportation systems (public transport, cycling and walking) for work purposes. It was found that most home-based firms engaged in some form of paper recycling, purchased environmentally-friendly products for office use, and used energy-efficient lighting for their office. However, few firm owners donated to environmental groups, signed up to “green” electricity sources for their power, or used environmentally-friendly transport modes.

## **Introduction**

Home-based businesses (HBBs) represent the majority of business operating in Australia and many other countries today, yet their role and impact on environmental outcomes is poorly understood. Traditionally most research into the environmental performance of business has been concentrated on large corporations. In recent years there has been a marked increase in the number and range of studies into the environmental impact of small and medium-sized firms (see, for example, Hillary 2000; Wolters 2000). However, the largest single group of small firms in many countries are the so-called micro-firms. These are organisations which employ between 0-4 staff. The vast majority of them are usually operated at (or from) the owner’s residence. Because of their very small size, they are often overlooked when the environmental performance of firms is examined.

As a result of this near-invisibility, there are many aspects about environmental business management within the micro-firm that have yet to be fully analysed. This paper reports on an initial exploratory study which sought to examine environment management within the largest category of

micro-firms - the home-based business - using a mixture of both qualitative and basic quantitative research tools. More specifically, the purpose of the project was to:

1. Examine the perceptions of HBB owner/operators about their role and impact on environmental issues;
2. Assess the perceived barriers and opportunities to collecting empirical data about the same; and
3. Collect basic descriptive data about the environmental performance of HBBs, which may be used as a baseline for future research into this area.

It begins by briefly explaining some of the basic characteristics of HBBs, the potential ways in which they can impact on the environment, and some of the difficulties of conducting research within this field. It then discusses the perceptions of HBB owner/operators about their environmental impact, and the results of a mail survey into their actual "green" business practices. It concludes by highlighting some of the limitations of the research, and provides some suggestions for future research in this field.

### **The Nature Of Home-Based Businesses**

Many businesspeople and researchers are often surprised by the size and significance of the home-based business sector. Traditionally it has been regarded as a small-scale phenomenon with limited relevance to the wider economy. In reality, however, HBBs are a major structural force in almost all economies. Australia is no exception. In June 2001, there were almost 780,000 home based businesses in the country, which accounted for 67% of all small businesses in the nation. These were operated by 999,000 owner/managers (Australian Bureau of Statistics 2001).

Today, home-based firms constitute one of the fastest growing groups of all business enterprises in Australia. In recent years, the rate of increase has significantly outstripped the general growth in all small businesses (between 1999-2001, for example, the number of HBBs grew by an average annual rate of 16%, compared to 11% for all small firms) (Australian Bureau of Statistics 2001). Such micro-enterprises have helped generate most of the new jobs created in the country (Department of Employment, Workplace Relations and Small 1998). Moreover, the majority of all new firms that commence trading do so whilst operating as a home-based business (Peacock 2000).

Once perceived to be highly risky enterprises with low financial returns and only marginal prospects for long-term survival, many researchers today suggest that in fact the opposite is often true: most HBBs endure for a relatively long period of time (typically more than five years), and are capable of generating significant economic returns for their owner/operators (Stanger 2001; Jay 2001). Similar comments have been noted in other countries (Good & Levy 1992).

The growth in the number and significance of home-based businesses has been driven by a number of factors. At the macro-economic level, the recent rapid expansion in the services sector of the Australian economy has opened up numerous opportunities for businesses that can work from the owner's home. Unlike manufacturing, wholesaling or retailing, service-based firms largely rely on individual skills, and do not need large storage areas or a location in a retail shopping complex. Not surprisingly, then, many HBBs are drawn from the services sector. At the micro-level, the expansion of HBBs has been encouraged by increasing flexibility in local government zoning and regulations (which permit the use of homes as business premises), and an increasing willingness by small-scale entrepreneurs to set up enterprises which are low in capital outlay, allow more time with the family, and which can be operated part-time if desired.

The typical HBB in Australia tends to display characteristics that set it apart from other small, medium and large-scale enterprises. Although the majority of HBB owners are male, there is a higher proportion of female proprietors in this sector than are found in larger businesses. HBB operators also tend to be better educated than most other business owners, with a higher proportion holding degrees or post-secondary education qualifications. The archetypal HBB operator is usually between 30-50 years old, and often only works part-time in the enterprise. Most operators have had no formal management training, and have funded the venture entirely from their own personal finances. Almost 70% have no staff (Australian Bureau of Statistics 2001).

## **The Possible Environmental Impact of Home-Based Businesses**

Like any other business venture, there are a number of ways in which HBBs can impact on the environment. For example, although they are small in size, such firms are still consumers of raw materials, emitters of waste products, users of energy and water, and require transport. They often also form a basic part of the supply chain through which larger business entities distribute and consume goods and services.

Where HBBs do differ from many other enterprises, however, is that it is often difficult to demarcate the point at which business activities end and personal environmental impacts start. Having a business entity which is located in a residential context makes it extremely difficult to effectively “draw a box around the business” and unambiguously be able to claim that all activities within the box are clearly commercial ones, and all others are private. In reality, the line between the two spheres is often blurred and hard to disentangle.

The potential ways in which HBBs can act to improve their environmental performance is also extensive, and contains a mix of both private and commercial steps. Numerous writers have suggested practical action which can be introduced into almost all small business to make their operations “greener” (Lord 1990; Australian Greenhouse Office 1999; Durham University Business School 1997). These measures can include paper recycling and consumption reduction; more efficient usage of packaging materials; energy audits; economising on water, lighting, electricity and gas consumption; staff training and participation in environmental improvement activities; decreased use of private motor vehicles and increased public transport usage; supporting environmental groups and causes; and purchasing energy- and resource-efficient appliances and equipment. Many of these steps apply equally to the private behaviour of residential households. A number of the most common suggested measures is shown in Table One below.

Evaluating the environmental performance of a business organisation has long been a somewhat problematic issue, regardless of its size. As Wehrmeyer (1995) has pointed out, there is a vast range of quantitative measures which can be employed to gauge environmental activity in a business, and most of these can be evaluated in a number of different ways. In a micro-firm where the owner/operator is often the only employee of the business, measuring green performance is even more difficult, because it is often difficult to separate individual action from business activities. Potentially a very wide range of different indicators may be needed, because different individuals may choose to display environmentally-relevant activities in a number of different ways (Cave 1998).

Which activities are worthy of study, and which are best left aside? As Wehrmeyer, Tyteca and Wagner (2001) have suggested, an important issue in environmental management research today is the question of how many (and which) indicators are the minimum necessary to provide an approximate description of performance. Ideally all actions could be evaluated, but the reality is that all research is subject to resource constraints (such as cost, instrument complexity, and the willingness of subjects to respond). In practice, it is rarely feasible to conduct a meaningful performance evaluation project unless it is relatively simple for participants to understand, easy for respondents to complete, and yet retains its validity. One way to overcome such problems is to ask the respondents themselves, to determine which activities can feasibly be assessed (Ticehurst and Veal 1999).

**Table 1: Possible Environmental Practices in Both Small Firm & Residential Households**

**TRANSPORT**

Recycle motor vehicle oil  
Use public transport in lieu of private  
Car pooling

**PACKAGING**

Recycle/reuse packaging  
Reduce packaging consumed  
Order and store in bulk

**WATER**

Water reuse/recycling  
Install water wise shower heads  
Install dual flush toilets  
Purchase biodegradable detergents

**ENERGY, BUILDINGS and LANDSCAPING**

Use natural light (skylights, etc)  
Solar passive buildings  
Solar heating  
Provide indoor plants  
Use recycled timber  
Install energy efficient light bulbs  
Walkways over sensitive native vegetation  
Plant local native vegetation  
Use timers for lighting  
Use timer controls for airconditioning  
Undertake an energy audit  
Use energy ratings when choosing new office equipment

**RECYCLING**

Use recycling bins (for paper, cans, glass)  
Recycle paper for office use

**WASTE**

Install worm farms for vegetable waste  
Recycle green (food, vegetation) waste

**BUSINESS OPERATIONS and PROCESS**

Use ozone-friendly cleaning products  
Develop a statement of environmental aims  
Communicate the statement to all stakeholders  
Include environmental issues in the firm's business plan  
Safe storage of hazardous materials  
Calculate the whole life cost of each product produced

**EXTERNAL ORGANISATIONS**

Discounts for environmental groups (when booking rooms, facilities, etc)  
Lobby politicians on environmental issues  
Join an environmental group  
Sponsor an animal in the zoo/conservation project

**Sources:**

Lord (1990); Western Australian Department of Environmental Protection (1999); Australian Greenhouse Office (1999); Australian Bureau of Statistics (1998, 1999, 2000).

## **Methodology**

This study was conducted in two parts. In the first phase, six male and six female HBB owners were personally interviewed. This provided the opportunity to initially explore the topic in some detail, and to help formulate the questions which could be used in a subsequent quantitative analysis.

The second phase consisted of a mail survey, the questions for which were based on the prior interviews. This was conducted as part of a larger study into the performance and characteristics of home-based businesses located in Perth, the capital city of the state of Western Australia.

Data collection amongst the HBB sector, both in Australia and elsewhere, has often been a somewhat problematic affair for researchers. There are a number of substantial research barriers, some of which are unique to the field. In the first place, it is difficult to access a comprehensive database of all HBBs in a region, since it is usually not mandatory under local government laws for firms to register. Moreover, it is also possible for HBBs to “slip through” many publicly accessible business databases (for example, firms trading as sole proprietors under the owner’s name and tax file number are not required to register as separate entities with either the taxation or business regulatory authorities). Sometimes even the owners themselves regard their enterprise as more of a personal project than a *bona fide* business venture, and so do not register themselves. Not surprisingly, then, response rates in previous HBB studies have often been quite low (often managing less than 5%). As a result, most studies have tended to use a convenience sampling approach in order to boost respondent numbers (Jay 2001; Stanger 2001; Peacock 2000). This strategy was also adopted for the current project.

The sampling frame consisted of a database of active HBBs who had made recent contact with their local small business assistance agency (part of the community-based Business Enterprise Centre network). These firms were all located within the south-west portion of the greater Perth metropolitan area, and covered three different local government jurisdictions. This group was used primarily because each Centre maintains a regularly updated list of HBBs in its area, thus helping to ensure that the database was relatively accurate and comprehensive. Interview respondents were selected as a convenience sample, but were subsequently excluded from the mail survey. The survey questions were administered as part of a larger questionnaire sent out to 550 home-based firms in the region distributed in May 2002.

## **Personal Perceptions Of Owner/Operators**

An initial examination of firms began with a series of personal interviews with HBB operators. Business owners were asked a number of questions relating to their environmental impact and performance:

- Do you believe that your firm has an impact on the natural environment?
- Can you list practical measures that you do in your business which have an environmental impact?
- How is it possible to quantifiably evaluate these?

Respondents provided a wide range of answers and possible courses of action. However, the clear majority were of the view that their business did not have an environmental impact. Few of them seemed to be aware of their potential or actual role in affecting raw material consumption, energy usage, or felt that their waste output was significant.

Almost all of the business owners found it hard to believe that they had any impact on the environment. Most of them found it difficult to see how their business could have any environmental effect, either positive or negative. This perspective is perhaps best summarised by the following comment:

*“...It’s hard for me to think that anything I do really has any significance. It’s not as if I was running a factory or had lots of rubbish, like the (industrial complex) down the road does. Then I’d have an impact.”*

In most cases, the very small size of the business meant that owners themselves did not think they had any environmental impact:

*"I am just too small to count, aren't I? Why bother?"*

*"...if you want to find out about this [issue], go ask the real businesses."*

*"Me relevant? One person? I don't think so."*

However, when pressed on the issue of what potential environmental impact their HBB could have, most respondents were easily able to make suggestions. A clear trend emerged from the individual interviews that the following home-based business activities could all have an environmental effect: recycling of paper, energy usage in the office room (especially for electricity, lighting, heating and computing), car and transportation modes, purchasing of environmentally-friendly products for use within the office (especially stationery and office supplies), and making donations from the business to an environmental cause.

In addition to these items, individual owners also suggested an extensive list of other possible activities. Individual suggestions were wide-ranging, and included pro bono work for green groups, redesigning office and home layouts, recycling of furniture, and using native vegetation in interior furnishings, amongst others. However, none of these items were mentioned by more than one respondent, and so were excluded from the subsequent list of survey questions.

Interviewees were then asked about the ways in researchers might collect measurable data about the environmental performance of HBBs, the barriers which might exist to doing so, and how these could be overcome.

Respondents indicated a wide variety of possible impediments to the collection of environmental data. The first was the difficulty in separating personal and business-related activities. Many respondents believed that since their business was based at home, it was almost impossible to divorce personal and business inputs, activities and outputs:

*"Where do you draw the line? I can't. Come in and see if you can tell me where my work ends and my private activities start. If I buy a newspaper to read over coffee, but then leave it in my office study, is it a private or a commercial piece of waste? If I put it out in the house's recycling bin, does that mean my business isn't green, because it isn't in the office recycling bundle? Does it change if I claim the newspaper as a business expense or as a personal one?"*

*"Really, this is my house, and you should be asking what all the members of my household do. I'm just part of the action."*

A second substantial difficulty was the willingness of respondents to participate in a survey. Owners stated that they already received numerous unsolicited surveys, market research letters and phone calls, and were reluctant to participate in them. Several also stated that they had insufficient time:

*"I just don't have time to do that. It's really irrelevant."*

*"...I'm happy to help your study, I truly am, but don't ask me to do this. I can't, and I don't want to send you back a blank form..."*

A third barrier was the difficulty of quantifiably measuring performance. Most respondents indicated that it would be extremely difficult for them to empirically assess their own environmental performance. Most of the interviewees indicated that they would be unwilling or unable to collect complex data for the purposes of filling in a survey form:

*"Sorry, but I'm not going to sit down and count out the number of sheets of paper I use, or weigh up the paper boxes, no matter how important this might seem..."*

*"Don't ask me to tell you how much electricity I use. How long I cycled? What type of plastic I wrap my boxes in? Besides, if I don't think it's relevant, I'm not going to fill it in."*

*“I just don’t remember. Why should I? It’s not important, is it?”*

Clearly, measuring the *quantity* of inputs and outputs is a difficult task for such home-based micro-businesses. An alternative way of evaluating environmental performance is to focus on the *frequency* of actions undertaken by the business operator. Whilst it does not provide as rich a source of quantitative data, it can still provide some basic statistical evaluations. This is an approach frequently used by the Australian Bureau of Statistics in its national evaluations of personal environmental practices and activities amongst the general Australian population (ABS 1998, 1999, 2000), and was subsequently adopted for the second part of this study, the survey of HBB performance.

### **Survey Results**

Based on the initial interviews, a series of questions regarding environmental performance in HBBs was constructed. The survey questions were pretested on the original twelve interviewees and then administered as part of a larger questionnaire sent out to 550 home-based firms in the south-west region of the Perth metropolitan area during May 2002. The surveyed firms were selected for inclusion on the basis of a convenience sampling frame, as previously described in the “Methodology” section above.

Respondents were asked to indicate the frequency with which they engaged in the following “green” business practices within their business activities at home:

- Recycling of office paper
- Use of fluorescent lighting in the home work space
- Purchasing of environmentally friendly products for the business
- Signing up to “natural power” energy option as the preferred electricity supplier
- Use of public transportation, walking, and/or bicycle transport as their transport mode for business purposes
- Donating money to environmental groups or causes

The survey instrument was sent to all firms on the database, with a subsequent follow-up reminder letter and additional copy of the measuring instrument sent some two weeks later. A total of 95 useable replies were received, representing an overall response rate of 17.3%. However, not all respondents answered all questions, leading to a slightly lower response rate for individual survey items.

The majority of respondent HBBs were well established, long-running enterprises. Forty-seven firms (51%) had been in existence for between one and five years, 39 (42%) were six years or older, and only 7% of replies were from new enterprises that had commenced trading in the last year. In terms of gender balance, 37 (39%) of the respondents were female and the remaining 55 (61%) were male owner-operators. Fifty-four firms (79%) had only one person, the owner, working in the enterprise; 12 (18%) had 2-4 staff, and 2 (3%) had in excess of five people working in the business. These demographics are broadly in line with the general Australian HBB population (Australian Bureau of Statistics 2001).

Results of the survey are shown in Table 2 below.

**Table 2: Environmental Performance Amongst Western Australian Home-Based Businesses**

	Recycling of Office Paper	Use of Fluorescent Lighting	Purchase Environmentally Friendly Office Products	Sign Up For "Natural Power" Electricity	Use Public Transport
Never	22 (25%)	33 (38%)	19 (22%)	62 (81%)	51 (59%)
Sometimes	29 (34%)	23 (26%)	50 (57%)	7 (9%)	25 (29%)
Always	35 (41%)	31 (36%)	18 (21%)	8 (10%)	11 (13%)
Total	86	87	87	77	87

	Donations to Environmental Groups
Yes	12 (14%)
No	73 (86%)
Total	85

It is clear that there are some activities which are much more widely practiced than others. Paper recycling, the purchasing of "eco-friendly" products, and energy efficient lighting are widely used. On the other hand, donations, public transport and natural power energy options are very poorly used.

Some of the results support the findings of earlier research into the environmental performance on smaller firms. Palmer (2000), for example, found that the most common forms of environmental management in a number of small and micro-sized businesses in the United Kingdom included re-using or recycling waste products and environmentally-conscious purchasing decisions. This finding is echoed in the relatively high levels of paper recycling and green product purchasing in the current study. Similarly, studies in the United States have found that HBB owners tend to take a relatively high level of journeys using private transportation ("Travel and the Home-Based Worker" 1998), just as the HBB respondents in this study show a very clear preference for their own motor vehicles.

There are a number of possible reasons why some "green" behaviours are more common than others. In part, it may be a reflection of the relative ease with which they can be performed. It is much more convenient, for example, to set aside used paper and then place it in a recycling bin, but much more time consuming and inconvenient to use public transport.

Secondly, it should also be borne in mind that there are often external factors which moderate the behaviour of HBBs. The capacity to recycle paper, for example, is enhanced if a respondent's local government authority provides recycling bins and regular collections. Likewise, it is easier to use public transport when a business operator lives close to a bus or train line, but very difficult in poorly-serviced cities such as Perth.

Finally, it may be that HBBs are simply mirroring the actions of the domestic households in which they reside. The activities of HBB operators are often not that different to most private Australian households. Indeed, most of the above results are broadly in line with the environmental practices of the general Australian community. The Australian Bureau of Statistics (1998, 1999, 2000) publishes a series of regular surveys which tracks the behaviour of private households. Although slightly different response categories are used, making it difficult to directly compare the two data sets, the results are generally the same as found in this study. For example, the ABS found that only 24% of the workforce use public transport in their daily travels, and only 3% of households are connected to "natural power" energy sources. However, two types of behaviour have been measured using identical categories (frequency of paper recycling and donations to environmental groups), so enabling a direct comparison (see Table 3 below). As can be seen, HBBs operators are more active recyclers than the typical Australian private household, but less enthusiastic donors to environmental groups and activities.

**Table 3: Comparative Environmental Performance: HBBs versus Private Residences**

<i>Recycling of Office Paper</i>			<i>Donations to Environmental Groups</i>		
	<i>HBBs</i>	<i>Australia-wide</i>		<i>HBBs</i>	<i>Australia-wide</i>
Never	22 (25%)	49%	Yes	12 (14%)	20%
Sometimes	29 (34%)	25%	No	73 (86%)	80%
Always	35 (41%)	26%	Total	85 (100%)	100%
Total	86 (100%)	100%			

Source for Australia-wide figures: Australian Bureau of Statistics (1998)

Some caution, however, must be exercised in these results. In the first place, the number of interviews conducted is still small, and may not necessarily be representative of all HBB owner/operators. A similar caveat can be applied to the responses received to the mail survey. The present study has only briefly examined a small number of possible activities, and even then confined itself to those which have been self-identified as relevant by HBB owner/operators. It may well be that there are other, more pertinent activities which should be examined. Likewise, there may also be better ways of quantifying such responses, rather than simply measuring their frequency of occurrence.

### **Conclusion**

There is considerable scope for more research to be undertaken into the relationship between HBBs and environmental business management. This is a field in which many basic questions have yet to be fully examined. What other environmental impacts do HBBs have? Should other measurement variables be used? Why do HBBs undertake certain activities, but not others? Are there factors which can be used to determine which HBBs are likely to be “greener” than others? Is there likely to be a difference between micro-firms in different professions and industries? All of these, and many others, have yet to be fully explored.

As the field of environmental business management grows, it is perhaps inevitable that more attention will begin to be focused on what has hitherto been the invisible business sector – the myriad miniscule firms who form the basis of most economies, and who bridge the divide between private individual behaviour and organisational environmental behaviour.

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