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**MANAGING ENVIRONMENTAL SUSTAINABILITY IN SMEs: LEARNING  
FROM THE STARS**

**A Research Report on Developing a Best Practice Framework for Managing  
Environmental Sustainability in Australian Small and Medium Size  
Enterprises (SMEs)**

**Prepared for CPA Australia**

**January 2010**

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## **About the Authors**

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## Executive Summary

Professional accountants are an integral part of business management, and they are increasingly being called upon to take a more active role in ensuring that SMEs are sustainable. This study will assist accountants in this challenge.

The main objectives of this study were to examine: firstly, how the management of practices and capabilities of environmental sustainability are developed, maintained and managed in SME 'environmental sustainability leaders', with the view to develop a conceptual framework for environmental sustainability (ES) change management in Australian SMEs. These 'star' SMEs or 'sustainability leaders' have distinguished themselves as recognised leaders in implementing environmental sustainability initiatives. Secondly this study examined what learning in particular is involved in developing environmental change practices and capabilities; thirdly, how this learning might be fostered by other leaders and professional accountants in SMEs.

Semi-structured interviews have been conducted with CEOs/MDs and other management staff involved in the management of sustainability in twelve Queensland SME sustainability leaders. By conducting a content analysis, emerging codes, themes and comparative development of key logics were analysed in order to develop an initial conceptual best practice framework which can be used for driving ES initiatives in SMEs.

In relation to the first research objective, four stages of managing environmental sustainability (ES) change have been distinguished in this report including: the design for ES; internalising ES in the culture of the organisation; implementation; and becoming a leader in ES. Several components associated with each of these stages have been identified in the course of this research. The design stage comprises four main activities, including setting the foundations of success, developing the business case for ES; establishing a strategic orientation to environmental sustainability; and utilising strategic change capabilities.

The internalisation stage comprises two components: utilising strategic change capabilities and developing an ES Culture through creating conditions that motivate desired ES behaviour.

The implementation stage consists of three main components: the implementation of ES change initiatives; the identification of barriers and overcoming these barriers; and integrating external support for ES initiatives.

The main focus of the final stage is on becoming a leader in ES. Two main components are associated with this stage, including: the achievement of economic, social (human resource and community) and environmental sustainability outcomes; and becoming known as a renowned ES leader. The activities associated with the various components are discussed in detail in this report, culminating in a best practice framework for managing environmental sustainability titled: the

'Leaders in Managing Environmental Sustainability' framework.

SME environmental sustainability leaders offered the following advice to SMEs and accountants in SMEs: understand your business and be clear about why you are doing it; be strategic about it and build it in your business model; take manageable steps; make it about the triple bottom line—people, profitability and the environment; find a way to work 'on' your business; engage a sustainability leader; make it simple, start small and do it; target the big areas first and work your way down; engage people and make them part of the change; make ES part of the culture and belief system of the organisation; start with process improvement and understand the processes; focus and do it well; pursue support from government agencies; learn from your mistakes and from others; find relevant information; participate in ecoBiz initiatives; and continue and revisit environmental sustainability progress ever so often.

Since the framework in our study has been developed as a situational analysis of existing SME environmental sustainability leaders, accountants could benefit from drawing on the experiences and successes of these firms in further achieving the goals of developing mechanisms to access and engage with senior executives; and developing a 'borderless mind' through 'thinking out of the box'. The results and associated best practice framework in this report has the potential to assist accountants with implementing innovative approaches to managing environmental sustainability. This report supports the notion that 'sustainability is the future' and provides accountants with useful guidelines in fulfilling the critical role of managing environmental assets.

# 1. Introduction

Sustainability is defined as 'development that meets the needs of the present without compromising the ability of the future generation to meet their own needs' (UN 2008). Integral to this definition is environmental sustainability, economic sustainability and social sustainability. The main focus of this research report is on environmental sustainability, although economic and social sustainability outcomes as a result of environmental sustainability are also outlined. Major elements of sustainability include a sense of personal ethical responsibility for restoring healthier communities, eco-systems and practices of renewal or involving minimal resources and waste in production and life activity. Despite the increasing strategic and economic importance for businesses to be sustainable, research on small business sustainability is underdeveloped, limited, fragmented and focusing mainly on large organisations (Fenwick 2007). Five major Australian studies have been conducted recently in Australia. First, the Corporate and Environmental Sustainability Survey by BDO Kendalls in 2009 that was developed to improve understanding of what motivates organisations to become sustainable; second, the 2008 Australian Institute of Management (AIM) survey to determine the level of knowledge of the Australian Emissions Trading Scheme (ETS); third, the national survey on environmental sustainable practices by the Australian Industry Group (2007) which documented eco-sustainability practices from information on savings of energy, gas and water usage (both current and planned); fourth, a study by Jones, Frost, Loftus and van der Laan (2005) which documented the nature and extent of sustainability/TBL reporting in Australia; and the EPA Business Sustainability Survey in 2007 that measures the activity in progress and understanding of eco-efficiency and research. However, despite the increased awareness surrounding sustainability issues and growing pressure on businesses to adopt sustainable business practices, there is little understanding of management processes and practices necessary for organisations to implement sustainable practices, particularly for small and medium size enterprises. This research focuses on how a selected group of SME environmental sustainability leaders develop their internal strategic change management capabilities and processes in relation to environmental sustainability.

The urgency of research in this area is pressing in Australia with the Federal Government's Australian Emissions Trading Scheme (ETS) initiative and its expected impact upon small business. Furthermore, SMEs do not necessarily have the funds to employ environmental sustainability managers, often do not fully understand environmental sustainability, and are still in the very early stages of adopting and planning for sustainability (AIM 2008). This research report will provide SMEs and CPA members with an initial best practice framework on managing environmental sustainability in SMEs.

## **Objectives**

The main objectives of this study were to examine:

- how the management of practices and capabilities of environmental sustainability are developed, maintained and managed in SME 'sustainability leaders', with the view to develop a conceptual framework for sustainability change management in Australian SMEs. (These 'star' SMEs or 'sustainability leaders' have distinguished themselves as recognised leaders in implementing environmental sustainability initiatives);
- what learning in particular is involved in developing environmental change practices and capabilities;
- how this learning might be fostered by other leaders and professional accountants in SMEs.

**In order to achieve these objectives, the following interrelated research tasks have been undertaken:**

- An analysis of the sustainability triggers in these star small businesses;
- An analysis of the sustainability culture in these star small businesses;
- An analysis of the strategic sustainability change management capabilities in these star small businesses;
- An analysis of the sustainability management processes and practices in these star small businesses;
- An analysis of the sustainability outcomes and monitoring processes in these star small businesses.

## **2. About the study**

### **2.1 Scope of the research**

This research is limited to the study of environmental sustainability best practices within a selected group of SME sustainability leaders in Queensland. The focus on SMEs is deliberate, given the critical importance of SMEs to the Australian economy in terms of employment and overall economic activity. SME's are known to be vibrant and innovative; however, they are also known to be generally resource poor. Thus, the focus on SMEs will add to the literature and our understanding of how SMEs could successfully implement and manage environmental sustainability, not only in terms of being compliant, but also in terms of becoming leaders in environmental sustainability (ES).

## 2.2 Method of data collection and analysis

Qualitative methodology in the form of a case study approach (Yin 2009) has been employed in studying the objectives outlined above. Twelve Queensland SMEs that have either won ES awards, been recognised publicly for their ES efforts and initiatives, or are recognised by their peers as ES sustainability leaders, constitute the main source of data for the study. Semi-structured interviews have been conducted with CEOs/MDs and other management staff involved in the management of sustainability in twelve Queensland SMEs. Other firm-specific secondary data have been also collected and analysed. The study draws from the experience of sustainability leaders from different sectors of the Australian economy.

In-depth recorded interviews were transcribed and a content analysis was conducted through the use of NVivo qualitative analysis software. Emerging codes, themes and comparative development of key logics were analysed in order to develop an initial conceptual best practice framework which is used for driving ES initiatives in SMEs.

## 2.3 Sample demographics

### 2.3.1 SME demographics

Employing the ANZSIC industry classification, five manufacturing, two retail trade, one financial and insurance services, one accommodation and food services and one 'other' (printer), as well as two aquaculture businesses were included in this study. In defining a SME, small businesses in this study are constituted by 20 or fewer employees, (applying the Australian Bureau of Statistics definition of small business) and medium-sized businesses ranging from 21-200 employees. Half of the participating firms were small businesses, employing less than 20 employees.

**Table 1: Demographics of the participating firms**

	Type of Firms	Firm size category	Industry (ANZSIC categories) and main area of business	Business Structure
1	Chartered Accounting Firm	20-100	Financial and Insurance Services	Partnership
2	Aquaculture Business	<20	Aquaculture	Partnership in Australia and joint venture in Korea
3	Backpacker Hostel	<20	Accommodation and food services	Private company with a trust
4	Printing Services	<20	Other	Owner managed (with 4 equity holders)
5	Wholesale Nursery	<20	Retail Trade	Private company with sole director
6	Winery	<20	Manufacturing	Public company
7	Fish Breeders	<20	Aquaculture	Partnership
8	Wood Processing Plant (Manufacturer)	20 - 100	Manufacturing	Private company
9	Wastewater Systems Supplier	20 - 100	Manufacturing	Private company
10	Retail Electrical Goods Store	20 - 100	Retail Trade	Joint venture partnership 50% with Mr good Guys but locally and

				independently owned (able to own only one store)
11	<b>Manufacturer and distributor of environmentally friendly coloured renders, paints, coating systems.</b>	20 - 100	Manufacturing	Private company
12	<b>Ginger Factory</b>	100 – 200 (at this site)	Manufacturing	Public company

**Table 2: Short descriptive background to each participant firm**

<b>Firms</b>	<b>Background</b>
<b>Chartered Accounting Firm</b>	A Registered Tax Agent and Chartered Accounting firm, that not only provides a full portfolio of compliance services, but a range of value-adding business consultancy services not offered by most accountants. The firm is a paperless office, with all client files, work papers and correspondence fully digitised and housed on an internal server network.
<b>Wood Processing Plant (Manufacturer)</b>	A manufacturer of ice cream sticks and coffee stirrers since 1997. Produce 1.2 billion units annually for the global market, and is the last remaining wood processing plant of its kind in Australia. With fierce competition from Canada, China and Europe, the firm has remained competitive by identifying and implementing new technology and eco-efficient processes to achieve greater productivity, lower operating costs, and a more sustainable future. Produces high quality ice-cream sticks from hoop pine. The company's operating objective is to continually strive for better utilisation of available timber resources. This has led to significant savings in both resources and capital in their manufacturing process, and has inspired us to develop a small log sawing capability on-site.
<b>Aquaculture Business</b>	The firm has established an innovative aquaculture operation and we have demonstrated that aligning technology with nature will grow bigger barramundi, minimise the environmental impact and improve financial performance. The firm is a recirculative aquaculture operation. The company has revolutionised traditional aquaculture, which relies on large amounts of land and water. The high-density fish farming operation uses a series of indoor tanks ranging from 2500 to 14,000 litres, which make up an aquaculture system that includes a hatchery, a nursery, fingerling, grow out, breeding and research tanks. The entire system is contained in a 1200 square metre shed. It recirculates 650,000 litres of water and produces the same output as traditional methods which require in excess of 20 hectares and more than 2 million litres of water exchange each day.
<b>Wastewater Systems Supplier</b>	A wastewater systems supplier. The firm has developed an on-site water treatment system that uses less than 10 percent of the energy consumed by a standard aerated septic system. The 'Filter' converts wastewater into irrigation water by mirroring ecological processes. As well as cutting costs, the system reduces noise and odour.
<b>Ginger Factory</b>	The firm produce ginger. The firm has the capacity to process over 5000 ton of ginger per annum, Exports to more than 17 countries.
<b>Retail Electrical Goods Store</b>	The firm specialises in discounted electrical goods, and each store is locally owned and operated. Local knowledge and community support are the foundations of the business. The store is a joint venture partnership 50% with the main group, but is otherwise locally owned and operated.
<b>Backpacker Hostel</b>	The hostel is the closest backpacker hostel to the surfing beaches and national park. It is a fully restored 1880s building, listed by the National Trust. The lodge is a YHA associate, offering the budget traveller 92 beds with dorm style accommodation starting at \$30.00 per night with a backpacker card. Twins and doubles are available.
<b>Printing Services</b>	The firm began in 1983 providing quality printed products to the local community. Their pursuit of quality over the years has been the catalyst of their now constant drive to be innovative, dynamic and creative. Today they are a multi award winning Sunshine Coast based business having developed the capabilities to provide just about anything that can be printed, delivered locally, interstate and internationally.
<b>Wholesale Nursery</b>	A wholesale nursery that is producing 4ha of containerised plants annually for retailers, nurseries, landscape architects, developers and councils. Established in 1958.
<b>Manufacturer and distributor of environmentally friendly coloured renders, paints and coating systems</b>	The firm develop, manufacture and distribute environmentally friendly coloured renders, paints and coating systems for the residential and commercial market. The company boasts an impressive 18% market share of the national exterior render market and enjoys a \$20 million-plus turnover with clients ranging from individual homeowners to multi-million dollar companies.

<b>Fish Breeders</b>	The firm breeds fish and is a large-scale hatchery that produces premium quality native fish fingerlings for commercial industry, restocking groups and the general public. The farm was built in the mid eighties and comprises 7 hectares of production space divided into 40 aerated ponds. They specialise in the production of: Jade Perch/Barcoo Grunter ( <i>Scortum Barcoo</i> ); Silver Perch ( <i>Bidyanus bidyanus</i> ); Golden Perch/yellow belly ( <i>Macquaria ambigua</i> ); and Sooty Grunter ( <i>Hephaestus fuliginosus</i> ).
<b>Winery</b>	This firm is a modern winery, part of one of Queensland's newest wine regions—The Scenic Rim. It offers visitors the chance to taste and buy award-winning wines in their cellar door, to take a guided tour of their modern winemaking facility, and to dine in pleasant surroundings with friends and family.

## 2.3.2 Interviewees demographics

In-depth semi-structured interviews were conducted with CEOs/MDs and other management staff involved in the management of sustainability. In each firm one primary interviewee has been identified, although in some firms other managers (secondary interviewees) have also participated in the interviews. The personal demographics of the primary interviewees are summarised in this section. All main interviewees fulfil a CEO role in their firm with the exception of three senior managers who fulfil specific roles as sustainability managers. Four of the managers hold formal environmental qualifications; however, the rest of the managers come from very diverse backgrounds such as accounting, architecture and engineering, plastering, law and business.

**Table 3: Demographics of the main interviewee participants (Sustainability leaders in participating firms)**

<b>Firms</b>	<b>Gender and current role</b>	<b>Current role</b>	<b>Background and Qualifications</b>
<b>Chartered Accounting Firm</b>	Female	General manager	I am a chartered accountant, management consultant and general manager of the practice. I was a consultant a couple of years when I took on the Ecobiz project. I am also the sustainability manager.
<b>Wood Processing Plant (Manufacturer)</b>	Male	Owner and CEO	In business for about 30 years. Studied agriculture and previously worked in soil conservation. Purchased business in 1997. Initially had no idea what we were doing when we first started. The business is unique in that our resource is renewable and sustainable. So as a plantation resource we are harvesting and manufacturing goods from that resource and we are replenishing it as we go. So that is one of the things that I was really interested in the business.
<b>Aquaculture Business</b>	Male	Owner and CEO	Architecture and engineering background. Was on Magnetic Island for about 20 years with a newspaper and a civil contracting business. Have always been interested in aquaculture. Started to build in Ingham on the project about 8 years ago. I worked out that there had to be a better way. It is basically housed in a large shed and produces loads of barramundi.
<b>Wastewater Systems Supplier</b>	Male	CEO	My background is in finance and large companies like FMCG & Berri. So I then went and did some things on my own. The opportunity came up where I was asked to look at the business over about a month as a consultant, where I came up with a strategic plan. I was then asked to join the business to guide the implementation of the plan

<b>Firms</b>	<b>Gender and current role</b>	<b>Current role</b>	<b>Background and Qualifications</b>
			about 12 months ago.
<b>Ginger Factory</b>	Male	CEO	Background in accounting and international business. Came to Queensland in 2001 with this company and had to deal with challenges of low cost competition from Asia.
<b>Retail Electrical Goods Store</b>	Male	Owner and CEO	In retail for about 25 years and with the this firm the last 6 years, previously in supermarket retailers as regional manager and store manager.
<b>Backpacker Hostel</b>	Male	Owner and CEO	No background in environmental issues. Originally I was a lawyer for about 20 something years. I started here in Noosa in the late 70s, quit the law in about 2000 and operated this business along with the law business for about 4 years. So I have been doing this exclusively since 2000. We came here in 1996 and it was basically a dishevelled building and we decided to start a backpackers' hostel and we gradually worked out how to do that from scratch.
<b>Printing Services</b>	Male	Sustainability manager and equity holder	My role changed when it became less of an operational role and more of a planning role, I consider it 'working more on the business than working in the business'. I used to say I did planning and communications, which was not really a marketing role but more of a branding function. I guess I use the term sustainability now but it is broader than environmental sustainability, like I oversee the safety issues which I see as social sustainability. I oversee the training that happens here. Background in a Degree in Business in hospitality, shopping centres and then printing.
<b>Wholesale Nursery</b>	Male	Owner and CEO	Background is in production in a family business. The family has been involved in horticulture in the area since the late 1880s and then since 2003 as family we went in different directions. I have studied plant and crop production.
<b>Developer, manufacturer and distributor of environmentally friendly coloured renders, paints and coating systems</b>	Male	Owner and CEO	I moved to the Sunshine Coast in about 1979 and worked on building sites and learnt the plastering trade later. I did that up until 1987 and built a shed up the back yard to develop the products that we make. In 1992 we built this factory. No qualifications in ES. I'm a fellow of Australian Institute of company Directors, a relationship with the Sunshine Coast University.
<b>Fish Breeders</b>	Male	Owner and partner	I have a veterinary consulting business and I do a lot of project management. With that I manage projects mainly in dairy industry where I have a background so I do a lot of work for Dairy Australia mainly in research in the area of welfare. I have had a fair bit of experience in exotic disease management. So, veterinary related projects, most of them. The fisheries is a separate thing that I have with a business partner and I manage it.
<b>Winery</b>	Male	Owner and CEO	I did a wine science degree and set this company up 7 years ago.

### **3. Discussion of main findings: Managing Environmental Sustainability (ES) in SME Environmental Sustainability Leaders**

#### **3.1 Setting the foundations for success**

The actual moment of ES change begins the moment a person or a group hears the wake-up call and recognises that there is a reason for change. At this very early stage of change, it is important to identify and understand what wake-up calls exist, what they mean and what is being done with them by those in positions to initiate change. Challenging the status quo and creating a 'readiness for change' have been emphasised by several authors (Kouzes & Posner 1995; Kotter 1995; Tichy & Devanna 1990). Within the context of this study, and in view of the interview data, factors playing a role in setting the foundations of success in participating firms include: the SME leader challenging the status quo, gathering of initial information; clarifying the internal know-how about ES, identifying who the ES leader(s) is, and what the associated roles are; creating a theme of environmental sustainability in the firm (what ES means to the firm); and the personal mindset of leaders regarding ES.

##### **3.1.1 Challenging the status quo (making the decision to change)**

We did not specifically ask interviewees how they challenged the status quo, however, several main themes emerged from the interview data. The interview data indicates that all SME ES leaders realised the need for change and they challenged the status quo in various ways before embarking on ES initiatives. Four of the SME leaders challenged the status quo by acknowledging a new market could be created, for example:

*'We identified that there was a market for that product and we also believed that we could do it better. We believe this is the future of aquaculture in Australia—simple, effective, intelligent technology combined with nature and what it has to offer. We identified that there was a market for that product and we also believed that we could do it better. We believe this is the future of aquaculture in Australia—simple, effective, intelligent technology combined with nature and what it has to offer' (Aquaculture Business).*

Six firms challenged the status quo by acknowledging the need to make changes if they want to make a difference, for example:

*'As far as sustainability, culturally we wanted to make a positive difference and I personally wanted to make a positive difference' (Retail Electrical Goods Store).*

The other two firms did this by changing the way things are managed and changing attitudes, for example:

*'I think initially it was a revelation to have come across what was a key driver or reason why the company went broke before. We had to go out to the staff and try and change attitudes with the staff. If you can't measure something then you can't let them know*

*how they are going. Then what started to bob up were things that were wasteful' (Wood Processing Plant-Manufacturer).*

### **3.1.2 Gathering initial information**

Most firms are ecoBiz partners, with the exception of three firms. ecoBiz is the Department of Environment and Resource Management's signature partnership program with Queensland business and industry. ecoBiz assists businesses to identify efficiencies in waste, water and energy for financial and environmental benefits (ecoBiz 2010). It became evident that integral to becoming an ecoBiz partner, firms need to have been compliant in terms of relevant government regulations. Therefore, in order to determine compliance, existing information needed to be gathered by ecoBiz partners.

Apart from gathering initial information about current legal compliance issues and whether the firm is compliant with relevant government regulations, it is also important to gather initial information about what the firm has been doing in terms of ES and what the current reactions of staff and other stakeholders are in terms of environmental sustainability. The issue of developing a culture for ES is discussed in Section 3.6.

### **3.1.3 Clarifying the internal know-how about ES change, identifying who the ES leader(s) is and what the associated roles are**

It was evident from the interview data that in all the participating firms, successful ES change works best where there are one or more individuals who specifically take on the responsibility for ES in the firm. Leadership for sustainability change entails designing; and leading the ES change in the firm, 'fighting for the good cause', publicising the organisation's commitment to ES, encouraging staff to participate, having sufficient authority to be effective, and having the 'visibility' and personal qualities necessary to elicit support from staff (Stone 2006). Ideally, ES leader(s) require process thinking, design and facilitative change skills (Stone 2006). Unlike large organisations, SMEs do not necessarily have the resources to appoint a qualified sustainability manager and often need to rely on expertise in the firm. However, it is evident from the interview data that someone needs to specifically take on the management responsibility of ES—whether it is internal or a combination of both internal and external. For example, the response to this issue in a participating accounting firm:

*'I think you need a dedicated person to drive it, but a team involvement assists with changing behaviour, etc. and get buy in'.*

Who are the ES leaders in the participating SME firms in this study? The owner or CEO took on the role as sustainability leader in almost all firms. However, a mix of people in this role was evident in four firms. Two firms delegate this responsibility completely to a specific staff member: one firm has a specific sustainability role, even though the owner is also very much involved, and in another firm the role resides in multiple individuals—the owner, staff member(s) in the firm acting in this capacity and an external consultant. As is evident from the demographics of the participating firms (see section 4.1) and the personal mindsets of these leaders (see section 3.1.5), the interviewees do not

necessarily have a background in environmental issues. However, the ES leaders in the participating firms seem to be individuals with a big-picture understanding of the systemic and ES system dynamics; individuals with an ES change mindset, an interest in the area; and a willingness to constantly learn about ES issues.

The interview data showed that participating firms where the role of sustainability leaders is embedded in someone else besides just the owner/CEO indicated that an effective relationship between the ES leader(s) and top management is essential. For example:

*'The idea of the Eco-champion was to be a conduit between myself and the staff allowing brainstorming and communication bottom-up and top-down. Until we started this process I didn't realise that we had 2 staff with environmental degrees (environmental strategic planning & one in environmental science). They were very passionate & enthusiastic to be involved because they were able to put their degrees to use. One was a casual admin operator and one was a receiver in the warehouse. The other key component is Mike Duggan, who is an external consultant of 4 walls & a roof who has come on board in the last 18 months as the staff educator & motivator. We still have an internal staff member who is the Ecochampion but this method plateaued a bit. This is not the same person as the original Ecochampions which I was very supportive of as they moved into their areas of study, which I expect our current also might. He is currently excited about what we are doing here in leading the electrical industry. He also has a degree in environmental science. He has a couple of different titles. He is our merchandise manager who is responsible for displaying our products & therefore able to concentrate on sustainability functioning in the display. Mike has links with the ecochampion and myself & we have developed the SERB guide (Sustainable Electrical Retailers Induction Business). So our induction guide now has all the Good Guys usual cultural, functional ideals which are all linked to sustainability actions. The ecochampion holds induction process with all new staff. I call Mike our sustainability coach & he is able to come up with fun ways, games, etc to get the staff engaged. In this respect it is therefore important to establish and clarify an effective partnership between the ES champion(s) in the firm and top management' (retail electrical goods store).*

*'Our managing director is a champion, especially with creating the culture. I used to say I did planning & communications, which was not really a marketing role but more of a branding function. I guess I use the term sustainability now but it is broader than environmental sustainability, like I oversee the safety issues which I see as social sustainability. I oversee the training that happens here' (Printing Services).*

### **3.1.3.1 What sources do ES leaders use in staying abreast of new development in the ES area?**

It was clear that the ES leaders in the study continuously seek to learn and source information about ES. The question therefore could be asked, what sources do ES leaders use in staying abreast of new developments in the ES area? We asked the ES leaders where they get their information about ES from. ES leaders indicated a range of sources, including: their own experience, information that ecoBiz provides, magazines and journals (i.e. *Financial Review* and *Harvard Business Review*), books, discussing it and talking to others inside and outside the firm, industry associations (regular meetings and an annual conference), through business travelling, email, the internet, international internet news groups, social networking sites such as 'Linkin'. The internet seems to be the most popular

source of information with all interview participants indicating that they use this medium to obtain information and stay abreast of new information.

### **3.1.4 Clarifying what environmental sustainability mean to the firm**

The meaning participating firms attach to the term 'sustainability' has played a role in their organisations, both strategically by including it in their strategy, and also in terms of providing a ES change focus of motivating staff. Having clarity about what term regarding environmental sustainability resonates with the people in the firm seems to be very important in the sense that it provides a phrase that could focus ES change initiatives from early on and throughout the process of ES change.

There are numerous definitions that denote the 'theme' of environmental sustainability in a firm. However, these definitions are often very broad and do not take into account the business context characterised by SMEs and, as a consequence, hold very little relevance to SMEs (Battisti, Lee & Cameron 2009).

Therefore, in order to examine what terms SME sustainability leaders use in their firms, the following question was posed to the interviewees: 'there's lot of terms and words that could be used to describe environmental sustainability initiatives and actions. What word or words do you use in your firm to describe what you do in term of environmental sustainability?'

The main themes regarding meanings of ES evident from the interviews were: sustainability, more with less, organic supply chain, better business practices, a value, triple bottom line, good corporate citizen, little impact, if you need it use, if you don't turn it off, improve recovery, and environmentally friendly, eco friendly and environmental aware.

### **3.1.5 Determining the leader's (or leaders') personal mindset regarding the eco-change**

How SME managers think about organisational change will impact on their actions taken during the introduction and implementation of the proposed change. Milliken and Lant (1991) argue that their attitudes act as a filter in the reinterpretation of real events, and add novel aspects to the decision to initiative change initiatives. Owing to the discretion that managers enjoy in their decision making, their attitudes become decisive in explaining organisational change (Adner & Helfat 2003). It was evident from the case studies that for leaders to lead ES-change successfully, they require a mindset that the ES-changes will lead to desired outcomes/benefits. A belief that ES-change will have positive benefits either in terms of environmental, economic and/or social sustainability seemed to have brought a personal commitment to initiating and implementing specific eco-changes in their organisations.

What are the personal mindsets of the participating SME leaders in this study? In terms of their personal motivations for embarking on environmental sustainability, there seems to be a balance between passion for the environment and the achievement of business objectives. Three managers have indicated that 'business objectives' is the main personal driver in pursuing sustainability. For example:

*'I'm not specifically passionate about environmental sustainability. If it's commercially viable then it is sensible to do it. The only way we can fix things is have the money and the capital to do it. The commercial reality is the overriding determinant as to whether you do any of it' (wood processing plant—Manufacturer .*

Two have indicated their passion for the environment as their main motivation, for example:

*I think everyone is motivated by something whether it is money, position or whatever it is, so for me it is I wanted to leave a legacy'. When we were approached by the local council & the EPA to be a pilot business for the program ecoBiz (reducing/eliminating your water usage and waste) it just seemed like a perfect fit. As well as this business a perfect fit for the project and me personally. 'I think 'sustainability' has always been running through my veins". For me the driver for working is family and making a difference. For me I want my grandkids to be left a better place. I left this place better than I started with' (retail electrical goods store).*

Six managers indicated that both business and their passion for the environment are the main drivers. However the business case for sustainability as a primary personal motivator, seems to outweigh their emotional commitment to ES slightly. When counting the responses, 9 responses indicated business as driver and 8 responses indicated the environment.

*'ES is a passion for life, for things that beautiful and fun and profitable. It's like an investment and you have to change the way you look at the world to be a winner. You have to focus on the opportunities. 'From the context of business development I think I come from the perspective of quality assurance from people like Deming & Durrant, and then from a work psychology perspective Abraham Maslow. We don't have to reinvent the wheel for sustainability, we take an organic view or a more holistic view of business so those traditional ideas are very useful and they lead us to a great body of work on land manufacturing or land supply chains. I don't use those words I call it my organic supply chain'. 'It would be very hard to know that and to have that vision and then to go and do something contrary and to work towards destroying the world and making the world a worse place...what good is money if you don't have the respect of your family and community, or yourself...So, no, it's not hard at all, it's hard to do the opposite' (Developer, manufacturer and distributor of environmentally friendly coloured renders, paints and coating systems).*

*'The sustainability interest has come from being an avid watcher of what has been happening over the last few years. The more I've got into it the more opportunities I could see about being an early innovator in this area. We were getting good results and developing good networks. What I like to say to people is that we are just people in a small business in a regional town, we didn't get to design the building, we didn't get to make a 5 star rated building & we were able to achieve what we have achieved, so if we can do it so can anyone.' We largely did our improvements by setting our energy budget, saving on it & then reinvest it in something else and something else' (printing services).*

## **3.2 Developing the business case for ES**

In this study we were interested in examining why SME ES leaders have gone down the ES track and what benefits they have derived from implementing ES initiatives. These two aspects reflect a bigger question: is there a 'business case' for ES in participating firms. Research shows that economic drivers and benefits provide a strong basis for the business case for sustainability (Tinsley & Pillai 2006). It was evident from the interview data that apart from providing valuable data regarding what must change and why, the drivers of ES and benefits of ES provided a strong rationale and motivation to the rest of the organisation why ES is important to the organisation.

### **3.2.1 Determining the drivers of environmental sustainability in SME sustainability leaders**

Managers were asked what the main important factors were in the decision to introduce and encourage improved environmental sustainability practices. The reader, therefore, has to bear in mind that other drivers may also have played a role, but financial drivers such as cost minimisation and improving their bottom-line were identified as one of the main themes in the interviews (8 managers), for example:

*'Obviously we wouldn't be doing it if wasn't good for business & as I tell people 'sustainability doesn't have to just cost. The first year we were engaged as an ecoBiz partner my bottom line profits increased and I had a 10 fold increase of sales' (retail electrical goods store).*

Benefits of marketing and green company image were also reported by the majority of managers (8 managers).

Other dominant drivers identified by the participating firms were: the desire to make a difference and do the right thing (6 managers), corporate social responsibility including, business opportunity (5 managers), support from government (4 managers), desire to do things better (3 managers), minimising environmental impact (2 managers), environmental regulation (2 managers), supply chain reasons (1 manager) and stakeholders (1 manager). These results once again support the business case for ES and align with the results in the previous section which emphasise the importance of business objectives as a main motivator for going down the ES path.

### **3.2.2 Benefits of ES changes and initiatives to SME ES leaders**

Together with the drivers for ES, benefits derived from ES initiatives also feed into the business case for ES. Interviewees were asked: Apart from the benefits to the environment, what have you found have been some specific benefits of implementing ES changes and initiatives for your firm? It is evident from the interview data that all the study participants have derived economic sustainability benefits from their ES initiatives and seven of the participating firms have also mentioned specific benefits regarding social sustainability.

Two main themes regarding benefits of ES initiatives were identified, including: economic sustainability and social sustainability (human resources and community). Seven sub-themes of economic sustainability were identified, including increased profitability, cost savings, competitive advantage, breaking into international markets, creating a business opportunity, branding and marketing, for example:

*'Profile, brand enhancement, increased business all have come from it. We can justify all our initiatives on a commercial basis as well as an environmental basis' (printing services).*

Five sub-themes were identified regarding social sustainability, including learning, fun, making staff more conscious of ES, pride of staff, benefits for the community, for example:

*'I do think that the knowledge, the fact that you can tell people that you are harvesting trees on a sustainable basis is meaningful' (wood processing plant - Manufacturer).*

## **3.3 Establishing a strategic orientation to environmental sustainability**

### **3.3.1 Planning for environmental sustainability (where are we now?; where do we want to be?; how do we get there?)**

This section explores how SME ES leaders plan for environmental sustainability. Within the SME context, the strategic approaches that early adopters of environmental sustainability have employed are an unexplored area of research. The dominant view in the literature of the strategy process is one of a planned, deliberate and rational set of actions (see Andrews 1980). However, Mintzberg (1973, 1994) was one of the first writers to challenge the assumption that such formalised planning approaches had a positive effect on a firm's performance and suggested that strategy formulation could also be seen as a social, emergent process that could also have a significant impact on performance. In contrast authors such as Van Gelderen et al. (2000) argue that there is a positive correlation between a higher use of a complete planning strategy (a proactive attempt to actively structure the firms' situation) and success. Similarly it was found that the reactive strategy (strategy that is driven by the situation and in which actions are not planned) was found to be associated with failure.

Deliberate strategies are strategies where intentions that existed previously were realised (Mintzberg 1987). Gibcus and Kemp (2003) suggest that comparing intended strategy with realised strategy has helped to distinguish deliberate strategies (realised as intended by the planners) from emergent strategies (patterns or consistencies realised despite, or in the absence of, intentions). Therefore, deliberate and emergent strategies are independent of each other as intended strategies might go unrealised, while emergent strategies appear without preconception (Leitner 2007). Hence, Mintzberg's challenge has resulted in another view of the strategy development process with two orientations: the deliberate and planned approach on the one hand and the emergent social process on the other. The fundamental difference between deliberate and emergent strategy is that the former focuses on direction and control and getting desired things done while the latter is based on the notion of strategic learning and adaptive behaviour. Mintzberg 1990, cited in Hutter (2005: 1) argues that emergent strategy means, literally, 'unintended order'. Hutter (2005) points out that an emergent strategy can be likened to a pattern in a stream of decisions and actions, where the strategic relevance of the pattern is identified in retrospect. He further argues that emergent strategies are therefore intention-interpreted, not intention-driven.

The participants were asked: how do you plan for environmental sustainability? It is evident from the interview data that the most used strategic approach to planning by sustainability leaders is a deliberate approach. Eight of the twelve participants mainly used a deliberate approach to planning, for example:

*I tend to write a huge business plan and we go back to it. We then take a small plan and update it quarterly and review results, including monthly and weekly meetings. I say 'Planning is everything, the plan is nothing'. Scenario planning is more relevant now. Then you need to bring it back down to a practical perspective with accountability (Developer, manufacturer and distributor of environmentally friendly coloured renders, paints and coating systems).*

Three participants employ an emergent approach, for example:

*There was nothing formal in it and initially it was finding better ways. I think it became more formalised when we became involved with ecoBiz where measuring was required (wholesale nursery).*

Two firms employ a combination of both approaches, for example:

*It's quite informal, but we almost advertise it—it has crept into our 'about us'. I think with small business it's easier to get on with it. I think it came up in staff meetings where staff want to get involved. We have used action plans provided by ecoBiz—which details the action item, details of the initiatives, impact on material, energy or water, person responsible and estimated completion date' (chartered accounting firm).*

### **3.3.2 Determining the participants in planning for environmental sustainability**

Participants were asked whether they include others in planning for sustainability. It is clear from the interview data that the CEOs are the main players in the strategic process (all firms), with the majority (seven firms) involving staff in planning for ES. The results were indicative of a trend in SMEs overall and in small and medium enterprises respectively, to mainly involve people in the

strategic process who are within the boundaries of the organisation. The owner/CEO features as the main player in the strategic process, with some involvement of senior managers and staff in the firm. This scenario is in line with a deliberate approach to strategy-making (Wiesner 2009). A very low participation of external players was found, with only one firm indicating external involvement in planning through a consultant

### **3.3.3 Establishing a vision, mission or value statement for environmental sustainability**

Another key feature of the deliberate approach to strategy-making is the production of a vision statement and/or mission statement and/or statement of values (Barnes 2002). Together with a written plan, such statements could form the foundation for the structuring of an in-depth set of objectives for all functional areas of the business (Mintzberg 1994 in Barnes 2002). Our results indicate that, with the exception of three participating firms, the majority of participating firms have a written vision and/or mission statement and/or statement of values. It therefore appears that SME ES leaders do plan strategically in the sense of having written vision and mission statements supported by business level objectives.

Authors such as Richardson (1991, 1995); Georgellis, Joyce and Woods (2000); Beaver and Ross (2000) and Beaver (2004) argue that strategic awareness as a specific capability is significant to the shaping of the strategic posture of the organisation. In other words, strategic awareness capability of the SME manager is imperative to the growth and business success of the SME because the strategic awareness of the SME manager underlies the rational actions and choices of SME managers (Beaver 2004). Do SME ES leaders in this study have a strategic awareness regarding ES? Our results do indicate a strategic awareness of participant firms, indicating that they view a strategic plan as important to ES change in their firms. This strategic awareness is commensurate with the deliberate approach to ES strategy-making.

## **3.4 Utilising strategic change capabilities**

The aim of this section is to examine what strategic change capabilities participating SMEs have utilised in managing the process of ES change.

### **3.4.1 Deciding on a change approach(es) for environmental sustainability**

Some experts refer to organisational transformation to designate a fundamental and radical reorientation in the way the organisation operates. Some of this change may be described as radical change which could be interpreted as actions that alter the very character of the organisation (Reger, Mullane, Gustafson and DeMarie 1994). This is change that results in a major make-over of the organisation and/or of its component systems. Radical change occurs infrequently in the life cycle of an organisation. However, when it does occur, this change is intense and all-encompassing. There

may be times in an organisation's life when its survival depends on an ability to undergo successfully the rigours and demands of radical change. Radical change occurs when an industry's core assets and activities are both threatened with obsolescence, and knowledge and brand capital erodes along with the customer and supplier relationships. It is most commonly caused by the introduction of new technologies or regulations, or by changing consumer preferences (Wood, Zeffane, Fromholtz and Fitzgerald 2006).

Another and more common form of organisational change is incremental change (Walker, Armenakis and Bernerth 2007). This is change that occurs more frequently and less traumatically as part of an organisation's natural evolution. It is also often described as a step-by-step movement toward an organisational ideal. Management may attempt to fine-tune or adjust current operations to meet future goals. Typical changes of this type include new products, new technologies and new systems. Although the nature of the organisation remains relatively unaltered, incremental change builds on the existing ways of operating and seeks to enhance them or extend them in new directions. The ability to improve continually through incremental change is an important asset to organisations in today's demanding environments.

Participating managers were asked the following: In implementing these initiatives what approach or approaches to create a change towards sustainability have you used? The main aim with this question was to determine whether Queensland sustainability leaders employed radical change, incremental change or a combination in implementing ES initiatives.

What approach(es) have SMEs sustainability leaders used in the implementation of environmental initiatives? It is evident from the data that the approach most widely used in implementing ES initiatives is an incremental approach (8 references). Two firms used a radical approach and four firms used a combination of approaches.

It could be inferred from the interview data that the firms utilising a radical approach, at times, did so because they knew exactly where they wanted to go and the business had to change direction in relation to its core business. Reasons why firms used an incremental approach for some ES initiatives were the fact that the identification of changes was an evolving process; projects are usually novel in nature and the firm could not duplicate what other firms have done; some of the projects have been 'commonsense projects; the focus of efforts have been on small but doable; the journey is a continuous journey; there was learning involved; there has been an acknowledgement that people do not like change and they had to be shown what the advantage was for them and therefore it has been mapped systematically in a staged process like measurement; and looking for changes and carrying out those changes.

### **3.4.2 Deciding on the change management styles utilised in implementing ES change**

In asking the question: 'In implementing these initiatives what approach or approaches to create a change towards sustainability have you used?', the main aim was to determine whether Queensland sustainability leaders employed radical change, incremental change or a combination in implementing ES initiatives. However, a secondary aim was to determine what management styles SME managers employed in introducing ES initiatives.

There is no consensus in the literature regarding the extent to which organisational change objectives should be pursued or achieved through management initiative or through consultation. In other words, whether strategic thinking about organisational change should take place at the senior management level of the organisation (including the CEO and senior managers) or if employees from all organisational levels should be involved in strategic thinking about organisational change.

Drawing from conventional literature, creating the long-term direction for the organisation in relation to organisational change (strategic thinking about change) is viewed as the responsibility of the strategic decision makers and the senior managers in an organisation (De Wit et al. 2005; Johnson, Scholes and Whittington 2005). These managers need to ensure that an organisational change strategy is created that will ensure sustainable competitive advantage for the organisation. Contrary to this perspective, literature on change management suggests that the organisation should ideally involve employees from all levels in the change process and strategic thinking at multiple organisational levels is proposed as essential in creating and sustaining competitive advantage (DiVanna & Austin 2005; Hanford 1995; O'Shannassy, 2003).

Key words in the glossary of this newly emerging organisational model include novelty, quality, flexibility, adaptability, speed, and experimentation. In view of these requirements, the traditional organisational structure, with its hierarchical, top-down approach, centralised control and historically entrenched values of stability and security, is seen to be an outdated concept. The momentum is rather towards flatter, more 'flexible and agile organisational forms' (Bahrami, 1992, p. 33). In these organisational forms the boundaries are 'fluid and permeable' (Useem & Kochan 1992; Kanter, Stein and Jick 1992). It is argued that these changes have triggered a radical shift in the role of senior managers from the traditional authoritarian, command and control style to a more open, participative management style. There is a new emphasis on cooperation, collaboration and communication and, therefore, SME managers need to develop a completely different range of leadership skills. Traditionally, SME managers focused on the technical or operational dimensions of management, however, if SME managers are to be effective leaders in an environment of change, a second, interpersonal dimension becomes critical (Goleman 1998; Javidan 1995).

It is clear from the interview data that the majority of participating firms utilised a combination of top-down and participative management styles in the implementation of ES change. Four firms

employed a predominantly top-down approach and eight firms used a combination of top-down and participation in implementing ES changes, for example:

*'We include people in decision-making (23 out of 65 staff included), we do strategic workshops with all people in management roles or next in line. It has to be business wide to get buy-in. We have a picture of where we want to go, what the direction is & allowing people to see it in action & stating why we need to do things, reasons & rational' (wastewater systems supplier).*

*You have to be single minded & hard headed about what you want to do but you need a good team to support you. I think mostly change is brought about by crisis. Hunter Lovens has a saying is 'That the only thing that likes change is a wet baby'. I don't think this is necessarily true, 'people don't like to be changed but they don't mind change so much as long as they are part of it and can see an advantage'. The best way is to have a way of mapping the process & simulated games & stories (developer, manufacturer and distributor of environmentally friendly coloured renders, paints and coating systems).*

### **3.5 Developing an ES Culture through creating conditions that motivate desired ES behaviour**

Although numerous factors are beyond the control of SME managers, the strategic choices of the owner-manager and the choice of employing particular change management practices in the organisation are within the control of the owner-manager. Furthermore, in contrast with the situation in large organisations, the SME owner-manager has much greater control over the development and utilisation of eco-efficient strategies. According to Howard (1997), nine out of ten times the owner-manager will be working in the business, compared to just 35% of larger organisations. Furthermore, SMEs are less likely to be unionised, as evident from the results of the 1995 Australian workplace industrial relations survey. Only 17% of workers in small businesses were unionised, compared to 74% in large organisations (Morehead, Steel, Alexander, Stephen & Duffin 1997). This allows SME owner-managers a greater degree of managerial prerogative in relation to the implementation of ES practices than in larger organisations.

Furthermore, in SMEs, the values and norms of the business owner(s) determine the culture of the organisation to a much greater extent than in large organisations. Organisational culture could be defined as the underlying set of key values, beliefs, understandings and norms shared by an organisation's workforce (Lewis 2001), or within the context of sustainability it could be defined as: 'The process whereby the corporation and its individual members embrace a concern for the natural environment in such a way that it becomes an integral component of the organisation's core values. This goes beyond minimum legislative compliance and prescriptions and involves all levels of the corporate structure. It requires that the SME seeks, through the attitudes and behaviours of its employees, constantly and continuously to minimise the negative impact on the environment of all its activities, while making sure the required monitoring and funding are in place to achieve organisational objectives (including environmental objectives) (Keogh & Polonsky 1998). The implication of this definition is a need for a change in the core values of the organisation, or what

Schein (1992) refers to as basic underlying assumptions. It is important that SME managers understand these concepts because it will greatly enhance their ability to develop and manage sustainability programs which have the potential to engage the rest of the organisation at every level.

These underlying values relate to ethical behaviour, commitment to efficiency, or to colleagues, customers or other stakeholders. These values and norms may influence not only the goal of the enterprise, but also the strategy on how to obtain that goal (Kotey & Meredith, 1997). The organisational culture will not only be shaped by the owner's values, norms and goals, but also by the way in which the SME owner/manager communicates sustainability issues to their employees (Marlow & Patton 1993).

Culture is a very important but less tangible condition for success (Stone 2006). Baumgartner and Zielowski (2001) has expressed the view that the challenge of environmental sustainability is profoundly cultural and that there are numerous cultural (and economic) obstacles to the rapid adoption of ES. Therefore, the success of any program requires the consideration of both technical and cultural aspects in the management of the sustainability change process. This section focuses on the latter. The goal of developing an ES culture is to make sustainability part of the way firms 'live and breathe'. The objective is to 'develop a culture where strategic thinking and continuous improvement is internalised so that quality, efficiency and innovation become business as usual' (EcoBiz 2010). This section focuses on the ways in which participant firms achieve this. We asked interview participants how they go about developing an ES culture. We also asked follow-up questions regarding how they gain support for ES change, how they communicate the ES change message, and whether they experienced any resistance from staff and how they have overcome any resistance.

### **3.5.1 Creating a shared vision and communicating the future direction**

Although we did not specifically asked how interviewees create a shared vision and how they communicate this vision, the first overall theme emerging from the interview data was creating a shared vision and personally communicating the future direction in developing an ES culture and gaining commitment throughout the organisation. It is important to obtain agreement about the content of the vision—the actual direction and outcomes of the eco-change—crafting the vision in words that capture compelling possibilities for what the ES change will produce; and ensuring the entire organisation understands the vision and commits to making it work. Research has shown that if ES leaders develop the content and wording themselves, collective commitment will tend to take much longer. Furthermore, it is essential to communicate the vision for change clearly. Several main themes emerged regarding how the participant firms have created a shared vision and communicated this vision, including: people wanted to be involved; obtaining staff contribution to overall target and breaking down areas of responsibility; communication; making the vision clear; allowing people to see it in action and stating why they need to do things, proving reasons and rationale; productivity

measures; training; sustainability coach engaging staff; making it fun; team work; removing fear; and valuing staff. These approaches are in line with Jackson's (1997) and Hamel and Prahalad's (1994) view that clear and honest answers need to be provided to the what, why, and how questions. They argue that not only must the vision and goals be 'emotionally compelling' to all stakeholders, but they must also clearly understand how they will contribute to achieving that goal. An example of this approach in the interviews is:

*'We created a set of values of which one was environmental responsibility & people have joined the company with that in mind & are passionate about that. Communication is important and having a picture of where we want to go, what the direction is and allowing people to see it in action and stating why we need to do things, reasons and rational' (wastewater systems supplier).*

Interestingly, one firm incorporated ES in the staff's enterprise agreements, whereas in direct contrast another believes in removing all incentives schemes, putting up standard work procedures, and removing targets.

### **3.5.2 Gaining support for ES initiatives**

We specifically asked interviewees how they gain support for ES change. SME ES leaders engage staff in a number of ways. The positive benefits of employee participation and engagement have been clearly highlighted by the majority of interviewees—giving employees a say in the introduction of new ES change initiatives so that they do not see themselves as merely 'victims' in a never-ending barrage of reactive management and externally driven change initiatives and management fads. The following themes emerged from the data: facilitating rewards, recognition, feedback and communication, actions to engage and motivate staff, the provision of training and staff development activities and utilising teams. For example:

*When staff perceive it as a cost saving exercise and not fun it can have an impact, which is why I think it is better to get staff involved in activities (chartered accounting firm):*

*It was necessary to get staff onboard with that. We did talk to staff about the change process. Every 2 weeks we have meetings with staff. I keep in communication all the time to make sure that staff feel valued, etc. I think it is about getting them involved in what the company is trying to do & let them know that their input is valuable. It is about communicating with them & asking what they think and letting them know they are valued & genuinely wanting to know what they think (Fish breeders) .*

### **3.5.3 Communicating the ES change message**

The previous section highlighted the importance of communication in gaining support for ES initiatives. This section expands this discussion by focusing on the specific communication strategies used by SME ES leaders.

It is clear from the data that SME ES leaders use a mix of informal and formal communication

strategies. This ranged from informal communication including face-to-face communication by simply talking to directly to staff to more formal types of communication strategies such as meetings, new letters, training, action plans, notice boards and signs. Committees and electronic communication proved to be a less popular strategy. One firm makes a specific attempt to target specific generations by using various types of communication and a couple of interviewees commented on implementing specific strategies to communicate with their clients/customers. For example:

*We try to keep it simple for our consumers with something like a display, ie bucket display—standard washing machine 23 red buckets & front loader—5 buckets of green. Verbal communication with repetition of what we are trying to do (retail electrical goods store).*

### **3.5.4 Embedding an ES Culture in the firm**

We did not ask specific questions about how participating firms embed ES in the culture of the firm, however, specific evidence regarding this issue emerged from the interview data. Culture is structured into three levels representing the different levels of cultural evidence (Schein 1992). These levels range from the very tangible manifestations to the deeply embedded, unconscious basic assumptions. These levels are artefacts, espoused values and basic assumptions.

Artefacts including visible, hearable and perceptible phenomena are at the surface of an organisation (Stone 2006). Examples for these are products, architecture, documentation, language, technology employed, myths and stories about the company, rituals and ceremonies. This level of culture is easy to observe, but very difficult to decode because the sense of artefacts can be found in deeper levels of culture only (Stone 2006). Within the context of environmental sustainability, examples of some technical and strategic artefacts already discussed in this report include, for example: environmental initiatives, product and service design on the basis of ecology and efficiency criteria, ecological assessment, investment for plant improvement, analysis and optimisation of material flow and processes, and process improvement.

Espoused values are when successful actions and behaviours of individuals in the organisation become benchmarks for other members. Such actions and behaviours turn into organisationally shared values. Gradually, these values are transformed into non-discussable assumptions supported by articulated sets of beliefs, norms and operational rules of behaviour. Values at this conscious level help to interpret the level of artefacts. Organisational values arise and have a certain historic development and are difficult to change or prescribe (Stone 2006). Espoused values are described as the 'strategies, goals and philosophies' that are presented as the values of the organisation. They differ from 'basic assumptions' because they are not considered to have been validated by shared experiences of success (Schein 1992). Within the context of environmental sustainability, example themes of espoused values of a technical and strategic nature which have been outlined earlier in the report include: environmental and sustainable thinking, and responsibility of personnel. It also entails the expression of the 'meaning of ES in a particular organisation, for example 'more with less'. Basic

assumptions are self evident in an organisation in which little variation within a cultural unit is found. Basic assumptions are implicit; they guide individual behaviour and inform group members how to perceive, think and feel about things. This level is the most difficult one to change. Since the human mind needs cognitive stability, any challenge to, or questioning of, a basic assumption will release fear and defensiveness. In this sense, the shared basic assumptions that make up the culture of a group can be thought of at both the individual and group level as psychological cognitive defence mechanisms that permit the group to continue to function. Stone (2006) argues that recognising this connection is important when one thinks about changing aspects of a group's culture, for it is no easier to do that than to change an individual's pattern of defence mechanisms. Within the context of environmental sustainability examples of themes of basic assumptions reflected in technical and strategic issues which have been outlined in the report earlier include: technologically based improvements are sufficient to reach ES goals; ES goals can be reached autonomously within a single company; technologically based improvements are sufficient to reach ES aims, recognition of a company as a complex system, sustainable improvements, holistic approaches; realisation that ES requires networks and partnerships.

Another way in which some of the ES leaders have created an ES culture is to embed ES in mainstream management activities (Altham 2003).

The data provided some further examples of cultural evidence themes found in the participating firms regarding artefacts, espoused values, basic assumptions and embedding ES in mainstream management activities which are of a less technical and strategic nature, but that are instrumental in creating an ES culture in the participating firms. Themes in relation to artefacts include: taking the message to the wider community, displaying awards, incorporating ES in enterprise agreements, engaging staff in the monitoring of ES and sharing the firm's public recognition for ES with staff and their partners.

Themes regarding espoused values and basic assumptions include: staff sensing a feeling of pride, constant improvement and meeting targets, embedding the 'meaning of ES in the firm's culture, external benchmarking, a commitment by staff and creating a culture of 'this is just how we do things around here'.

Ways of embedding culture into the mainstream management activities include actions such as: including ES in enterprise agreements and training to keep staff motivated, for example:

*We have training sessions in the morning before work so that the staff can be trained to be able to educate the consumer, i.e. our current focus is standby power. Our external champion has links with the eco-champion and myself and we have developed the SERB guide (sustainable electrical retailers induction business). So our induction guide now has all the Good Guys usual cultural, functional ideals which are all linked to sustainability actions. We have training sessions in the morning before work so that the staff can be trained to be able to educate the consumer, i.e. our current focus is standby power (Retail electrical goods store).*

*The key thing is that we have put a lot of our staff through training. All of our staff have trade level which is a certificate 3 (Apprenticeship). Seven of our staff have gone on to do a Certificate 4 in Lean Manufacturing which came out of Japan, which is about taking the waste out of the manufacturing process. It was designed for efficiency but the great benefit is that any reduction on waste is not only good economically but also environmentally. "No one benefits out of waste, not the consumer, not the manufacturer or the environment". Three of the staff are going onto do a Diploma this year. We believe that training our staff so they can progress and develop within our operation is perhaps the best investment we can make into the future sustainability of the business (Printing services).*

Other themes identified are rewards which range from ad hoc in nature to bonuses. A small number of firms also integrate ES to some extent into performance reviews, however, one firm is opposed to individual performance reviews, since reviewing the system and teamwork are seen to be more important.

### **3.5.5 Identifying and addressing resistance**

The need of top management to take decisive action in identifying and addressing resistance in effectively managing change is emphasised by numerous authors (Graetz 2000; Jackson 1997; Useem & Kochan 1992; Kotter 1995; Kanter et al. 1992). Management and teams involved in ES implementation should be encouraged to identify barriers and consideration should be given to the skills necessary to effectively undertake these exercises, and what contingency plans will be followed if these solutions are not working. Furthermore, potential sources of resistance or how they should be overcome should also be identified. Stone (2006) found that the majority of difficulties encountered in ES programs were organisational in nature and that staff were ill-prepared to deal with problems that occurred.

We examined whether SME managers have experienced resistance in implementing ES change and, if yes, how they have dealt with this resistance. Interviewees were asked: 'Have you experienced resistance in implementing ES change and, if yes, how have you dealt with this resistance?'. Half of the interviewees indicated they did not experience any resistance to ES change, one indicated staff did not care and the remainder of firms have experienced some degree of resistance at different stages. This finding supports the notion by Newton and Harte (1997) who argue that over-optimism is prevalent in much of the literature on environmental management in business. They believe that it is misleading to suggest that programme components such as policy, audits and management systems can easily be developed and implemented. They believe that such prescriptions for change in organisations rely heavily on the assumption that 'organisations will voluntarily become greener'. It is, therefore, essential to take steps to address resistance before it becomes destructive. Themes that emerged from the data as to how participating firms deal with resistance to ES, include: perseverance, demonstrating the benefit for the business and community, backing staff recommendation up with financial resources, using the problem as part of the solution, informing and explaining the need for change to staff, and selecting the right people. Training has also been offered as a suggestion for overcoming resistance, for example:

*'Participating in the ecoBiz initiative & Lean Manufacturing training, as well as organisational culture. The way we have done it is that our staff are engaged by the training & it keeps them involved' (printing services).*

## **3.6 Implementing ES change**

### **3.6.1 Establishing a baseline position**

This study did not explore the extent to which participating firms have compliance management systems in place, however, since the majority of firms are also ecoBiz partners, the majority of firms would have had to address this issue before embarking on further ES change. Prior to implementing ES changes, SMEs would have had to establish their baseline position through measuring and benchmarking of water, energy, raw materials, waste, carbon and emissions intensity of their products and services. Since the majority of firms have participated in the ecoBiz program, they had to conduct a site survey.

### **3.6.2 Deciding on measurement**

It is clear from the data that measuring ES outcomes is an essential component in successfully implementing ES change. The types of measurements in participating firms range from sophisticated measurements of financial measurement, such as annual savings, payback to company, and projected measurements such as environmental dividends, in the form of energy savings, greenhouse gas emissions reductions and waste reduction, to quite basic measurements such as savings on power bills and an absence of comprehensive record-keeping. All firms agreed that measurement is important in tracking ES progress, however, one firm specifically expressed the view that they need assistance with measurement aspects.

### **3.6.3 Implementing environmental activities in the firm**

Interviewees were asked the following: 'You have implemented certain environmental sustainability initiatives. Please tell us more about these initiatives'. Apart from the interview data, information about ES initiatives has also been sourced from secondary data such as firm documentation. The participant firms have identified and implemented a range of ES initiatives and changes, ranging from realising efficiency gains to implementing systems, technologies and processes to reduce water, energy, raw materials, waste, carbon and emissions intensity of their products and services. More specifically, sixteen broad themes regarding specific ES changes and initiatives were identified, including: technology modification (changes in the production equipment, product modifications, recycling, better use of water, process changes, systems changes, changes in procedures, changes in production process, sustainability training, energy efficiency, use of external consultant, changes in supply chain, waste minimisation, sustainability community initiatives, minimising chemicals, and introducing measurement. It is evident from the data that the majority of firms are following a holistic approach to ES change since they are focusing on a range of types of ES changes.

Since the main focus of this study is 'managing' ES, a full identification, analysis and detailed discussion of the sustainability changes and initiatives within the participating firms and issues such as performance reporting, community consulting processes, TBL accounting and reporting systems and by-product exchange programs, fall beyond the scope of this study.

The following example provides the reader with a better idea of the types of changes and measurements in one participant firm (accounting firm). Other examples of initiatives and measurements in other participant firms across a range of industries can be found in Appendix 1.

### **3.7 Identifying and overcoming barriers to environmental sustainability change**

Sustainability initiatives require human resources, material and financial resources, however, limited resources are a reality for the majority of SMEs. This limitation places a major restriction on a SMEs' ability to direct appropriate resources to eco-efficiency innovation and effective change efforts. Within this context, SMEs are often forced to direct their resources to the achievement of short-term goals with the exclusion of more proactive approaches to changing their organisation for growth and prosperity. Smaller firms also find it more difficult to come up with the required investment for ES implementation, however when they do, the potential improvements could be significant to the future success of business (Tinsley & Pillay 2006).

Numerous benefits have been highlighted earlier in this report, however, while these benefits are significant to SMEs, they could find that the barriers to implementing ES hamper their efforts in implementing ES initiatives. Some of the barriers identified by Hillary (2004), such as lack of assistance, underestimating resource requirements and additional demands on existing staff to the detriment of the business, often stop implementation at the first stage within SMEs, so that no proper attempt to implement ES is ever made.

We asked interviewee participants: What barriers have you experienced in your firm's change to environmental sustainability and how have you overcome these barriers? One of the main barriers identified by the participating firms is the government. Themes relating to this aspect include issues such as the cost of doing business domestically and the government favouring imports, lack of understanding from government regarding the needs of SMEs, reinventing the wheel, lack of assistance and support, major constraints placed on SMEs by government regarding laws and regulations and compliance issues, lack of movement from government on the sustainable supplier procurement policy, lack of coordination in government departments, lack of expertise regarding particular business issues and difficulty in finding the right person to deal with. One particular government department that has received very positive comments is ecoBiz. It should be noted that all participants involved with the ecoBiz program have spoken very highly of ecoBiz and their staff.

The only barrier identified specifically regarding ecoBiz is a suggestion by one interviewee that follow-up once the SME has become an ecoBiz partner would be very beneficial. Other barriers identified by interviewees include: a lack of interest and support by the council; a lack of involvement in ES by other major companies that have a major impact on the environment which lead to staff in SMEs becoming cynical about their own perceived efforts regarding ES; compliance for compliance sake since it becomes a very time consuming administrative exercise; lack of understanding of certain industries such as the aquamarine industry, and lack of follow-up by potential suppliers; financial barriers such as lack of funding and the cost of implementing ES initiatives; lack of time to invest in ES; finding out about rebates takes time; differences regarding how individuals think about sustainability; and a lack of interest from landlords owing to the cost of ES initiatives which may impact on them.

Interviewees offered the following suggestions in overcoming barriers: getting involved with ecoBiz; a reconsideration of what the business does, taking on board outside suggestions and changing behaviour; a greater degree of follow up by ecoBiz; following-up on environmental grants; a national code with more unity and a common position would be useful; better coordination between government and local councils—for example when receiving funding from government, but not being allowed to implement the product as a result of the local council; a 'one stop shop' for finding information about ES issues; seminars and conferences where SME managers can meet with government decision-makers, collaboration with local council, other business people and networks to try and overcome financial barriers; trying to stay ahead; getting involved with ES award systems after successfully employing ES initiatives; a massive re-education program where universities look outside the square to adopt principles that are environmentally friendly; learn from what other countries are already doing; get SMEs to sit on advisory committees to advise the government of what should be done; policy makers impacting on specific industries should come from the specific industry; external consultant from government should get to know the business first and then see what would engage the firm best regarding measurement; a consistent rebate throughout Queensland; better funding or a tax concession would be good incentives and make access easier; make ecoBiz the 'body to go to'; the sustainable procurement policy could be a great lever since SMEs are such big purchasers in the market place and could therefore influence all industries; look at better ways to utilise tax payers' money in conservation rather than million dollar projects on infrastructure. Building in-house skills has also been offered as a way of overcoming barriers, for example:

*'Initially we did use consultants to assist us to know what we needed to approach. Now we have built into the capability to deal with this in house. If you are a small business it is worthwhile to get assistance because you don't know what you don't know but you don't what anyone leading you up the garden path. For me I think it is worthwhile to have the skills in house' (wastewater systems supplier).*

Two firms have used external consultants very effectively in progressing their ES initiatives and changes. One firm has engaged an external consultant as an external eco-champion who is working

very closely with the internal ES leader(s). The external eco-champions assist with strategic planning and vision building activities, coach, motivate and train staff in ES initiatives and assist with developing an ES culture. The other firm uses an external consultant specifically to assist with ES funding and grant applications and this approach has proved extremely effective in winning grants and funding. Some other firms have been focussed on building internal ES expertise.

### **3.8 Integrating external support for sustainability efforts**

What presents a challenge to SMEs, more than others, is the context of limited information within which they operate. Isolation from global centres of excellence, or the absence of local firms with similar technologies or problems, can exacerbate information scarcity and ultimately innovation success. Often, the relatively small size of the domestic market means many industries do not have enough firms to create the networks and linkages which can be observed overseas. It could be argued that in most sectors the Australian business environment provides less opportunity for engagement with the ideas, people and commercial imperatives that drive innovation. To determine whether SME ES leaders have integrated external support for their sustainability efforts, we asked the interview participants what external support they have received to encourage their ES changes; whether they are engaged in external networks in support of their ES changes; and whether they have any supplier relationships, etc. that they choose due to similar ideals.

Although some participating firms reported that they have received no or limited support from government, study participants have reported very good connections with government and their local councils. It is clear that the ecoBiz program and associated grants have had a very positive effect on the participating firm who have become ecoBiz partners.

*The ecoBiz partnership has been excellent. DERM (Department of Environment and Resource Management) is very good at facilitating functions of which I see the benefit is talking with the other businesses not necessarily the presentations held. I see the local council as a connector to other business (retail electrical goods store).*

These firms reported significant benefits through this collaboration. Several participants reported that networking with various professional and industry associations and business networks has proved to be very beneficial. One firm reported collaborating with a university. Another theme which emerged was how some firms have reconsidered their links with suppliers to incorporate ES benefits and specifically choosing suppliers on the basis of their ES qualities. An example of the latter is:

*Too often supply chains are characterised by waste, poor communications and self interest. This may be reflected by one member of a supply chain seeking to improve their individual financial position at the expense of another. These win/lose and lose/lose relationships are unsustainable on a number of levels. For many years we have been working with our supply chain to improve communication and reduce waste due to over runs and errors. We are also currently designing and testing an electronic workflow management system that will keep suppliers, sub contractors and clients better informed. To enhance the collective viability and sustainability of our supply chain we hope to develop a joint project facilitated by an external provider where our whole supply chain*

*participates in developing an understanding of each other's needs so we improve communication, minimise waste and increase profitability for all (printing services).*

However, other participants have not considered this issue and are choosing suppliers purely on a business basis.

## **3.9 Achieving economic and social outcomes as a result of ES initiatives**

### **3.9.1 Economic sustainability outcomes**

This report so far has highlighted various business benefits resulting from the actions taken in relation to ES. This has been achieved by businesses reducing their environmental impact by leveraging strategic, management, change, innovation and market advantages. Some firms have taken advantage of new and spin-off technologies and other business opportunities; others have increased their market penetration and access and have re-positioned their business in the marketplace as a result of their ES initiatives.

It is, therefore, clear that participating firms have achieved significant economic sustainability outcomes such as financial and other strategic business opportunities as a result of the ES changes they have implemented. The aspects have been outlined earlier as part of Section 3.2 'developing the business case for ES' (including 3.2.1; and 3.2.2) and Section 3.6 including 3.6.3 'implementing ES initiatives including specific outcomes as a result of measuring ES initiatives'.

### **3.9.2 Social sustainability outcomes**

#### **3.9.2.1 Internal human resource sustainability outcomes**

It has also been evident from this report that human resource sustainability outcomes (internal to the firm) have flowed from implementing ES change (see section 3.5: 'developing an ES culture through creating conditions that motivates ES). This has been done through training, the building of knowledge and expanding the skill base of staff in SMEs which resulted in human potential development. This has also been pursued through the provision of rewards, recognition, feedback and communication, engagement, motivation and team work. One aspect that has not been presented so far in the report is the impact some of the participating firms have had on the community.

#### **3.9.2.2 Community outcomes**

All participants in this study have been publicly recognised for their efforts in ES and all have achieved positive economic sustainability outcomes as a result of ES change. Most of the participants have also had significant human sustainability outcomes. We did not specifically ask what impact the participants have on the community, however, the following themes of community impact derived from the data indicate that these participating SMEs have impacted on the community through a range of proactive actions, including: sharing the ES message with schools and universities;

influencing and educating consumers' choices to buy ES friendly products; spreading the ES message to international travellers; community involvement through tree planting activities, sponsoring community events, staff involvement in ES community activities; nurturing relationships with community groups and through being a driver in their respective industries having a positive impact on ES activities in other businesses in the industry. Publishing a newsletter is used with a lot of success in one of the participant accounting firms:

*We also have made a commitment to telling our clients in a newsletter what we are doing, so I always felt like we needed to have something else. In our newsletter we have our green corner to tell our clients about initiatives & cycling to work, etc. There is commitment and time involved in this (chartered accounting firm).*

### **3.10 The 'Leaders in Managing Environmental Sustainability' Framework: An initial best practice framework for managing environmental sustainability in SMEs:**

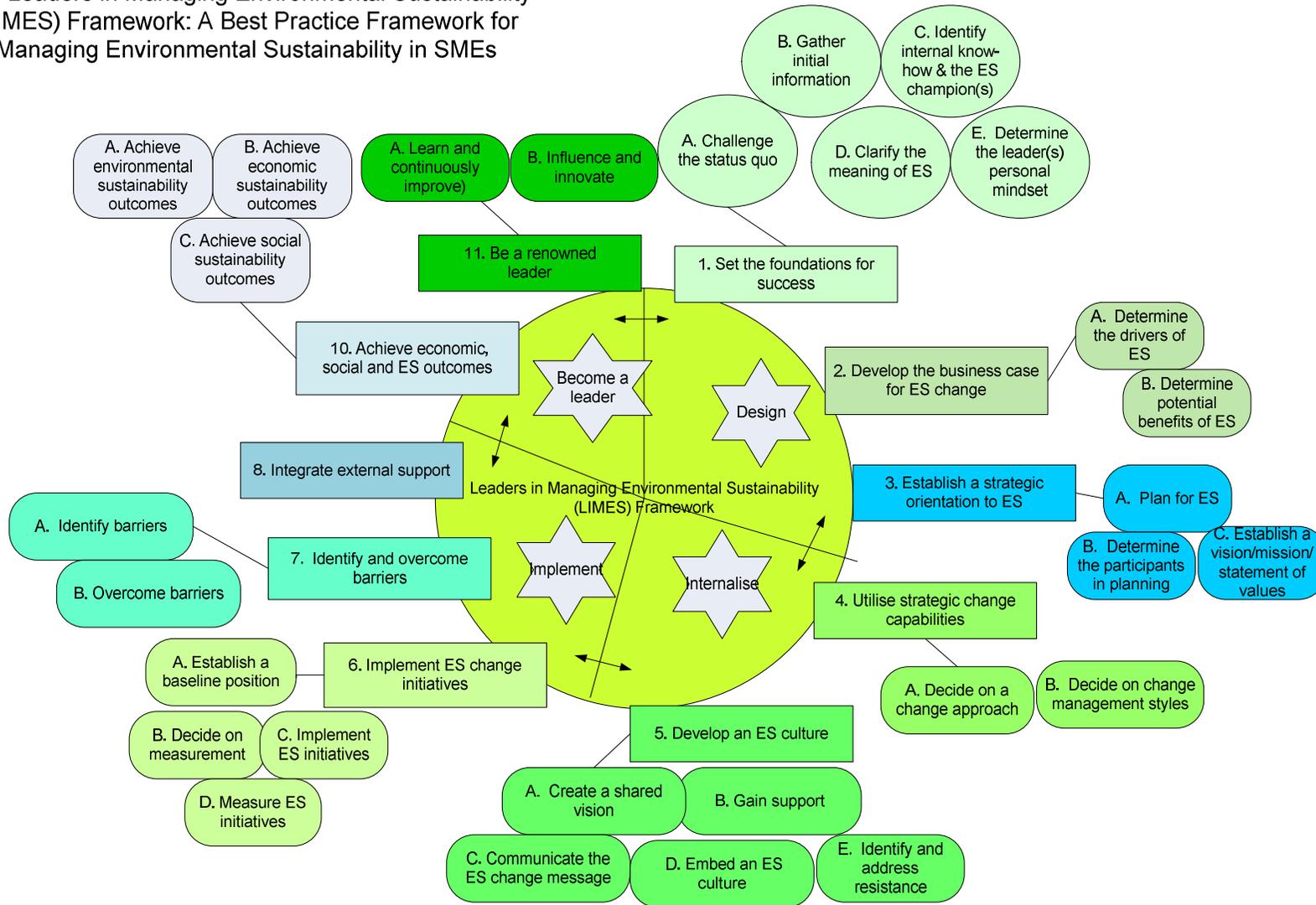
In view of the data gathered from SME ES leaders, and the analysis of the data, an initial Best Practice Framework has been developed by the authors (see Figure 1). It should be born in mind that the results contained in this report relate to information sought from only 12 SME ES leaders in Queensland and further development work on a national basis, including the validation of the framework on a national basis, will be conducted in the follow-up phase. However, SMEs who wish to embark on the ES journey may find this initial framework very useful in planning for the implementation of ES initiatives in their firms.

The framework consists of four main stages, including: the design of ES in the firm; the internalisation of ES in the culture of the firm; implementation of ES; and becoming an ES leader. There are various components associated with each of these stages and various activities associated with each component. These components and activities have been outlined throughout the

It should be noted that the dual arrows across various stages in the framework, indicate that the stages are not necessarily distinct and unique in nature and that there is not necessarily a linear progression from each stage to the next. For example, even though stage 2 (initialisation) precedes stage 3 in the framework, there is an overlap of activities across stages.

**Figure 1: Managing environmental sustainability in SMEs: A best practice framework**

The 'Leaders in Managing Environmental Sustainability' (LIMES) Framework: A Best Practice Framework for Managing Environmental Sustainability in SMEs



### 3.11 Implications for SMEs and accountants in SMEs

In the words of the CPA's CEO, Alex Malley, "the CPA has three key objectives: servicing members; developing mechanisms for members to access and engage with senior executives; and fostering a membership with a 'borderless mind' " (Cooper 2010). Even though the conceptual framework in this report requires further development and validation on a national basis, accountants could employ the framework to progress the first two of these objectives. Environmental sustainability could be a very effective mechanism through which accountants could access and engage senior management to a greater extent. This could be done through developing the business case for ES and ultimately enhancing the competitive advantage of the firm through ES. Regarding the last objective, one of the participants in our study, articulates this aspect very well:

*'From an accounting point of view, 'walk the talk' and go through the environmental sustainability process. Help clients think out of the box. The benefits come later on, like marketing and changing your culture' (Chartered accounting firm).*

Since the framework in our study has been developed as a situational analysis of existing SME ES leaders, accountants could benefit from drawing on the experiences and successes of these firms in further achieving these two goals. According to Alex Malley, as part of a brand strategy, the CPA is promoting a campaign of 'think plus create' to enhance awareness of how accountants operate and how they add value to business. He argues that the accounting profession must embrace two overarching roles: being the thinker and analyst in business, and being a co-creator of new ideas and innovation. He further emphasises that there is a need for accountants to better understand sustainability since the present economic climate provides opportunities to businesses that wish to commit to sustainable business practices and position themselves as business leaders in the creation of competitive advantage. In his view, 'sustainability is the future' and 'accountants will increasingly play a critical role in managing intangible assets such as the environment, energy and water resources (Cooper 2010).

His comments clearly illustrates that professional accountants are an integral part of business management, and they are increasingly being called upon to take a more active role in ensuring that SMEs are sustainable.

Furthermore, investors and lenders are increasingly demanding information on all aspects of business performance, including sustainability initiatives. Some investors will limit their investments to businesses that have demonstrated leadership in this area. Increasingly, the banks are applying the Equator Principles that require evidence of environmental awareness and risk management, before granting credit. The accountant, as the primary supplier of performance information is therefore being required to take on this additional role of guiding the organisation in its sustainability reporting. The accountant is also being asked to guide the organisation in how to balance the consideration of

purely financial issues with sustainability issues.

In addition, sustainability reporting is becoming widespread internationally, following in many cases the Global Reporting Initiative (GRI) guidelines. Currently, there are no standards or legislation requiring the assurance of sustainability reporting, but many organisations are voluntarily acquiring this assurance. Auditors are therefore being called on by such organisations to provide this service.

In view of these perspectives, apart from employing the guidelines in the 'LIMES' framework presented in this report (see Figure 1), accountants are encouraged to take on board the following specific advice participants in this study had to offer, when we asked them the question: What are some lessons learnt on your journey to ES and what advice can you give to other SMEs who wish to go down the path of ES and become leaders in ES? The following themes were identified in their responses to this question.

- (1) Understand your business and be clear about why you are doing it.
- (2) Be strategic about environmental sustainability and build it in your business model.
- (3) Start with process improvement and understand the processes.
- (4) Make it simple, start small and just do it.
- (5) Target the big areas first.
- (6) Engage a sustainability champion, either internal and/or external.
- (7) Take manageable steps.
- (8) Make it about the triple bottom line.
- (9) Find a way to work 'on' your business.
- (10) Engage people and make them part of the change.
- (11) Make it part of the culture and belief system of the business.
- (12) Focus and do it well.
- (13) Pursue support from government agencies.
- (14) Learn from your mistakes and from others.
- (15) Find relevant information.
- (16) Participate in ecoBiz initiatives.
- (17) Continue the exercise and revisit ever so often.

Another implication of this research report is the call for accountants in SMEs to be proactive specifically in the following areas:

- (1) Provide more effective ES support to businesses regardless whether they are affected by emission trading schemes or not. This could be done through the provision of strategic advice to SMEs regarding the role and benefits of ES in creating a competitive advantage in these businesses.
- (2) Assist SMEs with the development of policies (formal or informal) to address environmental sustainability issues - their application, their monitoring across the organisation and the management of associated operating risks.
- (3) Assist SMEs with supporting stakeholder (internal and external) engagement processes regarding environmental sustainability issues with readily accessible and reliable guidelines. Also assist with the collation and analysis of stakeholder feedback regarding these issues.
- (4) Support benchmarking of ES by providing relevant and reliable information in accessible, meaningful and comparable ways;
- (5) Analyse what the business implications of ES change are, in order to inform public policy, with the view to make it easier for SMEs to embark on the ES journey.

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# Appendix 1

## Examples of ES initiatives and measurement in SME ES leaders

Firms	Examples and evidence from interviews and secondary sources
<p><b>Chartered Accounting Firm</b></p>	<p>Our firm a paperless office, with all client files, work papers and correspondence fully digitised and housed on our internal server network. Given the confidential nature of our client information, security of digital files is paramount. In order for the server to function optimally, it requires a consistent operating temperature of 22 degrees Celsius. Since enrolling in the EcoBiz Programme, we have raised our awareness of resource consumption and become more aware of wastage. Our entire office was air conditioned 24x7 in order to maintain server room temperature. We reconfigured our technology housing and purchased a standalone air conditioning unit for our server room, enabling us to turn off the main office air conditioner in the weekends and evenings, while still maintaining the temperature requirements of our technology infrastructure.</p> <p>A summary of our actions as part of the program are as follows:</p> <p>Lighting - Replaced Fluoro lights to more energy efficient Replaced halogen bulbs to more energy efficient (50W – 30W); Replaced ‘whole-office lighting’ system, so individual offices can be lit individually to avoid waste in empty spaces; Air Conditioner - Purchased air conditioner for server room to switch off at night/weekends: Maintain ambient temperature of 24 degrees in office; Paper -Introduced recycled paper in the office printers; Recycling - Additional recycling bin from council &amp; introduced recycling-only bin in kitchen. Recycled hand-towels in toilets; Sustainability Challenge - Communicate office eco-friendly tips and challenges via our monthly newsletter section, ‘Green Corner’, going to over 750 contacts; Client Communication - Offering electronic option for data transfers (i.e. CD containing client info &amp; web upload); Turn off computers - Ensure computers, monitors, printers are off at the end of each day; Batteries - Introduce rechargeable batteries and recycle all old batteries. Recycle all old office equipment, cabling and mobile phones; The tools through the spreadsheets that were set were really good. We had to measure &amp; make changes, ie lightbulbs &amp; then measure it again.</p> <p>Savings Highlights: As a result of participating in the ecoBiz program and becoming more aware of resource usage; Our firm reduced annual energy usage by 25 per cent, which is equivalent to 15.5 tonnes of greenhouse gas annually. Financial savings: \$16,500 each year; Energy savings: 52,600 MJ; Waste reduction: 9.1 m3; Potable water savings: 36.8 kL</p>
<p><b>Wood Processing Plant (Manufacturer)</b></p>	<p>Initiatives: Conversion of the dryer system to allow both dryers to operate independently, resulting in a substantial reduction in energy use by the company and a net 10% increase in overall capacity.</p> <ul style="list-style-type: none"> <li>• Retrofit of the wide, high speed chainsaw blade with best practice, thin kerf saw blades to improve wood recovery and reduce the cost of sawdust disposal. Decreasing the cut width of the chainsaw from 18mm to 8mm has reduced the loss of premium quality wood to sawdust by 50% or 163 tonnes per year, resulting in significant savings for the company.</li> <li>• Development of an ‘intelligent’ ice-cream stick pneumatic punch machine with a vision sorter system. The pneumatic punch is designed to avoid knots and other defects in the wood. The machine’s target accuracy of 97.5% allows for more selective punching of clear wood only, which has increased the number of ice-cream sticks produced from raw timber.</li> </ul> <p>It became evident to us that if you could have a poor recovery (the amount of material we could sell derived from the amount of material we could buy). If you could recover more, then your unit costs would go down &amp; you could be more competitive. You would also use less of your resource meaning processing less resource to make more. We had to find out what our key indicator was &amp; we ended up with something that covered all of the aspects of the business. That was a set of numbers that was described as cubic metres of log giving us millions of sticks out &amp; then we could start measuring that. What we found out in relation to this sustainability aspect is that ‘You can’t do anything unless you have it measured’. There has to be a very reliable system of measurement within the process to compare yourself with. The decrease in the number of sticks rejected at the end of the punching process translates into a two percent or 176 tonnes per year improved recovery, and savings of over \$60,000 per year. In addition, the application of this new technology improves sorting reliability and accuracy, reducing manual inspection. This has freed up \$140,000 of labour for redeployment and has increased the production capacity of the plant.</p> <p>Projected financial dividends: Total project cost \$169,000; ecoBiz investment \$50,591; Annual savings \$83,380; Payback to company 1.4 years; Projected environmental dividends: Energy savings 282MWh/year; Greenhouse gas emissions reduction 298,895kg CO2-e/year; Waste reduction 339t/year</p>

Firms	Examples and evidence from interviews and secondary sources
<b>Aquaculture Business</b>	<p>Our holistic approach to aquaculture includes developing a hydroponics system to reuse and purify water used in the fish tanks. Wastewater from the tanks is used to grow salad vegetables and flowers, and simultaneously improve the quality of the water for reuse.</p> <p>Produce including lettuce, tomatoes, chillies and capsicums are sold locally and provide an additional source of revenue. After the hydroponics stage, water goes through a mineral zeolite filter to absorb ammonia (which is harmful to fish) before returning to the fish tanks. The zeolite is put back into the hydroponic system to serve as a highly effective slow-release fertiliser.</p> <p>We have installed a high-level water storage system using gravity to circulate the 650,000 litres of water through the fish tanks to significantly reduce the energy required to operate the facility.</p> <p>This process delivers energy savings of up to 50 percent on traditional re-circulative aquaculture and water savings of up to 98 percent. Fish mortality is down to 6 percent from 20 percent compared to some traditional methods, and greenhouse gas reductions are achieved by using solar heating and gravity-driven water.</p> <p>Financial: ecoBiz investment: \$52,000; Company investment: \$180,000; Financial return over 5 years: \$370,000; Payback: 3.2 years. Environmental: Water savings: 230ML/year; Energy savings: 2.3MWh/year; Reduction in greenhouse gas; emissions: 2400kg CO<sub>2</sub>-e/year</p>
<b>Wastewater Systems Supplier</b>	<p>We have developed an on-site water treatment system that uses less than 10 percent of the energy consumed by a standard aerated septic system. Our Filter converts wastewater into irrigation water by mirroring ecological processes. As well as cutting costs, the system reduces noise and odour.</p> <p>We have got some measurements on Co<sub>2</sub> of power usage, etc. Measurement is important because you have to demonstrate that you are making an impact. The BioPod works with nature...so you save. The "ecosystem in a tank" treats the waste: no expensive aerators to run, fix and replace; Cuts electricity use by around 95%: reducing carbon dioxide emissions by about 1 tonne per annum; No routine pump-outs: save sludge transport and disposal costs; Only one annual check-up: most others need 3 - 4 services each year; Negligible methane emitted: septic systems emit large amounts, 21 times as potent as carbon dioxide Chemical-free system: no chlorine continually disposed of in your garden; The most compact system: less to transport; less disruption to the garden; Safe and waterwise irrigation: doesn't waste water or potentially spray pathogens around.</p>
<b>Ginger Factory</b>	<p>We have developed an innovative automated process to significantly reduce its water usage, wastewater, and gas consumption during the ginger cleansing process. Since this new system began full operation in late November 2007, the firm has saved about 30,000 litres of water, 18,000 litres of wastewater, and 330,000 litres of gas, and is anticipating further savings in 2008. The firm preserves the early harvested ginger in vats for periods of 12 months or more, in a solution of town water and sodium metabisulphite. The sulphite is then removed. In the past that involved using large amounts of water. The new process uses oxygen to remove the sulphite, allowing the water to be re-used.</p> <p>There are measurements of wastage, loss through the plant, which are a whole lot of KPIs that impact the financial results of the process.</p> <p>Other initiatives: Crystallising Air Conditioning - In 2002, the air conditioning system for our crystallising room was completely redesigned. A new unit was installed with electronic Tx valves, saving up to 20% on "old" technology. We controlled the unit using a digital control system. Another 15% was saving by floating the discharge head. This minimises power consumed. Waste heat from the compressors was used to re-heat the air as we are dehumidifying the atmosphere. This would normally use steam, saving \$60,000 per year in gas. A recuperative heat exchanger was also installed on our dehumidifier saving \$14,000 per year in electricity.</p> <p>Fiji Crystallising Air Conditioner - In 1999, a new air conditioning system was installed in the crystallising room at our Frespac operation in Fiji. This unit was a standard system using standard Tx valves and steam to reheat the air. After several issues with reliability and the cost of steam, it was rebuilt in 2002 with electronic Tx valves and using waste compressor heat to reheat the air going back into the room. This saved \$100,000 worth of diesel back in 2002.</p> <p>Steam Boiler Upgrade - Up until 1993, we had 2 2.5MW Clayton steam generators producing steam for our factory. These ran at low efficiency (64%), produced wet steam and were unreliable. We replaced these with a single 6MW John Thompson waterwall with and economiser. This has increased the efficiency to over 84%. Noise levels were dramatically. We are saving up to 2,000 litres per day on gas and more than \$35,000 per year in R&amp;M costs.</p>

Firms	Examples and evidence from interviews and secondary sources
	<p>Cooling System Chain 6 - In 2004, a new automated mixing and flushing system was installed into our Chain 6 line. All tanks were insulated, the first in the factory and a new cooling system installed where water was recirculated and waste heat collected back into our water line. This has saved us \$5,000 per year in water and \$6,000 per year in gas.</p> <p>Syruping Fan Automatic Control - In June 2005, we installed an automatic control system to our ventilation fan system in syruping. This controls on temperature and humidity and shuts down 2 fans over night when not required. Cost to install was \$40,000 with savings estimated to be \$21,000 per year in electricity. Actual savings are at this stage greater than that as we are saving \$33,000 per year or \$90/day.</p> <p>Trickle Filter Installation Stage 1 - We have been working since 1998 to try and treat our waste on site and reuse a significant amount of this water either through irrigation or in non-critical areas of the factory. In 2002/3, we installed a pilot plant high rate trickle filter using a special high strength strip of plastic for a media. This worked very well and allowed us to size a full scale unit on site. This was approved late 2004 and completed in 2005. There are no other types like this in Australia; however they are very common overseas. It uses a continuous high strength plastic strip that can handle large changes in both strength and volume. This has converted a significant amount of our dissolved waste (food) into suspended solids. The next stage will remove these solids. This formed an Eco-Biz grant of \$150,000. (We were the first company to get an Eco-BIZ grant and one of the first to join the program).</p> <p>Stage 2 Effluent Solids Removal - The second stage of this area was to remove suspended solids from the waste water. Several trials were performed using a dissolved air flotation (DAF) unit to collect the solids and remove them. This has just been installed (October 2009) and is currently being commissioned. The next stage will look at water reuse.</p> <p>Sulphite Stripping System Cost \$1,000k - Our year's supply of ginger is brought into the factory between March and April each year, washed then placed into large concrete vats where it is preserved in a solution of sodium meta-bisulphite. Sulphite is an oxygen scavenger resulting in the removal of all bacteria, bleaching of the ginger and the softening of the rhizome resulting in better processing yields. The use of this preservative for ginger was pioneered by the firm and has been one of the reasons why our product is better than the opposition. Unfortunately, the sulphite then has to be completely removed from the ginger once the rhizome has been cut and sorted. This results in a large volume of hot water being used to flush the sulphite from the ginger. A tank of ginger has this water replaced several times a day resulting in hot water, high in sulphite being dumped down the sewer.</p> <p>Over the past 9 years, we have carried out a significant amount of research and trials to allow us to simply flush sulphite from ginger pieces using cold recycled water. A system was designed in house and built in 2006/7 and achieved savings of \$787,000 since it commenced operation. The savings were made up of, 335 tonnes of gas, 58.2 ML of water, 38 ML of waste water and significant improvements in syruping gain.</p> <p>There have been several major challenges with this system and these are being addressed at present.</p> <p>Cooling System Chains 1 to 5 - Presently on these chains, cooling water is used to reduce the temperature of syrup to allow packing off at certain times. Unfortunately, this water is sent down the drain, thus wasting approximately 5 ML/pa of hot water.</p> <p>When we installed Chain 6, a closed cooling system was installed that recycled cooling water for these new processing tanks. By connecting this into Chains 1-5, this water can be saved and the waste heat recovered back into the process. This will save 5 ML/y of water and waste water as well as 800 GJ of gas or 28,000 litres. This equates to a saving of \$15,000 per year of water/waste water and \$10,000 per year of gas.</p> <p>Evaporator Upgrade - The operation of our syruping area generates an excess of light brix or strength sugar syrups. To enable the syrups to be reused, an evaporator is used to concentrate the syrup back to 74 brix. This evaporator uses 1 kg of steam to evaporate 1 kg of water from our light brix sugar syrups. This means over a 12 month period, we use 177 tonne of gas at approximately \$1,100/tonne or \$194,700.</p> <p>By modifying the evaporator and installing an extra evaporating pass with thermo recompression, the evaporator will only use 0.33 kg of steam to evaporate 1 kg of water from our syrups. This will</p>

Firms	Examples and evidence from interviews and secondary sources
	<p>reduce the gas usage to 58 tonne or a saving of 119 tonne or \$130,900. Predictions are that gas will increase significantly in the future. This is part of a Retooling for Climate Change grant approved by AusIndustry.</p> <p>Water Harvesting - BGL have been reducing water usage through several techniques over the last 10 years. For example, water usage has dropped from 118 Mega Litres in 2006 to 90 ML in 2008, a reduction of 28 ML or \$42,000. We currently use a significant amount of water in green ginger, brining and our wash plant. The wash plant/brine vats alone uses a minimum 12 ML of water per year. (Depends on length of intake and dry ginger runs) Green ginger use approximately 15 ML/year.</p> <p>It is proposed to use rainwater sent to our dam, clean it to Class A+ and use it in the wash plant and green ginger areas. This would save a minimum of 27 ML of water. Taking into account the running cost of such a plant, this would save approximately \$27,000 per year. This is also part of a Retooling for Climate Change Grant approved by AusIndustry.</p> <p>Eco Efficiency Toolbox - The AIG along with the Queensland Government and Australian Government put together a "Eco-efficiency Toolkit for the Queensland Food Processing Industry". It was on the web but not sure where it is now. AIG may have a copy or Penny Prasad/Robert Pagan at UNEP Working Group for Cleaner Production in the Food Industry.</p>
<b>Retail Electrical Goods Store</b>	<p>We have had big savings with eco-efficient appliances. The Capalaba store is also reducing its impact on the environment by saving an estimated 857m3 of waste from going into landfill each year. Business environmental savings: Landfill waste reductions 857m3; Customer environmental savings: Water 17–24ML/year; Energy 36%; Green house gas emissions: washing machines 105,480kg CO2-e/year; air conditioners 201,000kg CO2-e/year. Other environmental savings: Since establishing the point of sale information program, sales of eco-efficient front-load washing machines have increased by 90 percent, equating to approximately 24 million litres of water saved every year. That amounts to a reduction of 105 tonnes of greenhouse gas emissions and a 36 percent saving in electricity costs for customers. The increase in sales of inter air conditioners equates to a 30 percent reduction in electricity use by the consumer and in turn is estimated to be a reduction of 201 tonnes of greenhouse gas emissions. A recent polystyrene recycling pilot program has resulted in 270m3 of polystyrene packaging being recycled annually.</p>
<b>Backpacker Hostel</b>	<p>We look at the accounts and bills for any reductions on bills. But what I need is someone from EcoBiz to come back and measure how we have gone with reductions.</p>
<b>Printing Services</b>	<p>We use simple ones like data with every energy bill, rates notices gives you water usage. We keep data on our waste &amp; one reason is because we are selling a lot of that. We do monthly audits to tell us a few other things. There is a workflow to the arrangement of the factory in relation to no wasted movement, use of space efficiently, etc. We also consider transportation. Yes the vehicles we use here are European Diesels, which is the best fuel efficient at this stage. We would love to get bio-diesel but can't get a good supplier. Part of this is also the planning, like scheduling many functions for a van like when it goes to Brisbane, etc. We recently did a check on all that &amp; we have reduced our courier costs by about \$1500 a month by making sure that any other supplies can be picked up. Eventually when we are talking about this carbon natural thing transport will be part of it. The message I hope gets out there is that buying carbon credit is not a solution in itself. Waste of any kind is what really makes a difference.</p> <p>We have a 100% green power target point: 16,000 kwh per quarter. This last power bill we used 12,644 kwh and in the last year we have used around 57,000 kwh. That is 8,000 kwh p.a. better than our goal. This quarter in '07 we used 188.08 kwh per day, and now in '09 its 140.5 kwh per day. By using our air conditioners 100 days/year. In '08 it was down to 164.89 kwh per day and now in '09 its 140.5 kwh per day. Benchmarking data suggests that we use about half the energy other printers in Queensland use to produce the same output. inverter style air conditioning. This allowed us to decommission our 20 year old inefficient, centralised air conditioning system. This strategy has created a 56% reduction in the energy used for air conditioning and a further 8% saving to overall usage. Measurable business benefits: Over 30% reduction in energy usage low water usage and costs waste is a net income stream - not a cost</p> <p>High Staff Morale Strong Brand in the marketplace Lots and lots of publicity at no cost New markets and new customers and yes we do more than our bit to reduce greenhouse gases and help keep our part of the world a great place to live and work.</p>
<b>Wholesale Nursery</b>	<p>Some we are able to measure and report through the ecoBiz project and I think that did work with the team to be able to demonstrate what was achievable rather than aiming too high.</p> <p><b>Environmental savings:</b> By upgrading the efficiency of their irrigation system, we discovered we could replace their 4kW pump with a 2kW model, irrigating at the same volume, with half the energy costs. In addition, by removing another of their pumps altogether they have cut their annual energy use by almost 20,000kWh. The nursery has also introduced other water-</p>

Firms	Examples and evidence from interviews and secondary sources
	<p>saving initiatives, such as:</p> <ul style="list-style-type: none"> <li>• upgrading irrigation sprinklers to reduce water use by 30 percent</li> <li>• recycling irrigation water</li> <li>• using copra peat and wetting agents to create better water management of plants, and</li> <li>• using Turbomiser low volume spraying, introduced in 1990, to reduce chemical use.</li> </ul> <p>By replacing non-recyclable trays with collapsible bins to deliver plants, the nursery saves over 2,500 waxed cardboard trays (4m<sup>3</sup> or 780kg) from landfill annually, and has reduced shipping costs by 30 percent. To reduce waste, the nursery is recycling cardboard and steel, reusing potting mix in top soil production, and mulching prunings and reusing green waste as mulch on in-ground field production. Our eco-efficiency approach extends to pest control, with the introduction of oils, bacteria and other biocontrols to manage pests and disease, and the installation of a solar powered Vortex Bug Bin to capture moths and beetles. Pine bark and copra peat (both renewable resources and waste by-products) are now being used for potting mix instead of sand (a mined raw material). Lower costs : Our larger eco-efficient initiatives have great benefits for the environment and the bottom line, but the many smaller adjustments are also saving the business money. The nursery has focused on projects that were achievable in a relatively short time period that would also achieve positive return on investment. By installing thermostats on air conditioners, turning off appliances when not in use, and reducing waste, we are saving thousands of dollars every year.</p>
<p><b>Developer, manufacturer and distributor of environmentally friendly coloured renders, paints and coating systems</b></p>	<p>We measure things like financials and how we are going against how we said we would with our projects (i.e. cleaning up work area). We don't really measure things like carbon emissions, water savings. We look at it more on a holistic view &amp; we talk about saving energy &amp; then saving money. I think we will have to start counting some of those things so that we can get the credit for it as a supplier. I think we have a major problem with how we measure businesses in relation to only economic &amp; not the environmental aspects. The firm has achieved significant and pioneering results to date without comprehensive record-keeping of change strategies.</p>
<p><b>Fish Breeders</b></p>	<p>The company's Beenleigh facility, south of Brisbane, has developed an environmentally efficient, pond-based production centre to supply fingerling-sized Australian native freshwater fish to the aquaculture and aquarium markets. By focusing on fingerlings, the facility uses 60 percent less electricity, 90 percent less feed and 30 percent less labour. The fish also take less time to get to market.</p>
<p><b>Winery</b></p>	<p>Right from day one we tried to do the right thing for the environment. For example we have recycled the cardboard boxes right from the beginning even though we had to pay the local council for the recycling pick up, we could have just put everything through the normal waste bin pick up. We are trying to do everything we can to reduce our impact on the environment. "We got into the organic wine making partly because of the same idea that the world is going to more organic food production to have less of an impact on the environment in terms of pesticide use especially". One example is where we had a salesman come up here in relation to heat pump technology that the government is subsidising. Within one &amp; half years the installation would be paid off &amp; then be saving money on electricity. One of the other things we are looking at is solar power but we are still assessing the outlay &amp; being able to generate my own electricity. One other initiative that staff came up with was when emptying lines of wine we used to use water &amp; now one of our staff members has suggested pushing it with gas. We had a few empty tanks last year &amp; devised a system where we saved 90,000 litres of rainwater last year. Unfortunately we couldn't afford to buy large plastic tanks so we put it in some wine barrels. We then needed the tanks for wine so rang the council to come &amp; pick the water up to be utilised rather than being wasted.</p>

## Appendix 2

### List of participants in this study

1. Accounting North
2. Barramundi Blue Aquaculture
3. Biolytix
4. Buderim Ginger Factory
5. Halse Lodge
6. SEQLD Fish
7. Good Guys Capalaba
8. Qld Complete Printing Services
9. Redlands Nursery
10. Rockcote
11. Warrego Wines
12. Wood Processing Plant (this participant requested anonymity)