

## ***Creating the Global Greenscape: developing a global market entry framework for the green and renewable technologies***

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### ***Introduction and overview of Chapter***

The following chapter develops the case for the global greenscape. The chapter introduces the green global market place (Greenscape) and discusses the market, consumer types and attitudes. The chapter introduces current green market practices and adopts case study methodology to present three distinct green companies related to renewable energy, process technology and waste water recycling and their international market activities. The chapter offers discussion on findings and incorporate the novel technique of discourse analysis using Leximancer 3.0. The chapter concludes with a framework for the global greenscape and reflections for global marketing of green technologies.

The Stern report is the result of major review undertaken in the UK to better understand the economics of climate change. The report aimed to clarify comprehensively the nature of the economic challenges of climate change and how they can be met, in the UK and globally. The study examined the implications for energy demand and emissions in both developed and developing countries. The study considered the risks of increased climate volatility and major irreversible impacts, air pollutants, greenhouse gas emissions, the role of land-use changes and forestry and the effectiveness of national and international policies. The study consulted with key stakeholders including academic, private sector, scientific, NGO and other experts, internationally and domestically, to understand views and inform analysis. Several archived documents exist elaborating and advancing the Stern findings and position this report as seminal to the debate on climate change (HM Treasury [http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/sternreview\\_backgroundtoreview.htm](http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/sternreview_backgroundtoreview.htm)). The report concluded that “all individuals, firms and communities, in relation to production of housing, transport and food consumption decisions must unite to develop sustainable change and well being. The Stern report offered the notion that dangerous climate change cannot be avoided solely through high level international agreements; it will take behavioural change by individuals, regions and communities (Stern 2006). While solutions to sustainable consumption involve diverse stakeholder groups, they also extend to the innovation,

development and diffusion of a diverse range of products, processes and services and the adoption of corporate socially responsible policies (Tukker, Charter, Vezzoli, Sto & Andresen 2008; Uiterkamp & Vlek, 2007). This chapter will discuss product and process innovation and diffusion into green ready markets and offer a framework for developing and penetrating the global greenscape.

Achieving sustainable consumption and corporate social responsibility is a response to the scientific and international communities' concern that the world is living beyond its ecological systems (Placet, Anderson & Fowler, 2005) and is facing a potential crisis with regard to environmental and other resources (Tukker et al, 2008). Defining sustainable consumption is difficult because of the multiple perspectives that surround the concept (Peattie & Collins 2009; Tukker et al, 2008). It is best viewed as an umbrella term that incorporates sustainability's environmental, social and economic dimensions and takes on such ideas as reducing environmental impact, enhancing quality of life, minimising waste, taking a life cycle approach and looking at ecological preservation for future generations (UNEP, 2002). The goal of sustainable living is to ensure that society is able to be maintained over time and can be applied to all layers of community and business. Solutions to sustainable consumption are multidimensional and involve three parties; governments (policy makers); producers (business); and consumers (Tukker et al 2008). Issues of energy security, food security, cost management and waste minimisation all come to play. The notion of consumption in this context extends beyond the initial purchase of products to include their manufacture, use and disposal; a concept that is wider than a narrow marketing ideology (Peattie & Collins 2009; McDonald & Oates 2006). Moreover, the way in which we market these products in the marketplace will depend on the notion and philosophy of sustainability, renewal goals and green practices. These ideals will form the foundation of this chapter.

Business contributes to sustainable consumption through the manufacture of goods and services that are more ecologically efficient and durable, using fair trade practices and ensuring an economic benefit to the community (Tucker et al 2008; Peattie & Charter 2003). Consumers contribute to sustainability through purchase, use and waste. Consumer demands can drive business production and provide consumers with a direct opportunity to contribute to the goals of sustainable business consumption through demand. Governments and government platforms for green innovation can also drive much of this innovation with green consumption focused on both consumer and business communities. Governments in many countries are responding to this enthusiasm through policies and practices that promote and attract green innovation (Peattie & Collins 2009; McDonald & Oates 2006). International

and national market commercialization of these sustainable technologies provides a number of benefits to the economy, including improving the terms of trade, allowing specialization in green product development and development of clean and process technologies (cleantech) (REEEP, 2008), development of export and internationalized markets and support and development to the primary industries. However, the most recent data indicates that market success for green/clean technology is low (REEEP, 2008) and requires marketing development support (Hume, 2010). There are some countries with strong market potential and green stewardship, such as China, India and Brazil with smaller markets like Australia not taking advantage of these opportunities. Interestingly North America is also slow to adopt green development programs (Greendex Report, 2012).

As a market, China, India, Malaysia, Latin American and in particular Brazil, are actively scanning the globe for a range of clean technologies to implement in order to maintain their policy of a minimum of 50% renewables or green technologies throughout its energy matrix (REEEP, 2008). This directly relates to opportunities for new implementations and international transference of green technologies for penetration into these developing markets. Companies with the right set of skills can capitalise on these markets with product portfolios like wind, biomass, bioenergies (such as Ethanol and Biodiesel), hydro, tidal, ocean / wave, geothermal, solar and agribusiness innovations, to name a few. In order to leverage products and programs, companies need extensive commercial support, market development and education to assist them in penetrating markets like China, India and Latin American. To increase the chance of success for global green innovator companies, the requirement for market commercialization strategies and 'market entry' support is warranted. More knowledge on market development, market entry and planning needs to be shared for international partnerships, such as the Australasian Latin American Business Council (<http://www.alabc.com.au/>) to prosper. This chapter aims to contribute to the discourse in the field of market commercialisation of new technologies to global market opportunities such as China, India and Latin America and offer a conceptual framework for market entry, diffusion and growth.

The chapter will incorporate three case studies on process innovations and product sectors that have penetrated global markets and develop a green entry framework. The case study process is designed to identify and develop a toolkit for market success criteria and pitfalls of commercializing and internationalizing process technologies and product innovation diffusion into the broader marketplace. The chapter will proceed with discussion on the specific 'G (reen) markets' market information, marketing functions for market entry and market diffusion for renewable products and process technologies

such as supply chain elements, and how these interrelate with achieving sustainability goals.

## ***Overview of the current green markets and global renewable energy market***

### ***The case for a going global green marketing framework***

The increasing realisation that global economic prosperity and employment depends on a stable climate and healthy ecosystems is spurring investment in green products, green process technologies and services. As the OECD has recognised, strong environmental policies can no longer be regarded as a burden to economies. On the contrary, ambitious environmental policies have an impressive track record in generating innovation, industry development, job creation and economic prosperity. The case of Germany (BMU, 2006) and Denmark (Christensen, Godskesen, Gram-Hassen, Quitzau & Ropke, 2007; REN21, 2008) leading the way in wind and renewable energy provides good examples of where active environmental industry policy has led to the development of strong domestic markets. Brazil and India have emerged recently as two of the world's fastest growing markets for renewable energy investment and green buildings. These developments in global destinations have opened up a range of opportunities in energy, technology, construction, architecture, engineering, building materials and equipment manufacture for domestic firms to seek overseas investment. Australian businesses have been moderately successful in the 'clean green growth' scenario accessing overseas markets. However, in other areas, particularly solar energy and other renewable energy technologies, some of Australia's most promising technologies have only been commercialised overseas due to a lack of political interest and investment support in Australia (Green Gold Rush, [http://www.actu.org.au/Images/Dynamic/attachments/6211/Green\\_Gold%20Rush\\_final.pdf](http://www.actu.org.au/Images/Dynamic/attachments/6211/Green_Gold%20Rush_final.pdf); REN21, 2008). This chapter will advance the notion of overseas market development by identifying the types of green products and process technologies available in the marketplace and through case study analysis offer some success and failure criteria.

### ***Green Market Opportunity***

This section will identify areas where innovation and development can capitalise on opportunities. The discussion will include an overview of the green market landscape, including green products and process technologies and customer types and behaviour. This section will also identify some of the marketing opportunities in Latin America specifically Brazil.

### ***Current market for green services and product globally***

In the Annual Greendex Report (2012), the emerging economies of Brazil, India, and Russia (BRIC)(O'Neil, 2008), along with Mexico and Argentina, rated in the top eight countries that had the highest sustainable behaviour. Green markets and industries, rapidly evolving globally in response to climate change and other environmental challenges, have significant potential for global businesses and local economies. Overall, global green markets are projected to double from \$US1.4 trillion per year to \$US2.7 trillion by 2020. Based on this analysis of 30 green industries globally, green innovator businesses are particularly well positioned to succeed in the following six key markets:

- Renewable energy. Generally defined as the production of energy directly from natural resources, for instance; solar, geothermal, hydro and wind.
- Energy efficiency. Improvements in current design, such as a better form of lighting or water heating.
- Sustainable water systems. Reuse of Grey water, or hand washing, laundry and showering.
- Biomaterials. Eg, Biodegradable plastics.
- Green buildings. Akin to energy efficiency, natural lighting, recyclable grey water, water harvesting and automatic lighting.
- Biomass. Varied descriptions include; the use of waste products from processing of sugar (bagasse) for electricity generation, whole trees or part thereof for heating and electricity generation.

(Source: REN21, 2008).

Many global economies such as Australia, China, India, UK and LATAM, Brazil are aiming to implement government policy that creates strong market demand and pathways for industry development. It is predicted that in the six key industries, the creation of strong domestic markets supported by strong climate change and other policies could result in additional jobs for all economies by 2030. Unfortunately, in many scenarios inadequate domestic market demand fails to address skills and training for green industry development and investment in green businesses with firms needing to look for opportunities overseas. The most recent data indicates that market success for green/clean technology is low and needs marketing development support (REEEP, 2008; Cadman and Hume, 2012). Using Australia as an example exporting of green technologies tends to make up only small contributions of all businesses (IDC, 2011) with mixed success in translating innovation capacity and natural resource advantages into business success in green industries globally (Green Gold Rush,

[http://www.actu.org.au/Images/Dynamic/attachments/6211/Green\\_Gold%20R](http://www.actu.org.au/Images/Dynamic/attachments/6211/Green_Gold%20R)

[ush\\_final.pdf](#)) with most successful innovators taking product overseas to larger markets with a greater green investment.

### ***Stakeholder Analysis: Global Green players***

Globally, the growth of clean technology indices is now consistently outpacing the broader market and presents a strong market potential. As a proportion of global venture capital investment, green industries are up from just 1.6 per cent of total investment in 2003 to 11 per cent in 2008 suggesting we are slowly improving success. Industries including biofuels and renewables, clean technology and biomass are leading the way in investment capital. The value of sales from green energy sources like wind, solar and geothermal power and biofuels will continue to grow to as much as \$US1 trillion globally a year by 2030, according to investment analysts (Green Gold Rush.

[http://www.actu.org.au/Images/Dynamic/attachments/6211/Green Gold%20 R ush\\_final.pdf](http://www.actu.org.au/Images/Dynamic/attachments/6211/Green_Gold%20Rush_final.pdf)). More than \$US148 billion in new funding entered the renewable energy sector globally in 2007, up 60 per cent from 2006. The highest levels of renewable energy investment are in Europe, followed by the USA. However, China, India and Brazil (REN21, 2008) have been drawing growing investor interest, their collective share of new investment growing from 12 per cent in 2004 to 22 per cent in 2007, representing an increase in absolute terms of 14 times, from \$US1.8 billion to \$US26 billion. With the move towards a low-carbon and more sustainable world, growing numbers of jobs are being created in these sectors (WBCSD, 2007). Almost 1.2 million workers are employed in generating biomass-derived energy in just four leading countries: Brazil, the United States, Germany (BMU, 2006) and China (WBCSD, 2007). Overall, the number of people presently employed in the renewable energy sector runs to about 2.3 million (Securing Australia's Energy future, <http://www.efa.com.au/Library/CthEnergyWhitePaper.pdf>). The industry relies on strong consumer markets and aims to develop these over the next few years to maximise the market.

### ***Who are the green consumers?***

Climate change is viewed by most as a global problem. Concerns about the cost of energy and shortages of natural resources cloud the future of the environment and are important consumer considerations for sustainable living. Indian, Chinese and Brazilian consumers fill the top three positions in their consumers' sustainable behaviour (Greendex Report, 2012). Australia is not as developed but the government has recognised the importance for action, introducing a Carbon Tax in July 2012. Often consumers suggest that individual efforts are 'not worth the effort, if government and industry do not also take action. This is typically the view of developed nations' consumers (Greendex Report, 2012). There are many green firms designing and producing renewable technologies that are attractive for many global markets with the firms looking to capitalise

on sustainability and the global greenscape. The stakeholder customers include individual consumers, governments and businesses. Process technologies and green products are purchased for many reasons with focus on increased efficiencies, lower waste, minimising negative climate effects and lower carbon. Particular reference to Latin America consumers will be incorporated into the case analysis, highlighting reference to initiatives and sectors that have been gaining traction. Despite improvements in renewable home energy saving systems such as solar and energy saving appliance, little improvement in food and goods manufacture and consumption can be found in the general green market place. Developed countries consumers'' such as Australia and America rank poorly in transportation with little future changes planned for renewable energy usage and vehicle modification with Australians are among the least likely to use public transportation and to walk or cycle to their destinations. In Latin America, with higher populations and a longer focus on renewable energy, consumers are more familiar and supportive of green initiatives (State of the environment <http://www.environment.gov.au/soe/2011/report/built-environment/2-1-livability.html>)

### ***Behaviour process in buying green products***

Consumer behaviour, green habits and the drivers of green consumption are little researched in academic discourse, save for The National Geographic Society's Greendex report (2012), which surveys 17,000 consumers across 17 countries to quantitatively measure environmentally friendly people. Consumer search and choice differs across the green consumer segments with personal, firm and government values and agendas influencing approaches. Interestingly, the social conscientious of firms impact these attitudes with many firms rarely opting for green innovation and portraying socially aligned and responsible innovation. In many countries, in particular Australia consumers have increased their consumption of imported goods and reduced consumption of self-grown foods. These are small trends toward market communities and consuming locally grown food, however the numbers are small and at this stage insignificant (State of the Environment, <http://www.environment.gov.au/soe/2011/report/built-environment/2-1-livability.html>). Interestingly, in many countries a lower rate of drinking bottled water is evident however consumption of beef and chicken has not changed and these make a large environmental impact. These behaviours are all indication of the consumer's understanding and approach to green and sustainable practices ((WBCSD, 2007; State of the Environment, <http://www.environment.gov.au/soe/2011/report/built-environment/2-1-livability.html>).

### ***What do the consumers think about green products?***

Understanding the demographics and drivers of green consumerism can help entrepreneurs explore the environmental market domestically and globally and focus on likely prospects. Australian consumers' attitudes toward the environment suggest a relatively high level of concern and a lower level of action (Hume, 2010). Climate change is viewed by most as a national and government problem. Concern about the cost of energy and shortages of water are considered of concern and important, with Australians feeling supportive of environmental problems (Hume, 2010). Consumers however also suggest that individual efforts are not worth it if governments and industries do not also take action. Cost considerations and environmental concerns are suggested to motivate consumers to adopt more environmentally sustainable behaviour. In general terms the actual retail cost, a lack of environmentally friendly options and clear information about green products and service offered are considered a deterrent to buy green (Hume, 2010). It appears that consumers are sending a message that they want "less talk and more action" from business and government, or at least action before talk.

In general terms much market research has been done on green consumers with market research suggesting green consumers: are sincere in their intentions, with a growing commitment to greener lifestyles. Most consumers suggest their environmental practices are inadequate. Consumers show a tolerance for companies and green practice, they do not expect companies to be perfect in order to be considered 'green' however they easily distrust firms who are caught making false claims. They look for companies that are taking some substantive steps and are making the commitment to improve. Consumers want green practice to be easy with only minimal inconvenience is tolerated by consumers of green products. In a recent poll, 58% of respondents cited poor product availability as a reason for not purchasing more green products.

Irrespective of the negative attitudes, consumers globally are eager to learn, and this means that consumer education is one of the most effective strategies that entrepreneurs can use when taking green products to market. There is a perception amongst consumers that 'green' products will be less effective than existing brands with these consumers less likely to sacrifice quality than price. Assurances of quality are absolutely essential, and must be communicated convincingly. Quality is judged on many features, including performance, look, feel, fit, comfort, and durability. There is suggestion that currently the loyalist 'deep-green' market is too small to attract major competition with recent estimates putting the size of this market at about 2% of North American consumers (The National Measurement Institute ,[www.measurement.gov.au/](http://www.measurement.gov.au/)),. This is an important factor in planning long-term global penetration strategies. These individuals will often pay higher prices or sacrifice product performance



for environmental improvements. Premiums of more than around 2% can be charged only if the consumer perceives additional product value. This segment is moderately attractive with these factors influencing pricing strategy of any marketing and global strategy.

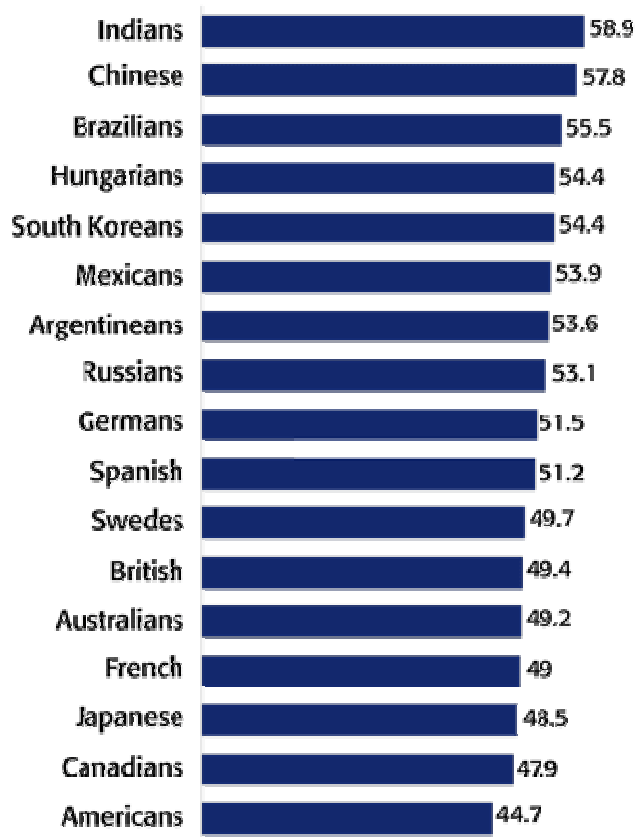
The most responsive age groups of green consumers tend to be children, teens and young adults, some adults, many of whom are influenced by their children. In addition, women are a key target for greener products, and often make purchases on behalf of men. The best 'green' customers are people with more money to spend (Pitney Bowes: <http://news.pb.com/press-releases/corporate-citizenship/pitney-bowes-business-insight-and-earthsense-uncover-the-top-ten-green-us-states.htm>). As a result, the most promising products for 'greening' tend to be at the higher end of the market. The most promising outlets for green products are retail stores frequented by wealthier shoppers, businesses with high carbon load and global markets looking for energy and food security. In general, green consumers have the education and intellectual orientation to appreciate value; they will understand evidence that is presented in support of environmental claims and be discerning of information that is unprincipled.

Nielsen ([www.nielsen.com/au/en.html](http://www.nielsen.com/au/en.html)) and NMI's (The National Measurement Institute, [www.measurement.gov.au/](http://www.measurement.gov.au/)) research identifies the, LOHAS model (Lifestyles Of Health And Sustainability) and suggests these green consumers are the top spenders in many areas. For entrepreneurs targeting their green innovations, this model can offer some valuable consumer insights. NMI estimates U.S. LOHAS products to be a \$209 billion industry, and projects U.S. sales of LOHAS products to be more than \$400 billion by 2010. These figures are similar for the other large global populations and markets positioning these markets are opportunistic for many green markets including renewables, biomass and clean technology. The following table is the output of the Greendex Report (Greendex, 2012). The research explores individual consumer behaviour and material lifestyle of 17,000 consumers in 17 countries around the world, and measures the specific choices and behaviours that contribute most to a consumer's overall ecological impact. The table offers an index of the green consumer patterns in global markets. It should be noted that China, India and Brazil are among the highest in green consumer patterns presenting a strong marketing opportunity in these regions. It should be noted that not only do these countries represent the highest overall rankings, the developing nations of United States of America, Canada, France, Great Britain and Australia, rank the lowest in relation to sustainable consumer behaviour and their attitudes toward the impact on their environment.

Figure 1: Ranking green consumers

**Greendex: Overall Rankings**

Consumers in Each Country, 2012



NGS12\_greendex\_2012

Source: Greendex 2012: Consumer Choice And The Environment – A Worldwide Tracking Survey Highlights Report Published By National Geographic

To succeed, eco-entrepreneurs must not neglect the traditional values of price, quality, convenience and availability, we these factors supported by the consumer comments introduced. Green products must be significantly better, in environmental terms, than the competition, the product data must provide clear, persuasive and comprehensive information on that differentiates the product apart environmentally. An important rule in marketing green products is to minimize the sacrifices that consumers must make in order to buy and use 'green' products and support the claims with valid data. Improvements must be substantive and backed by hard facts. A good strategy is to offer environmental improvements in several categories at the same time, such as water pollution, solid waste, and manufacturing processes. The following section will introduce some of the process innovations, product and the green supply chain factors that contribute to the green market.

### ***The green supply chain***

In conjunction with specific product types firms have several opportunities to capitalise on green market opportunities and many ways in which they can innovate products and processes to fit green markets and creating differentiated products based on green attributes. Current practices in the green supply chain can support going global with a green strategy as a new process and as an efficient element for a current supply chain. Moreover, innovations in the green supply chain add green improvements and innovations to products that allow for differentiation and repositioning. Key areas include green design, green supply chain, G(reen) procurement, G(reen) design, G(reen) manufacture , G(reen)waste management and G(reen) retail and the role of development and distribution as a tool to increase productivity and eco-efficiency. This section will introduce these terms and apply them to the global greenscape.

### ***Current Green Practice and Design***

Business contributes to sustainable consumption through the manufacture of goods and services that are more ecologically efficient and durable, using fair trade practices and ensuring an economic benefit to the community (Tucker et al 2008; Peattie & Charter 2003). Consumers contribute to sustainability through purchase, use and waste. Consumer demands can drive business production and provide consumers with a direct opportunity to contribute to the goals of sustainable business consumption through demand with governments driving sustainability through policy and incentive. Practices such as green procurement, green manufacture, green retailing (Jones, Hillier, Comfort, & Eastwood, (2005) and the integration of these practices into service design are the fundamentals practices available to firms in creating a greenscape that deliver green product services, process innovations and promotional claims to consumers.

Marketers have responded to growing consumer demand for environment-friendly products in several ways, each of which is a component of green practice and should be considered in any quality management programs. These include: 1) promoting the environmental attributes of products; 2) introducing new products specifically for those concerned with energy efficiency, waste reduction, sustainability, and climate control, and 3) redesigning existing products with an eye towards these same consumers. Marketing campaigns touting the environmental ethics of companies and the environmental advantages of their products are also on the rise with most observers agreeing that some businesses engage in green marketing solely because such an emphasis will enable them to make a profit. Other businesses, however, conduct their operations in an environmentally sensitive fashion because their owners and managers feel a responsibility to preserve the integrity of the natural

environment and satisfy consumer needs and desires (Tukker et al 2008). Indeed, true green marketing emphasizes environmental stewardship with green or environmental business and marketing defined as any business and marketing activity that recognizes environmental stewardship as a fundamental business development responsibility and business growth responsibility (Kanellos & Valos , 2010). This expands, to some extent, the traditional understanding of a business's responsibilities and goals.

Service Design transects many functional departments including marketing, finance, operations, human resource, research and development and information technology with the aim of service design to develop and design methods of coordinating and delivering ideas to the market place. Environmentally responsible or "green" business practice takes into account consumer concerns about promoting preservation and conservation of the natural environment. In particular, green marketing campaigns highlight the superior environmental protection characteristics of a company's products and services. The sorts of green characteristics usually highlighted include such things as reduced waste in packaging, increased energy efficiency of the product in use, reduced use of chemicals in farming, or decreased release of toxic emissions and other pollutants in production.

Green design seeks to reduce negative impacts on the environment, and the health and comfort of stakeholders in the supply chain with the basic objective of sustainability and green services reduced consumption of non-renewable resources, minimization of waste, and creation of healthy and productive environments. Coupling this with the distinct objectives of traditional services design, green service design firms can offer efficient, productive and quality products from a "green" ideology. Although it's not yet mainstream, many big companies are now pushing triple bottom line and corporate social responsibility requirements deep down into their supply chains. In fact, the term "green" procurement is probably too narrow. What the leading big companies around the world are talking about is sustainable procurement. That means their suppliers must tick all the boxes on environmental issues including reduced packaging, less pollutants, energy efficiency, water conservation and waste reduction. They also need to treat their workers fairly, offer a safe workplace and purchase their own inputs in a sustainable fashion. Enhancing indoor environments reduces non-renewable energy consumption at all supply chain points, including aligning with green suppliers and intermediaries, minimising water and using environmentally preferable products and are also popular green strategic choices. Adopting delivery practices within a green framework often forms the basis of green claims.

As procurement policies can have a significant impact on a company's environmental "footprint," given that somewhere between 50 and 70 percent of a company's overall costs originate from purchasing" green procurement has become a popular area of adoption and promotion for the green firm. Green procurement is a fundamental and essential element of green design with the ethos aiming to seek out and buy goods and services that are less environmentally damaging. Generally, goods and services that are produced locally are less environmentally damaging than goods and services produced from afar, as less energy is expended getting them to the consumer. Green procurement is often supplemented with other environmentally friendly practices, such as reusing and recycling.

Green procurement integrates into the green manufacturing chain with it focusing on manufacturing methods that support and sustain a renewable way of producing products and/or services that do no harm to you or the environment (Walton & Hume, 2011). Green manufacture and process flow and small incremental changes can make large differences to the environment and will flow on to other areas of the supply chain. Reducing the use hazardous chemicals, no testing on animals and packaging, labels and office communication that are recyclable and minimise energy consumption are all elements of green manufacture. These claims are often used by green firms to legitimate and communicate their green practice. Green distribution is about being efficient, timely and cost effective, and supporting the sustainability agenda with sustainable distribution focusing on storage and movement of goods in a way that supports continued economic growth while protecting the environment and delivering a better quality of life for future generations. The need to reduce carbon emissions has driven the environmental challenge and positions green distribution as a key consideration in green design.

The final green activity within firms is green retailing with it often adopted by firm as a means of green practice (Tukker et al 2008). According to new research from the Australian Centre for Retail Studies (Tukker et al 2008) consumers are willing to spend more for green; green with increasing numbers demanding greener products from retailers and green brands. The major trends in global best practice green retail includes energy efficient stores, offering energy-efficient products, reducing packaging, green marketing and merchandising as well as green sourcing and distribution (Borden, 1992; Lerner, 1998; Harris, 2007). It is evident there is both internal practices and external positioning that firms are currently using to create a green ethos and aim a greater share of the green economy. The major trends in global best practice and green retail and marketing penetration include energy efficient stores, offering energy-efficient products, reduced packaging, green marketing and merchandising as well as green sourcing and distribution. It is essential to

highlight to current marketeers that marketing and retail practices; current trade practices issues and product line modification must be considered in the positioning of the green product and services when penetrating international marketing. Issues including green locations and leasing, more sustainable customer interactions such as web and E Retail, greener and eco-advertising and green packaging need consideration in the branding of a green firm and product.

Green design seeks to reduce negative impacts on the environment, and the health and comfort of stakeholders in the supply chain. The basic objectives of sustainability and green services are to reduce consumption of non-renewable resources, minimize waste, and create healthy, productive environments. Coupling this with the distinct objectives of services design, green service design aims to offer an efficient, productive and quality service tailored to the requirements of the firm, the customer and other stakeholders and is delivered and developed from a “green” ideology (Joyce, Green & Winch, 2006).

### ***Data and methodology***

Exploratory research is a flexible and valuable tool for research (Babbie, 1989; Churchill, 1979; Kinnear and Taylor, 1996). The objective of exploratory research offer depth and thick descriptions to areas where little is known increasing the researcher’s familiarity with a problem and clarifying concepts (Patton, 1990; Churchill, 1979; Miles & Huberman, 1995; Zikmund, 1991; Churchill, 1979). It is suggested the interpretation of the findings are subjective and with small sample cases that cannot be projected to a wider population (Zikmund, 1991; Miles & Huberman, 1995) however the depth of data obtained is informative, valuable and offer insight not obtained from empirical research. This paper adopts a case study methodology to identify overall themes and practices and offer a deeper understanding of the global Greenscape the cases identified for examination are reflective and retrospective and include a range of green firms. These are selected to offer an in depth overview of the green innovation marketplace.

This research adopts a qualitative ethnographic approach and employs a combination of workplace observations and document collection to explore and gather a contextualized understanding of the measures and evaluations of the green innovation market penetration. As recommended by Eisenhardt (1989) and Patton, (1990), the research sample will consist of three to six different cases. The cases were purposively selected to provide a maximum variation to assess replication logic for theory building purposes. The underlying principle to the sampling technique will be to provide information rich cases that are worthy of in-depth study. Multiple data sources across hierarchical levels, together with observation and relevant document collection, were sought within

each of the case studies to provide the data variation and the theoretical saturation as recommended by Glaser and Strauss (1967), Eisenhardt (1989), Eisenhardt and Graebner (2007) and Perry (1998). Data from the multiple sources was divided into themes and categories based on literature findings. The next stage progresses to narrative analysis, a subfield of discourse studies. Discourse studies have increasingly using types of linguistic analyses (Alvevesson & Karreman, 2000; Soderberg, 2006). A computer-assisted text analysis of the interview transcripts was undertaken using Leximancer (Smith, 2000) and relying on a corpus-based approach (Stubbs, 1996). One advantage of the use of the Leximancer 3.0 system is argued that it makes the investigator aware of the global context and significance of concepts and helps avoid fixation on particular anecdotal evidence, which may be atypical or erroneous (Smith and Humphreys, 2006). Identification of the dominant themes of the cases was undertaken by examining the maps. Leximancer stochastically calculates of the concepts in the corpus, as recommended by McKenna and Rooney (2005). This visualisation technique enables investigators to see, in a global representation, the important concepts in the corpus and relationships between these concepts. Concepts that occur in very similar semantic contexts tend to form clusters. Each map is then used by the investigator to present an overall representation of the corpus and to guide interpretation.

***Case examples of international alliances pitfalls and processes of practice “Latin America***

This section will highlight and discuss the criteria and globalisation processes of three cases. Each of these cases chose to enter the LATAM market and table 1 offers insight into the key PESTLE issues for going global to this market. The table depicts the Australian Brazilian relationship. Brazil offers incentive and encouragement for clean technologies whereas this has not yet been established in Australia, China, Indian and Russia. Brazil also has strong government support with electoral candidates running on the green ticket. It appears one of the key considerations distinguishing these countries is size, government objectives and population.

**Table 1: comparison table of Australia and Brazil PESTLE**

<b>COUNTRY</b>	<b>POLITICAL</b>	<b>ECONOMIC</b>	<b>SOCIO – CULTURAL</b>	<b>TECHNOLOGICAL</b>
AUSTRALIA	Carbon Tax introduced in July 2012 Company establishment is simple	Resources driven economy  2012 GDP growth = 3.5%  GDP = \$1.3T	Green if it is profitable Bo viable biofuels, biomass industry Solar, wind, wave receive	Innovative nation with small market  Export is preferred option of government

		Ranking = 13	market acceptance	
BRAZIL	Government grant and incentive programs for electricity, biofuel / ethanol growth and biomass export programs  Difficult for foreign company to establish presence	Resources & Agribusiness  2012 GDP growth = 3.2%  GDP = \$2.2T  Ranking = 6	Green candidate in 2012 election received 17% of round 1 votes  Significant investment across 'clean tech' portfolio spectrum	Net buyer of technology with large technology base of users  Investment available for local partnership  Technology transfer is preferred model of government

The 3 cases will cover the 3 distinct green markets 1. Biofuels 2. Biomass and 3. Water technology. This section elaborates on the success criteria and pitfalls for market introduction, entry and diffusion through these case studies of agribusiness, biofuels and biomass technology transfers.

### **Case Study 1 – Energy Security and home grown transportation fuel**

#### **Description and idea origination**

This case explores a process innovation for a biofuels injection system that opened into the Brazilian Diesel transport sector. While conducting a 'spill clean-up' for a biofuel producer south of Sydney, Australia, a mechanically-minded environmental scientist overheard the client ask, 'why isn't this fuel being used in the Diesel transport market.' Knowing as he did that the chemical nature of Diesel compared to gasoline is different, in that gasoline can mix readily with biofuels, while Diesel and biofuels are akin to oil and water. While chemical emulsifiers have been used to bind them, their performance outcome characteristics do not match market requirements. Therefore, it became evident that what was required was a manner of using biofuels with Diesel, where performance was at least equal to the existing paradigm. An Injection method was invented and twelve months later, a patent application was completed and a prototype existed. Internal technology validation to test the process gave support to external trials to measure its robustness and validity in non-protected laboratory settings. Following some capital sourcing, the prototype was further developed and a commercial agreement for market-based pilot was pursued. An agreement and pilot in place, two years of marketing the innovation to similar commercial entities did not achieve the same outcome." It became evident that



while Australian users were stating their green credentials, no-one had interest to introduce an environmentally-friendly transport fuel.

### **Market opportunities and scanning**

Exploratory quantitative research identified two international markets, namely: United States of America (USA) and Brazil. Qualitative research clarified each market, identifying strong market barriers in the USA to foreign inventions, when compared to local competitive offerings and the constant food versus fuel debate. In comparison, Brazil offered an attractive investment and market profile, though presenting its own barriers, in this instance, language and regulatory, while dispelling any food versus fuel concerns, given biofuels have been produced for over 35 years, using only 1% of arable land and supplying 52% of fuel transport consumption with no impact on food production (Neves, Pinto, Conejero and Trombin (2011: 20). Comparatively speaking, Australia had no government support and a private sector presenting strong resistance to an environmentally friendly transport fuel, USA had some penetration, though deep set within the food versus fuel debate and heavily supported by government incentives, while Brazil was in its fourth decade of a country-wide revolution in the use of home grown biofuels and openness toward continued innovation.

### **Market selection**

It is widely recognised that Australia's economy in 2012 is growing on the back of a shovel, driven by a resource hungry international market. Fossil fuels, in part, are by products of some raw materials extracted from the earth that find their way back into the equipment used to further excavate and transport this material to the seaside ports. Thus, it could be said, there is reason to continue to use these refined fuels. Brazil, whose economy is also growing, due in no small way to international commodities demand, in contrast, has a home grown biofuels market, started as a result of the Middle Eastern oil crisis of the 1970's. Two countries with similar economic drivers have developed far differing strategies for their passenger transportation. One, whose car manufacturing industry is strongly linked to overseas control. The other, who has attracted almost every car manufacturer inside its borders to research and manufacture vehicles to use biofuels, Three decades later, early prototypes have developed and vehicle manufacturers produce over eighty (80) passenger vehicle models, while the government mandates a twenty five percent (25%) consumption of biofuels in a tank of gasoline.

There are more than Eight million non-passenger vehicles are on the road in Brazil with an average life span of twelve years (Instituto Brasileiro de Geografia e Estatística (IBGE). A visual inspection will see these vehicles bellow black plumes of smoke into the densely populated cities of Brazil. So, a

market looking for a biofuels solution for its non-passenger fleet, a government prepared to assist and an existing proof of concept validation of a process innovation is in place. The answer to ask, therefore, is ‘how does the innovative early stage company leverage itself to take advantage of the opportunity?’

## **Case Study 2 – Energy Crops for electricity grid and innovative supply chain management**

### **Description and idea origination**

This case study looks at process innovation for a device to reduce the supply chain costs associated with harvest of short rotation crops. Born from the notion of harvesting fast growing trees for use as a power source, Australian farmers saw the need for ‘energy cropping’ as a revenue stream for themselves while achieving a clean energy basis for the market. Market forces prevailed with power stations driving the financial model by giving a transparent floor price to the farmers, for the delivered raw material. Working backward to the field, calculations showed that harvesting and transportation consumed over Seventy percent (70%) of the raw materials’ delivery cost. A decade-long research and development program to understand the origins of these costs, funded through long enormous federal, state-government and private enterprise, resulted in a supply chain management innovation that cost \$6 million to build the initial prototype. This product proposes to reduce harvesting and transportation costs by as much as fifty percent (50%) of the existing harvesting and transportation costs.

### **Market opportunities and scanning**

The initial prototype successfully demonstrated the concept that a significant cost reduction could be achieved through a technology-enabled harvesting supply chain management innovation. In parallel, this process demonstrated two key unknown areas. Due to the geographical expanse of Australia and the associated population density, or lack thereof and the heavily-engineered design for purpose product, the actual cost of the invention proved prohibitive to a market that needed it, but did not have the quantity or density to leverage its potential. Australia, with growing regions track its coastline compares to Brazil and its growing regions sitting within a 2,000 by 2,500 kilometre region sitting within reach of the Tropic of Capricorn and containing large areas reaching rainfall of up to 1,600 millimetres (mm) per year, Australia’s largest rainfall areas of 600-700 mm per year fail to match the opportunity.

‘Find me the wood’ was the instruction of the entrepreneur. Unbeknownst to him at the time of his decree, on the other side of the planet, the concept of ‘short rotation crops’, researched by several scholars over the prototype’s development timeline, had moved itself onto a commercial footing. Using

various species, particularly Eucalyptus, which surprisingly had been imported into Brazil from Australia one hundred years (100) earlier, a number of commercial entities had established themselves, broadly in the forestry market space but with a strategy to fulfil market requirements for Mandatory Renewable Energy Targets (MRETS) and deliver clean energy to the growing Brazilian energy matrix, what became known as the 'pure energy play' began to emerge. The uptake of MRETS is advanced more in European countries than Brazil, resulting in the growth of an export market with a commencement date of 2013. So, Brazil has the land mass, growing conditions, market forces and market participants as a potential target zone.

### **Market Selection**

The trade-off between oil extraction, water content, cost of growth, a plantation's holding cost and cost associated with harvesting the relevant tree size are some of the variables facing the decision of when to plant and when to harvest. At the time of writing, approximately 1 million hectares of short rotation or energy crops are planted in Brazil, thereby answering the second issue of demonstration. A market of sufficient size to require large number of harvesters, whose production costs would conceivably reduce through the learning curve of development and production, as it nears commercial release. Some more advanced than others, key market participants are readying themselves to fulfil demand (delivery) contracts commencing in eighteen months. Profit margins for the early mover and higher returns for the investor buoyed by the emergence of a new energy market await the astute participant.

### **Case Study 3 – Low Water, Low Carbon and the scalability of recycling Description and idea origination**

Case Study 3 reviews a process innovation for the industrial sector in relation to the recycling of grey water and conservation of electricity. A son's awareness of the soaring electricity and water costs and their impact on the profitability of the family-owned laundry business, gave rise to an innovative process that recycles eighty percent (80%) of water use, while simultaneously reducing electricity consumption by as much as Thirty percent (30%). Funded internally by the organisation to achieve savings for the business, the initial prototype took an elapsed timeframe of twenty four (24) months. The intellectual property process was followed and a patent application exists. Expansion into multi-story buildings followed and the company had successfully demonstrated external rigour to their invention, while simultaneously opening a new market segment.

### **Market opportunities and scanning**

While the first prototype remains in use three years later, the commercially available product utilises design and incorporating an existing invention to perform a key process task. This secondary item is owned by an international

company for use in a separate environmental area. Upon discovery of this international company, presentation of this new market sector resulted in an exclusive, performance-based global agreement for the laundry industry. Armed with a partnership to attack the world, the key competitors are chemical based products and therefore, do not carry the green credentials of the innovation.

A key Brazilian mantra is Low Carbon, Low Water. Committed to continuing the green content of the energy matrix and maintaining a minimum fifty percent (50%) clean energy threshold, low Carbon is evident in the market place and is often demonstrated through investments by typically non-green participants into green technologies. The recent Vale investment of \$350 million into the building of wind farms is one example. In a country where rainfalls can reach over 1,600 millimetres per annum, it would appear on the surface that there is an abundance of water. The truth is that half the nation remains water-poor and the sustainable retention of this natural resource is a critical element in the nation's future sustainability strategy.

### **Market Selection**

Performance-based contracts last as long as the partner is prepared to achieve. Akin to a ticking time bomb giving notice to its detonation, the signing of a global agreement forces the company into an action to which it may not be prepared. A successful sourcing of capital gave rise to documentation for process innovation and technology validation. Commissioned research highlighted priority market segments and Brazil sat in the top 10. In a land of dense population where the typical home sits inside a multi-storied building, laundry is an outsourced activity. Laundries are as common as street corners and as visible as the high rise buildings from where the cleaned product originates. The geographical size of a major capital city of Australia, such as Melbourne, matches that of Sao Paulo, whose population matches that of Australia. As the market waits for a solution, the company has capital in place, external rigour on validation conducted and a documented process innovation to strengthen the company's foundation for international entry. Who is the right partner and when can they be found?

### **LATAM Brazil's Green Market Summary**

Using Brazil as a market opportunity this next section will discuss the specific cultural economics and social influences of this destination. Brazil prides itself on the honouring of intellectual property and intellectual property is a primary hook to secure investment. Local registration is paramount. A patent application is sufficient from which to construct licensing agreements and gain the investment community's attention. Regulatory barriers exist for foreign companies. Establishing a company in Brazil can take upwards of nine months

and the government imposes heavy tariffs on the importation of goods, not so as to douse foreign technological advances reaching its shores but to encourage technology transfer with local entities through formal partnerships. Respecting the will of the country to successfully enter the nation, behold its wishes and use the willingness to form a partnership as an arrow in the quiver of strategic entry. Australian-based technology validation is the 'door-opener' to attracting the eye of the partner. Appropriately focused quantitative and qualitative research is a methodological approach to targeting the right partner, while conducting locally-based validation, either through a well established private-public research partnership model or directly with the targeted commercial partner, gives the stamp of approval from which to proceed with market penetration.

Investment inside Brazil differs from that in Australia. Digging precious commodities from the ground and growing the food basket above the Earth are two sectors shared by Australia and Brazil, who also share the Southern Cross as an integral element of their respective nation's flag. Brazilians are aware of its connection with Australia and several technology transfers have taken place in these sectors that further enhance the willingness to conduct business. Angel investment is a key source of funding in Australia (<http://www.australianinvestmentnetwork.com/home>). It is true that an investment angel community exists in Brazil but family offices are the visible face of technology investment (<http://www.australianinvestmentnetwork.com/home>). Brazil is an older country than Australia. While Australia celebrated its bicentennial in 1988, in 2012, twenty four years later, Sao Paulo celebrated its 400<sup>th</sup> year since birth. Business ownership of this period has produced numerous family dynasties with many adopting a diversification approach to investment with renewable technologies placed high on the priority list. Relationships hold the keys to success in this market and the primary form of networking is through personal contacts. To achieve entry into this environment, a broad range of contacts is required, particularly in the commercial centre of Brazil, Sao Paulo. Home to 22 million persons in the greater Sao Paulo city and 40 million in its state, it contributes over 30% of the country's gross domestic product.

Portuguese is the language and Brazil is the country. Australian companies in the past have based themselves in the western part of the continent and performed a briefcase entry strategy into Latin America's largest economy. While this has been tolerated for some time, Brazilians, as a proud nation, want to be recognised and encourage people to learn their language and base themselves inside their boundaries. A strong diplomatic culture exists between Australia and Brazil. Business relationships are encouraged and business visas are available to those who wish to ask. Culturally similar to Australia, a strong work ethic mirrored by a family oriented society awaits the prepared innovator.

## ***Findings and Analysis***

This section will elaborate on the descriptions of the short cases offered and the findings of the case, the leximancer results and the case assessments. The leximancer maps allow for collation and assessment of vast amounts of case materials and allow for unbiased judgement of this material. A global map of the themes was produced leading to an enriched interpretation. The cases were analysed using data analysis from Leximancer 3.0

(<https://www.leximancer.com/>) output, the key and global concepts and green cases material and interview data and were collated and themes identified. Each firm was analysed separately and in cross comparison. The data output and global mapping is discussed in this section. The following map Figure 1 identifies the global nodes of the combined cases with the pathway map, Figure 2, offering insight in related themes, concepts and relationships of the case content. The process offers affirmation and verification of the case analysis and adds to the ethnography and identifies the important areas of function that should be considered for successful market penetration with green product. These following maps will inform and add value to the discussion.



**Figure 2: Leximancer mapping**

Examination of the map presented in Figure 2, themes and concepts within the maps led to the identification of a number of recurring themes. The global themes of *Green* and *Market* are most prominent in the analysis and represent the focus of the firms and the nature of each case. The overlapping concepts of *research and global* suggest that research is essential for market development and the green market is global in nature and support the critical analysis of cases offered in Table 1. Interestingly, *Investment and Brazil* present newer concepts that are yet to intersect the *market* node and suggest the novelty of the Brazilian market with investment in this market emerging and growing.

The evident themes of *green, environment, environmental* and *business* were consistently identified in the map of narratives of all cases and case material. These were identified explicitly as key nodes central to the map. Specific firm material and documentation analyzed supports the themes/central node from each firm. *Environmental, environment and green* all overlap identifying the nature of the green markets is directly related to environmental causes and improvement to the environment. The pathways of *business and water* depict the emergence of businesses offering environmental product and services related business. The map depicts the popularity of business related to water security, purification and conservation. Hydro energy and water business are also aligned to the goals of many global markets for energy security and this node depicts that popularity. Moving beyond the cross compared map the pathway diagram offers an enriched interpretation of the interrelationships of many concepts and themes. Each pathway is identified by considering the global themes, the centrality in the map, relationship with other themes and concepts within themes. The pathways are discussed in the following section and adopt a collective approach to all cases.

Using leximancer 3.0 a pathways diagram is offered that advances the critical analysis and the global node map of the cases offered. The pathways diagram demonstrates the relationships from the four key nodes of *green, market, products* and *process*. As expected, the majority of pathways emanate from *Green*, as it forms the central node of the case study analysis. *Market* and *Products* link directly to *Green*, where *Research, Use, Renewable, Supply and Business* have no further linkages. This may be due to the notion that they are logical elements of *Green*, though as yet, undetermined as to why they may not link directly to other pathways and could be advanced by further specific research. *Environmental* is deemed to have *consumption and consumers* as its connections, suggesting it is more of a mindset than an output. Should this hold, *Environmental* products would have a solid link to markets with consumers who have beliefs in the environment. *Waste* has two logical associations, tying the closed loop process of waste-related technologies to the ongoing sustainability of the environment. *Energy* is a key pathway from

*Environmental* with *cost* a demand input and *Water*, an important market segment. This is consistent with the ‘waste water’ case study that connects the strong demand originating from Brazil for hydro or water products and the need for associated technologies. *Energy* is growing and shows growth with a connection to some form of government intervention. Again, this is consistent with each of the case studies, where Brazil has solid government intervention on biofuels, biomass and water. As *process-defined Products*, it is logical to see that Practices are required in order to deliver the product, where *Marketing* is an inclusive determinant to pursue the *Global* nature of the *Product*.

*Markets* are a pathway from *Market* that include the *Process* relationship of *technologies* that in turn, relates to *product* as one endpoint and *case* as the other. These relationships are understandable, given the relevance of the case study analysis and the product’s basis in technology. A *Market* as a subset of a dynamic environment or country would require ongoing development and continuous innovation to meet the market’s demands. *Technology* as a defined linkage of *Market*, further emphasises the relationship of the technology-based case studies and highlights the need for *investment* in order to flourish in the designated market choice.

There is a *strong* market link to *Brazil* and *Australia* sits at the pathways’ end in relation to the *industry* and the *company’s* within. It could be said that Australia is included due the nature of the case studies originating from Australia; however, it is suggested that any global origination-point could be transposed to reflect the need for inputs to the demand, rather than Australia standing alone as the unique supply market. Further, it could be hypothesised that apart from a strong market direction to Brazil, other BRIC nations could be transposed for Brazil, given the rankings of these emerging nations in the Greendex Report (2012) and their consumer’s attitudes toward sustainable behaviour. Other areas for further research include the question of ‘whether the same pathway to investment exists in the other BRIC nations, as strongly as it does in Brazil’ and ‘what, if any analysis can be made about a node’s final position of the pathway’.



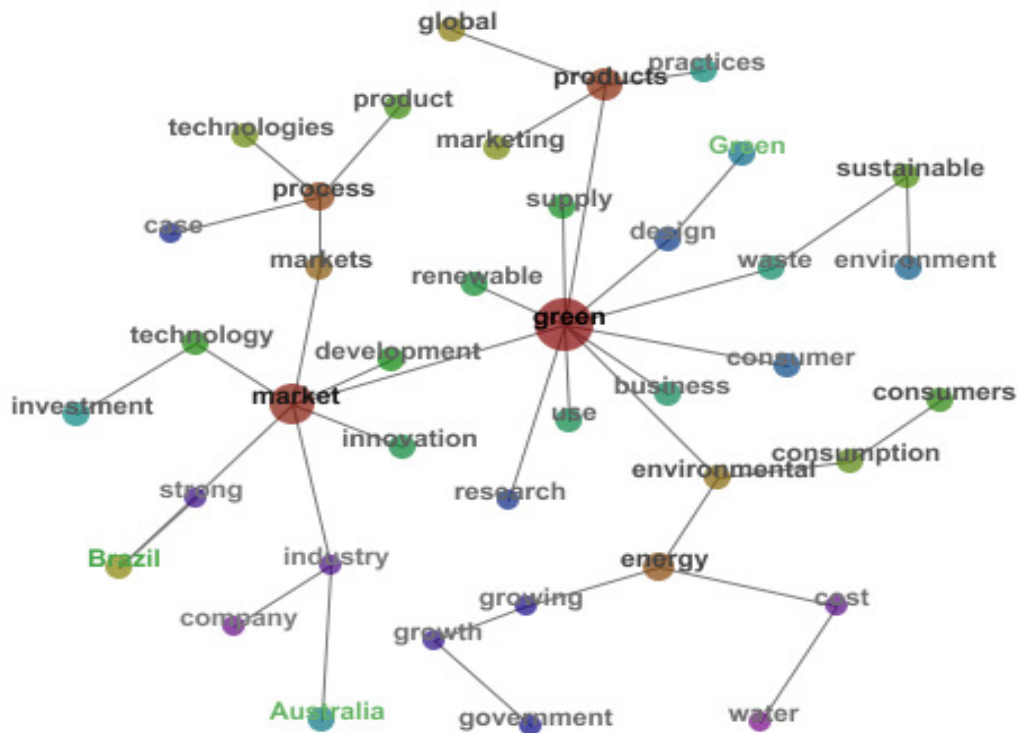


Figure 3: Leximancer pathways and relationships

Table 2 offers a summary of the current practices of each of the cases used and applies this to marketing theory and knowledge. Using critical analysis the content has been coded and aligned to known marketing terms and practices. It is clearly identified that basic market functions are required and should be mapped from commencement. It should be noted that research and data validation is seen as a vital practice for these firms into the emerging markets with testing and market research an essential requirement for market success. Markets such as Brazil, Philippines, Latin America, United Arab Emirates and in particular Brazil were all identified as strong prospects for penetration and success. All products were in the growth phase of the product life cycle.

Table 2: Summary of case findings

	Company 1 Biofuels	Company 3 Water	Company 2 Biomass
Global Market selected	Brazil, Philippines	Latin America(LATAM), United Arab Emirates	Brazil, LATAM
Product or service	Product process	Product Process	Product process
PLC stage	Growth	Growth	Early-growth

	Company 1 Biofuels	Company 3 Water	Company 2 Biomass
in cycle			
Mode of entry	Research partnership & Joint Venture (JV) investment partner	Technology transfer to local distribution / investment partner	Manufacturing partnership & local investment
Government support	High	Medium-high	Low-medium
Venture capital	Yes. Levels to be determined by JV partner	Yes. funding through local distribution partner	Yes. Funding being pursued via manufacturing partnership
Other global market potential	South Africa, USA	South Africa, LATAM, Mexico, UAE	LATAM, Northern Europe, USA, Canada
Marketing functions needed	Laboratory testing to confirm data validation, government liaison for lobbying, local pricing needs to be better understood	Local agent to develop installation process, transpose original to local conditions, government assistance to be detailed	Map manufacturing process to local conditions, conduct local validation, investment personnel
Global practices needed	Data validation, Product development, process design	Data validation, Management education, research options	Data validation, Technology transfer

***Proposed framework, discussion and recommendations for going global with green/renewables***

Considering all the data available, the leximancer analysis in Figure 2 and 3 and the pestle information in Table 2 , The Green Innovators Global Growth Knowledge Pathway offers reflections for global marketers for sustainability, process and Biomass technologies (and products) that plan to enter global markets; in particular Brazil. Planning to enter a popular green destination like Brazil would require adopting the recommendations offered by the framework. This section will use a combination of general and specific international

business and marketing material focussed on market entry into Latin American Markets. Figure 2 maps the entry, arrival and ongoing practices required for global market entry into Brazil for clean technology products and process, with Table 2 offering the specific nuances for each product and process. On entry is essential to create value, and plan. On arrival the activities are focussed on creating partnerships and alliances with local stakeholders and competing research to support product claims and market needs. Finally, it is essential for ongoing development to ensure that research is continued, marketing is evolving and response to market needs is rapid.

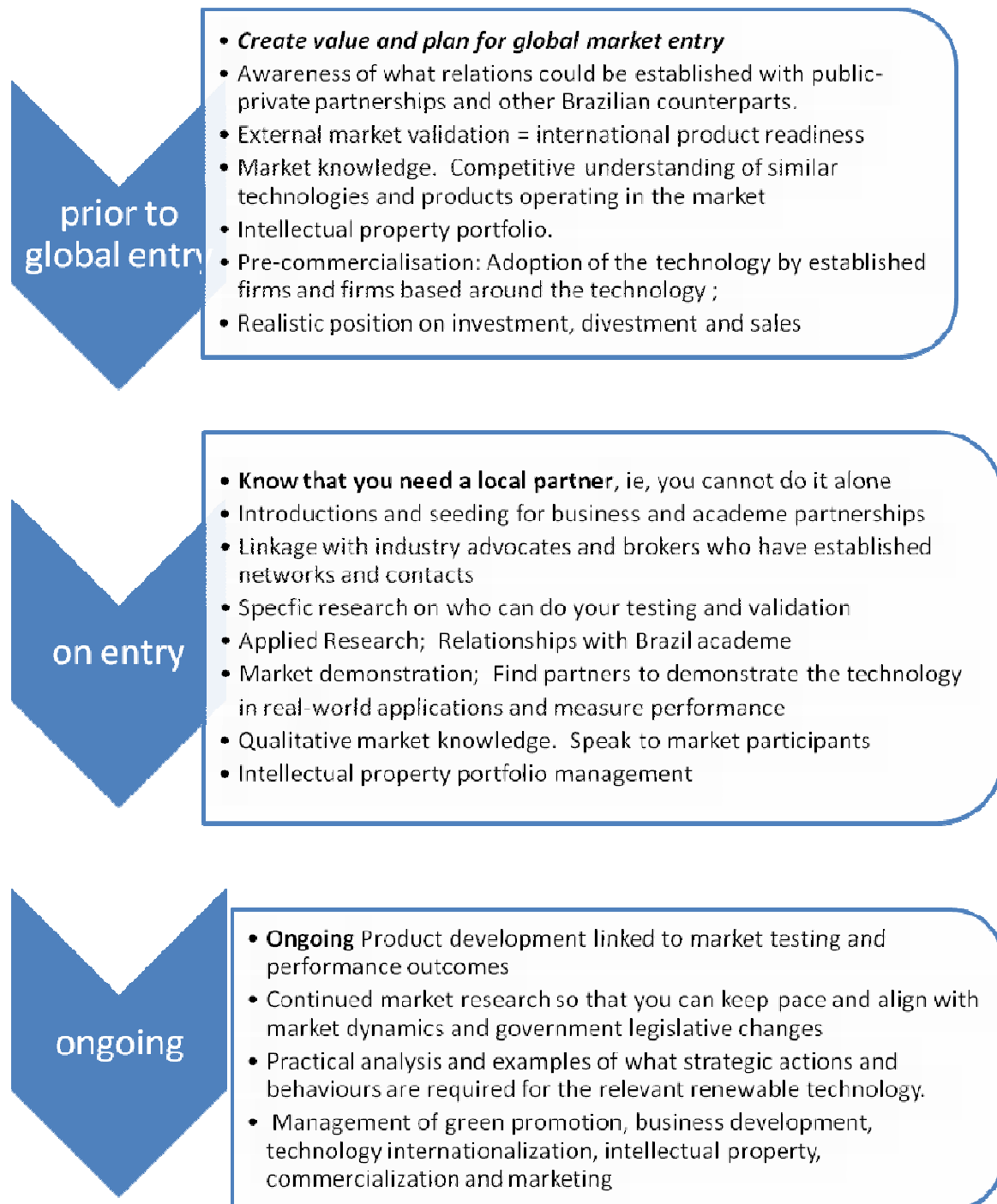


Figure 4: Hume , Johnston , Argar and Hume (2012) Green Innovators' Global Growth Knowledge Pathway

### ***Reflections and future research***

Technology Type	Group 1 Sustainability	Group 2 Process	Group 3 Biomass
Entry objectives	Awareness that it is an active and growing market. Product development positioned through research, is essential	Particular to industry type	Establish relationships and partnerships through the early stage of market growth
Examples of Marketing development practice	Large company structures and diversification strategies	Through solid industry associations, demonstrate market benefit	Spinoff planning associated with existing market condition
Marketing objectives	Joint ventures are proving a successful model	Identify traditional sales and distribution operating in market	Specific to market participant
The needs of Industry specific research	Linkage between theoretical research and commercial application. Benefit analysis modelling	Industry wide impact. Productivity increase and return on investment	Logistics and supply chain relevance
Cross-border collaboration	Geographical positioning reflects technological market similarities	Existing research can leverage advanced market deployment	Australia tends to lead development for this product through a government research agency, though the practical application lags emerging economies

**Table 3: Reflections and Recommendations**

The Table 3 depicts some specific reflections for market entry of the potential green products segments discussed; clean technology, process technologies and renewables. The table offers insight to the penetration of product into global markets and offers insights to global green technology penetration. It is noted that these companies are technically-skilled however have little understanding of marketing principles and their position within international market entry. This includes opportunities for external linkages to research facilities and industry associations, the impact of successful government liaison on funding, establishment of alliances and penetration of new markets, and ongoing market research. These factors are all vital to the successful penetration of new world green markets.

## **Conclusions**

The chapter has offered 3 case studies on process innovations and product sectors and has shown how these cases have developed a strategy of entry to Brazil as a green market opportunity. Given the position Brazil has within the Greendex Report (2012), it would be acceptable to extrapolate that India, China and Russia, who make up the other top three positions and the developed nations of United States of America, France and Canada make up the bottom rankings, this document relates to the BRIC nations and is not just confined to Brazil. The ‘success and failure criteria’ identify how planning, patent and partnerships are essential for successful entry. The chapter offered insight into the different types of green products and supply chain process technologies that form the green marketplace. This included specific content on G (reen) markets, market information, marketing functions for market entry and market diffusion for renewable products and process technologies such as supply chain elements, and how these interrelate with achieving sustainability goals. Finally, this chapter presented a strong case for entry into Brazil, and positioned this destination as a prime opportunity for green investment.

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