

**THE IMPLEMENTATION OF A SUSTAINABLE FRAMEWORK:**  
Winkler Partners as a case study

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ABSTRACT

Traditionally, environmental and business interests are seen to be at polar odds with each other, with business leaders arguing that introducing environmentally friendly practices will drive up costs and deprive them of their competitive edge. However, events over the last several years (such as the soaring cost of energy, the scientific consensus on global warming and the introduction of strict environmental standards for goods to be imported into the EU) have caused many in the business world to step back and reflect upon the environment-business relationship.

In light of the environmental crisis, this thesis seeks to examine the efforts of a (small) medium-sized Taiwanese business to incorporate sustainability not just into its business model but to infuse it into the very framework of its operations. The business in question is Winkler Partners, a law firm based in Taipei under both Taiwan and American partnership. This thesis serves to both document the implementation of the sustainable framework and assess the firm's preliminary efforts since the program's inception in 2004. A survey is conducted to assess whether the framework has brought about a change in corporate culture (the cultural sphere), while metrics on energy and resource use are examined to gauge the success of sustainability initiatives (the physical sphere).

Keywords: environment, sustainable business, corporate culture, environmental metrics, Taiwan, small and medium-sized enterprises

## ACKNOWLEDGEMENTS

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I would also like to thank my advisor Chen Hai-Ming for her encouragement, support and patience and as well as those nudges, both subtle and not so subtle, that helped bring this paper into being. Also, thanks to Kathy Yang and Mark Brown for their invaluable help during the review process.

This thesis also brings to a close a rewarding three years at Taiwan's National Chiao Tung University and I would like to acknowledge the incredible warmth and openness of its staff and students, particularly the graduating classes of 2006, 2006 and 2008. Their encouragement and support helped me through the hours of classes, research and exams and they are certainly a reflection of kindness of the Taiwanese people.

The author alone assumes responsibility for the conclusions of this thesis and any errors it may contain.

Mark McVicar (馬竣功)

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# CHAPTER ONE

## INTRODUCTION

### SECTION ONE: WHERE WE ARE – THE ENVIRONMENTAL CRISIS<sup>1</sup>

*“The inherent resilience of ecological systems allows them to tolerate pressures up to a certain degree, but once a threshold is reached, the resulting impacts can be sudden and severe”* (Fiskel, 2006)

The time for ignoring the issues of environmental degradation and climate change is over. Recent years have seen the emergence of a scientific consensus on the environmental crisis and few serious scientists now refute its existence. A recent report issued by the UN’s Intergovernmental Panel on Climate Change (IPCC) confirms that human activity is “very likely” the cause of global warming which will result in a probable rise in global temperatures by 1.8 to 4 degrees Celsius, a rise in sea levels of 28-43cm and an increase in heat waves, tropical storms and other natural disasters. Dr. Susan Solomon, one of the lead authors of the report, indicated that, “we can be very confident that the net effect of human activity since 1750 has been one of warming”.<sup>2</sup>

The cumulative impact of human activity has spread to almost every corner of the globe. Another UN study published in March of 2005 reported that as much as 60% of the earth’s ecosystems are being degraded (Hanson, 2005), and other studies have reported obvious signs of damage to our water, atmosphere, forests, land and soil, which have, in turn, led to a historically

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<sup>1</sup> While this section explains the current environmental crisis, Paul Hawken’s book “The Ecology of Commerce”, provides a more comprehensive accounting of the problem and the causes in our current social/ political/ economic framework.

<sup>2</sup> <<http://news.bbc.co.uk/2/hi/science/nature/6321351.stm>>  
Black R. 2 February 2007, *Humans blamed for climate change*, accessed on 17 Mar. 2007.

unprecedented loss of biodiversity (Ghadar, 2006). The IPCC's most recent report, released in April 2007 contains some of the most disturbing predictions to date, this despite efforts by countries like Saudi Arabia and China to weaken the wording. The report indicates that millions of people could die due to hunger, thirst, floods, drought and disease resulting from climate change and that a global temperature rise of 3.6 degrees (within the predicted range) could mean the extinction of up to 1/3 of the Earth's species.<sup>3</sup>

For years, business has argued that the implementation of strict environmental standards would negatively impact economic growth and jobs. However, environmental degradation, if left unchecked threatens the very underpinnings of our economy, the costs of which could be enormous. Recently, at a meeting between Taiwan's Environmental Protection Administration and the British Trade and Cultural Office ("BTCO"), BTCO Director Michael Reilly cited a UK Government review, which estimated that the costs associated with climate change *alone* could range from 5 to 20 percent of global GDP. In contrast, the investment required to mitigate the most severe impacts of global warming would amount to only 1 % of global GDP.<sup>4</sup>

However, despite its emergence as a mainstream political and social issue, debate, rhetoric and political promises and will not solve the ecological crisis. The problem requires concrete action, and the degree to which we are able to avoid the most serious repercussions will depend on the action we take today. Regardless, of whether we meet this challenge or continue to ignore the problem, the environmental crisis certainly will be one of the defining trends of the 21<sup>st</sup> century.

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<sup>3</sup> <<http://www.thestar.com/News/article/200406>>  
Seth Borenstein. 6 April 2007, "Bleakest Report Ever on Global Warming", accessed on 7 April 2007.

<sup>4</sup> <<http://www.taipeitimes.com/News/taiwan/archives/2006/11/04/2003334741>>  
Shelley Shan. 4 November 2006, "UK's climate review has a message for Taiwan too.", accessed on 7 January 2007.

## SECTION TWO: THE ENVIRONMENTAL MEGA-TREND AND THE IMPLICATIONS FOR BUSINESS

Mega-trends are defined as “large social, economic, political and technological changes that are slow to form, and once in place, they influence us for some time” (Naisbitt & Aburdene, 1990).

An alternative definition states that:

*“[A mega-trend is ]commonly used to indicate a widespread (i.e., more than one country) trend of major impact, composed of sub-trends which, in themselves, are capable of major impacts. For example, global climate change will have a major impact, on all the countries of the world, and can be disaggregated into global atmospheric warming, sea-level rise, decrease in stratospheric ozone, etc.”<sup>5</sup>*

A five-year study led by Fariborz Ghadar for *Industrial Management* magazine examined 12 trends that are changing the world. These “global tectonics” are significant mega-trends that cross political, social, economic and national boundaries. Over half of them are intricately related to the environmental crisis including population pressures, urbanization, disease and globalization, resource management and environmental degradation.<sup>6</sup>

As scholars of business, we understand that long-term success and survival depends on a company’s ability to recognize and adapt to these overarching trends. However, to date the environmental crisis has largely been neglected by the business community, perhaps due to the traditional belief that conflicting environmental and corporate interests mean accepting tradeoffs

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<sup>5</sup> <<http://www.infinitefutures.com/resources/glossary.shtml>>

<sup>6</sup> Ghadar, F. et al. 2005, *Industrial Management*, various issues.



between profit and ecological protection. Business leaders have typically argued that introducing environmentally-friendly practices will drive up costs, stunt growth and deprive them of their competitive edge.

## Competitive Advantage

There is evidence, however, that this type of thinking is changing. Jeff Immelt, CEO of General Electric has stated that “we’re at a tipping point where energy efficiency and emissions reduction also equal profitability”<sup>7</sup>, while DOW Chemical CEO Andrew N. Liveris has said that “there is 100% overlap between our business drivers and social and environmental interests”.<sup>8</sup> Research has also shown that businesses can develop a competitive advantage through various green methods. Welford and Gouldson (1993) and Imai (1983) found that, among the various facets of competitive advantage, many can be achieved through the “greening” process, including improved material efficiency, superior waste management, increased staff commitment, improved media coverage and community relations, assured present and future compliance, and reduced risk exposure.

Forward-thinking companies are making the connection between sustainable practices and corporate performance, while also realizing that a sustainable approach to business can not only help the bottom line but will also lower costs as well as risks. One of the most impressive examples is Alcoa, the world's leading producer of aluminum products. In 1998 the company set a goal to reduce greenhouse gasses in connection with its manufacturing by 25 percent by 2010. Not only did the company meet that goal seven years earlier in 2003, but it reduced its emissions

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<sup>7</sup> Dan R. Anderson, “The Critical Importance of Sustainability Risk Management”, Risk Management, 53(4), p. 74, April 2006.

<sup>8</sup> Engardio, Capell, Carey and Kenji. “Beyond the Green Corporation; Imagine a world in which eco-friendly and socially responsible practices actually help a company’s bottom line. It’s closer than you think”, Business Week, 4019, p. 50, 29 January 2007

by 25 percent again in 2004.<sup>9</sup> Another notable example is the well-known car manufacturer, Toyota, whose leading role in the development of hybrid cars and alternative fuel systems have helped it gain market share over GM and other US automakers, so much so, that Toyota is poised to become the largest automaker in the world.<sup>10</sup> Finally, Ray C. Anderson, the founder, chairman and CEO of Interface, Inc., the world's largest producer of commercial floor coverings and other interior products has endeavored to make Interface the world's first sustainable corporation by leading a company-wide war on waste and pioneering the processes of sustainable development. Andersen feels that the world is on the verge of what he considers is the "second industrial revolution", one whose driving principle will be sustainability.

*"In the 21<sup>st</sup> Century, as the revolution gathers speed, I believe the winners will be the resource efficient. At whose expense will they win? At the expense of the resource-inefficient. Technology at its best, emulating nature, will eliminate the inefficient adapters",<sup>11</sup>*

In only the first year of implementing its sustainability program, Interface increased sales by 20%, or almost \$200 million with no increase in raw materials used (Anderson R, 1997).

## Risk

As the conflict between profits and ecological protection is being blurred, companies are beginning to realize additional benefits of sustainable practices. Environmental issues are now considered, along with other social issues, to be important risk factors for business. By not acting

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<sup>9</sup> Klimley A. "Sustainable Development Becoming Integral Part of Business Strategy", Research Technology Management, 48(5), p. 2, 2005.

<sup>10</sup> <<http://www.forbes.com/markets/feeds/afx/2006/12/22/afx3277462.html>>  
22 December 2006, *Toyota set to replace GM as world's largest automaker in 2007*, accessed on 14 January 2007.

<sup>11</sup> Anderson, Ray. Mid-Course Correction, Perengrinzilla Press, Atlanta, 1997, p. 18.

now, companies are risking their long-term competitiveness and, in extreme cases, their very viability. Mathiew J . Keirnan, the CEO of Innovest Strategic Value Advisors,<sup>12</sup> pointed out that businesses need to begin taking environmental risk assessment seriously. “Nobody has any idea when such events can hit a balance sheet, so companies must stay ahead of the curve” (Anderson D, 2006). An example of this is Wal-Mart whose poor social and environmental practices have cost the company an estimated US\$16 billion in market capitalization (Engardio et al., 2007). How companies handle issues like corporate governance, social issues and the environment are increasingly giving insight into the overall management quality of a company. It shows breadth of vision, a focus on long-term management and value creation, and serves as an index for investors.

Socially responsible investing (SRI)<sup>13</sup> has been around for some time but has only emerged as a mainstream investment choice in recent years. In fact, over 10% of capital managed by professional investors is in SRI evaluated companies (Anderson D, 2006). Recent evidence is also showing that the returns for these funds are higher. A 2005 report showed that during the period from August 1996 to August 2001, the Dow Jones Dow Jones Sustainability Index grew by 15.8% while the Dow Jones Global Indexes gained only 12.5% (Anderson D, 2006). A review of 70 research studies by the Alliance for Environmental Innovation found that the stock performance of more environmentally sound businesses can be up to 2% higher than those companies with poor environmental practices.<sup>14</sup> Similar results were found in a study of 300 of the largest corporations in the U.S.<sup>15</sup>

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<sup>12</sup> Innovest Strategic Value Advisors was founded in 1995 and provides financial risk assessments and consulting services for corporations and investors that incorporate non-traditional risk factors such as carbon emissions and climate change.

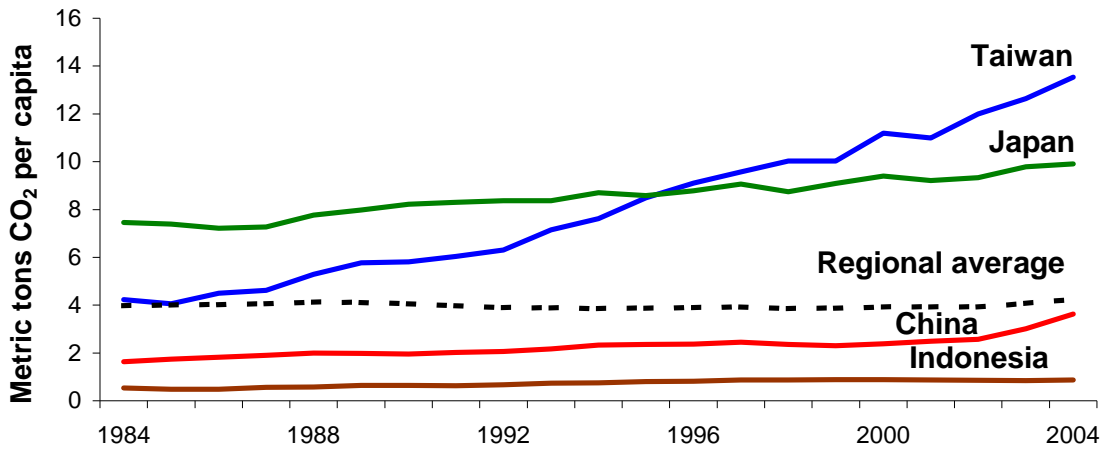
<sup>13</sup> SRI includes both social and environmental performance

<sup>14</sup> C. Deutsch, “For Wall Street, Increasing Evidence That Green Begets Green”, New York Times, 19 July 1998, A7.

<sup>15</sup> S. Feldman et al. “Does Improving a Firm’s Environmental Management System an Environmental Performance

SECTION THREE: A TAIWAN PERSPECTIVE

Taiwan has shown a sheer lack of impetus in tackling environmental issues, despite being one of the most developed countries in Asia and having one of the highest population densities in the world. According to the US Energy Information Administration’s International Energy Annual Report, Taiwan has the highest per-capita carbon emissions in Asia.<sup>16</sup>



Source: EIA International Energy Annual Report

Fig. 1. Per Capita Carbon Dioxide Emissions in Select Asian Countries, 1984-2004

Even more distressing is that this trend shows little sign of abating. Robin Winkler, founding partner of the subject of this study and a member of Taiwan’s Environmental Impact Assessment (EIA) Committee<sup>17</sup> notes that while this particular EIA committee is considered to be the most

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Result in a Higher Stock Price?”, ICF Kaiser International, Inc., 1996.

<sup>16</sup> <[http://www.eia.doe.gov/emeu/cabs/Taiwan/images/taiwan-emissions\\_percap.xls](http://www.eia.doe.gov/emeu/cabs/Taiwan/images/taiwan-emissions_percap.xls)>

<sup>17</sup> Taiwan’s Environmental Impact Assessment Committee consists of 21 members of and is chaired by the Minister of the Environmental Protection Agency. Representatives from five other government agencies sit on the board with 14 experts and professionals from various backgrounds. The committee reviews all major development projects by the central government.

environmentally-conscious since its inception, projects approved under its two year term will increase Taiwan's greenhouse gas emissions by over 30%.<sup>18</sup>

In the 2005 "Environmental Sustainability Index" report released jointly by Yale University and Columbia University, Taiwan was ranked second last in the world in terms of "sustainability" just ahead of North Korea<sup>19</sup>. While some may dispute the way in which the placement was calculated, there is no doubt that Taiwan's environmental quality has been seriously damaged in its quest for economic prowess. Nowhere in the world should the idea of sustainability be more important than in the heavily populated areas of Asia. These countries have experienced rapid industrial growth over the last decade, but that growth is based on old and inefficient technologies (coal-fired power plants) and is resulting in sobering environmental costs. With the emerging economies of Asia continuing to expand using this inefficient framework, it is likely that pollution levels will continue to multiply exponentially. Currently, China has seven of the ten most polluted cities in the world and its carbon dioxide emissions are second only to the United States.<sup>20</sup>

*"More than half of China's rivers are seriously polluted. Widespread soil erosion is impoverishing many villages. This is in turn pushing desperate families into burgeoning cities where apartment buildings are sprouting at amazing rates. Urban poverty is more than matching rural poverty, but they still come".<sup>21</sup>*

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<sup>18</sup> Information collected by Taiwan's Environmental Impact Assessment Committee and provided by Robin Winkler. Also confirmed by Taipei Times article: <<http://www.taipeitimes.com/News/editorials/archives/2007/03/17/2003352697>> Chen, Bing-heng. 17 March 2007, *pollutants also pose a hazard to the economy*, accessed on 17 March 2007.

<sup>19</sup> Yale Center for Environmental Law and Policy, Yale University; Center for International Earth Science Information Network, Columbia University, "2005 Environmental Sustainability Index", 2005.

<sup>20</sup> Anonymous. "China: Governing for development", *The OECD Observer*, Sep. 2006, p. 61.

<sup>21</sup> Timothy O'Riordan. "China and the Agony of the Sustainable Transition", *Environment*, Sep. 2006, 48(7); p. 1.

This problem has only been magnified by increasing Taiwan investment in China. Former president Lee Teng-hui once said:

*"The strategic mistake of Taiwan's economic development is that it has given up building today's Taiwan for duplicating yesterday's Taiwan in China, while failing to plan for tomorrow's Taiwan. This is a suicidal economic strategy".<sup>22</sup>*

There are many that will argue that this is more of a political statement than an economic or environmental one. However, when examined in the context of sustainability, it touches upon one the key issue facing not only Taiwan, but the entire developed world. As Taiwan develops, it is moving many of its more polluting industries to China, where they are implemented on a much larger scale. These companies not only take advantage of China's cheap labor but also its lax environmental regime. As China prepares to surpass the U.S. as the world's biggest polluter, we must realize the contributions of Taiwan and Taiwan-funded businesses to the problem.

#### SECTION FOUR: RESEARCH PURPOSE

Hoffman and Ocasio (2001) found that future developments in the environmental domain are likely to negatively impact businesses ability to meet its goals and that managers must, in turn, formulate strategies to cope with those developments; this includes a comprehensive and systematic monitoring of environmental issues and adequate responses by management. Therefore, in the context of the impending crisis, this paper looks at the efforts of a small

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<sup>22</sup> <<http://www.taipeitimes.com/News/editorials/archives/2006/07/31/2003321238>>

Huang, Ter-yuan. 31 July 2006, *Sustainable economy must place nation first*, accessed on 31 July 2006,

business not just to incorporate sustainable practices into its business model, but to infuse those concepts into the very framework of its operations. The business in question is Winkler Partners (WP), a law firm based in Taipei under both Taiwan and American partnership. A survey is conducted to assess the culture created within the firm (the cultural sphere) and metrics on energy and resource use are examined to gauge the success of sustainability initiatives (the physical sphere).

Specifically, the present paper hopes to:

1. Describe and document the implementation of a sustainable framework and highlight the motivations and barriers for small and medium-sized businesses.
2. Assess WP's corporate culture and perceptions of employees in response to the new sustainable framework.
3. Describe and assess the implementation of sustainability initiatives at WP using quantitative metrics and analyze whether it has successfully implemented the ideals of the sustainable framework.
4. Highlight the areas of success, provide recommendations for improvement, and propose revisions to the framework to reflect reality and meet sustainable goals.

WP seeks to transform itself into a sustainable and “zero impact” business. While its ideals are admirable, the program is still in its infancy. It is important to note that to date, no radical measures have implemented. With the exception of a rooftop garden (see Appendix I), no major infrastructure changes have been made and, in general, conservation measures have been simple and easy to implement.

The following chapter first defines sustainability and examines the role of small and medium

sized business in the environmental movement. The sustainable business framework used in this study is then presented, along with a review of extent literature on the various elements of that framework.





## CHAPTER TWO:

### THE SUSTAINABLE FRAMEWORK - LITERATURE REVIEW

#### SECTION ONE :

#### THE DEFINITION OF SUSTAINABILITY AND AN OVERVIEW OF ISSUES PERTAINING TO SMALL AND MEDIUM-SIZED ENTERPRISES

##### DEFINITION

Sustainability is defined by the UN's World Commission on Environment and Development as "the ability of current generations to meet their needs without compromising the ability of future generations to meet theirs". In fact, the Commission's Brundtland Report (1987) indicated that sustainable development requires the realization that economic development and ecological conservation are mutually interdependent in that our ecological environment provides a foundation for economic development.

Over the last century, however, little thought was put into the needs of the future and humanity has been churning through its natural resources at an alarming rate. In a conversation with Robin Winker, he noted that our economy has long been focused on only the first half of the sustainability definition, namely, our ability to meet the needs of today. Within the business community, meeting the challenge of sustainability will require a radical change of not only our business models and practices, but also the culture and attitudes that are the root cause of the problem. Scholars of sustainable business often refer to the "triple bottom line" which call for performance in environmental and social as well as financial spheres. While WP does incorporate socially progressive concepts into its business ethic, for the purposes of this paper, sustainability means achieving environmental and financial sustainability.

## Role of Small and medium-sized enterprises (SMEs)

Since the study deals with a small to medium-sized business, the extant literature relating to SME's and the implementation of sustainable policies is first discussed. The literature shows that, while individually their impact may be small, collectively, SMEs account for a significant amount of total pollution and waste. Also, the motivations and barriers to the implementation of sustainability programs have characteristics that are quite distinct from those of large corporations and, therefore, it is important to understand and examine these factors before introducing the sustainable framework used in this paper.

SMEs account for approximately 70% of world production and, while it is obvious that their combined impact on the environment is significant, very few are aware of the potential advantages of sound environmental strategy and practices (O'Laoire and Welford, 1996). While several studies have shown that good environmental practices provide a wide range of quantifiable benefits (Hillary 2004; Simpson 2004, Willard, 2005), SME's have traditionally been slow in their adaptation (Rowe and Hollingsworth, 1996). While this also applies to Taiwan SMEs, there is little research on Taiwan in particular. Studies from other countries around the world, however, may be able to shed some light on the barriers to green business and what incentives could effectively bring about change.

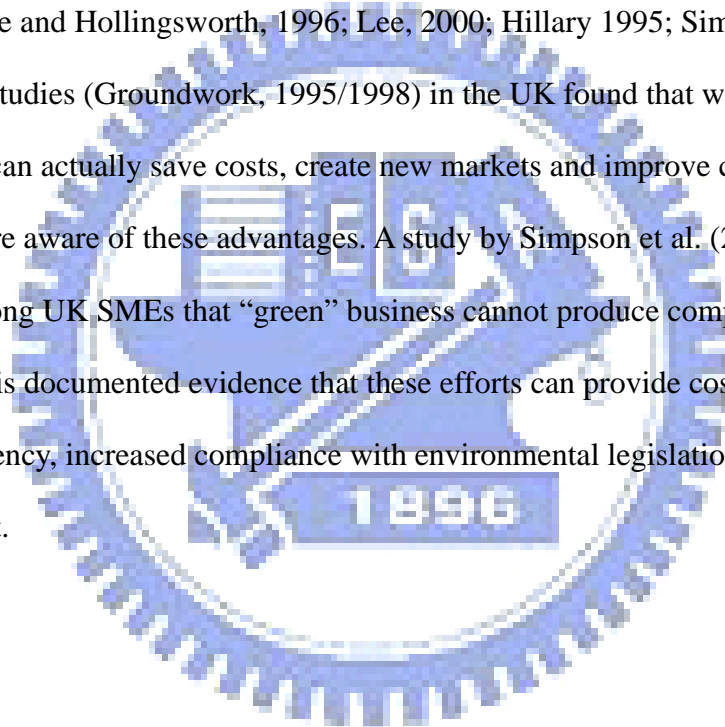
## BARRIERS

A study by Studer, Welford and Hills (2006, p. 424) found that 78 percent of SMEs in Hong Kong indicated that they did not engage in more sustainable practices because they were not required to do so under the law, while shortages in money, lack of demand from stakeholders or

customers, and a lack of technical know-how also arose as key barriers. Poor understanding of environmental issues was also found to be a barrier in several other studies (Ammenberg and Hjelm, 2003; Tilley, 1999; Welford, 1994). Furthermore, Simpson et al. found that SMEs perceived that environmentally friendly practices provided no competitive advantage and were a cost that could not be transferred to customers (Simpson et al., 2004).

In fact, misperception is one of the most significant obstacles to corporate greening. In general, small and medium sized-businesses believe that their activities have little or no impact on the environment (Rowe and Hollingsworth, 1996; Lee, 2000; Hillary 1995; Simpson et al., 2004).

The Groundwork studies (Groundwork, 1995/1998) in the UK found that while environmentally friendly practices can actually save costs, create new markets and improve customer satisfaction, very few firms were aware of these advantages. A study by Simpson et al. (2004) also confirmed the perception among UK SMEs that “green” business cannot produce competitive advantage, even though there is documented evidence that these efforts can provide cost savings resulting from greater efficiency, increased compliance with environmental legislation and more effective waste management.



## MOTIVATION

In general, SME's do not consider the environment to be a core issue for business (Rutherford et al, 2000). However, studies have shown that among those that do take action, the main motivation is often compliance with regulations (Studer et al, 2006) meaning they are reactive rather than proactive. Research in the UK also shows that regulations are likely to be the most effective method to move businesses towards more sustainable practices and that currently there is an over reliance on voluntary methods (Simpson et al, 2004). Furthermore, even when environmental regulations are in place, SMEs are often not aware of how those regulations might

impact their business (Stokes A, Rutherford R, 2000).

A study by Petts et al (1999), however, indicates that the implementation of environmental measures does not necessarily stem from external pressures such as legislation, but can be initiated by individual leaders and managers with strong personal commitment to environmental issues. This was confirmed by Studer et al (2006) whose study suggests that the beliefs of individual managers in Hong Kong was one of the major drivers for green practices while reputation and brand enhancement were more important for larger companies. Therefore, the large gap between the majority of SMEs that give little or no consideration to environmental issues, and the small minority of proactive SME's is due to the leadership commitment to the environment (Hillary, 2000). Masuel (2007) also found that the main reasons for initiating "greening" programs among printing companies in the Netherlands were the improvement of working conditions, compliance with anticipated regulations and moral duty.

Larger companies are often much more proactive in their implementation of environmental management systems; however, in contrast with SMEs, the motivation behind these programs is most often a desire to protect the company's reputation and brand value (Studer et al., 2006). Also, SMEs often face very different issues in terms of the implementation of green programs but current research and systems are generally geared to larger businesses and fail to account for the specific needs of SMEs (Gerstenfeld and Roberts, 2000, Hillary 2004).

## SECTION TWO: THE SUSTAINABLE FRAMEWORK

The extant literature presents a wide variety of factors that could be included in a sustainable model. However, for the purposes of this paper five elements under three broad categories have

been selected that apply most to Winkler Partners and its implementation of a sustainable framework. These include, 1) The Cultural Sphere which involves *building a culture of sustainability*, 2) the *Use of Tracking Tools*, which measure quantifiable items such as overall impact, energy use, waste production etc, and 3) The Physical Sphere which entails improvements in *energy conservation and efficiency, resource conservation and dematerialization, and the use of cleaner and more natural methods*. This section gives an overview of each element and reviews some related literature.

## THE CULTURAL SPHERE

*“We cannot solve the problems we have created with the same thinking that created them”*  
(Ray and Anderson, 2000, p. 155)

*Building a culture of sustainability:* This includes a clear vision and focused goals, the raising and maintenance of environmental awareness (both general and firm-specific), and the engagement, participation and support from all members of the organization. There is a specific focus on the need for upper management engagement, buy-in and support.

Under a sustainable framework, financial and ecological goals must be aligned, however, traditionally, this has not been the case. Hass (1996) notes that most businesses fail to incorporate environmental factors into corporate strategy and Porter (1991) stresses that corporate strategy must maintain a dynamic balance between company goals and the natural environment. To this end, corporate culture is key. It has been argued that the successful creation of an ecologically sustainable company depends on the institutionalization of environmental beliefs and processes into the very fabric of the organization (Purser, 1994; Jennings and Zandbergen, 1995) and that a true sustainable shift depends greatly on the “greening” of culture

(Post and Altman, 1994; Welford, 1995).

The creation of an environmental consensus is a significant factor in overcoming obstacles to sustainability. As a company works towards its goals, barriers to further improvement often become more significant as most of the “low hanging fruit” (meaning low cost conservation methods that can be easily implemented) has been picked. It is also suggested by Larsen and Peck (2001) that companies with a focused culture of sustainability are better able to overcome the “green wall”, which refers to significant technical, operational or financial barriers encountered as firms attempt to implement more ambitious projects and changes.

Kerr (2006) also notes that companies with a strong environmental ethic are more effective at overcoming obstacles encountered in the greening process, and that effective solutions to those obstacles require the backing of leadership, an effective environmental management system and a culture that focuses on continued education on environmental issues and sustainable practices. Stainer and Stainer (1997) also argue that, “corporate culture... must perceive greening, in the long term, as a key business value which should be become an inherent rather than a conscious issue”.

In creating that culture, Kerr specifically notes the importance of leadership:

*“the key to organizing an enterprise for sustainable operation is for leadership to establish a culture that is proactive in formulating environmental and social objectives, to pursue a strategy of continuous environmental and social improvement and to resource that strategy”*<sup>23</sup>

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<sup>23</sup> Ian Kerr. “Leadership Strategies for Sustainable SME Operation”, Business Strategy and the Environment, 15, p. 31, 2006.

This is reinforced by research by Fineman (1997), Crane (2000) and Harris and Crane (2002) which all found that one of the most significant barriers to corporate greening is lack of management support.

## THE USE OF TRACKING TOOLS

Once goals are set and measurement categories chosen, data must be captured and metrics created to track the process towards those goals. These metrics should be comprehensive in that they reflect the entirety of the company's activities (and thereby its environmental impact) yet be simple, clear and easily understood.

An important step in implementing a sustainable framework is the selection of specific environmental performance indicators (EPIs). Henri and Giasson (2006) define environmental performance indicators as:

*“measures that are based on observable or determinable quantities and that reflect in various ways the environmental impact of a given activity. The quantities involved may be physical quantities or materials... (energy, water, raw materials etc.) or that result from the process (... emissions in the form of air pollution, liquid effluent, etc.)”*

These metrics can be used to track progress on sustainable goals, identify trends and relationships and should be consistent (ideally universally consistent) with the ability to compare and contrast with other firms. The Global Reporting Initiative recommends a number of EPIs that measure all aspects of environmental performance including materials, energy, and water use,

biodiversity, emissions, suppliers, products and services, compliance, transportation and overall performance (Henri and Giasson, 2006). Among these, materials use and emissions are the most concrete and easily quantifiable, and therefore most often used by companies for reporting (Fiskel, 2006). However, it is important to ensure that the information collected is of good quality and the metrics used are practical and applicable. Beaumont et al (1993) have shown that information on environmental practices can be a strategic resource. Further, Stainer and Stainer (1997) indicate that “benefits and power will be derived from how [environmental metrics are] used rather than just having access to them. More information, greater openness and democracy are vital to the greening of industry”.

While metrics should be comprehensive and attempt to reflect all company activities, the amount of detail should depend on the company and the resources available.<sup>24</sup> Henri and Giasson (2006) also warn that simplicity is essential as too many measures can make information unusable and that focus should on simple measures that can be “comprehended, calculated and controlled”. Furthermore, metrics collected should be suited to the particular business or industry and can also be used for competitive advantage. Companies like Philips are even creating benchmarks for their individual products in an effort to create “Green Flagship” that compare favorably with competing products on things such as power consumptions, materials application, environmentally relevant substances and packaging.<sup>25</sup>

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<sup>24</sup> While the metrics used in this study are quite simple, an example of a more detailed and comprehensive set of metrics reflecting a larger and more complex company can be found at Interface Inc.’s sustainability website at <http://www.interfacesustainability.com/metrics.html>

<sup>25</sup> Anonymous. “Philips gets wired for ‘green’ benchmarking”, *Strategic Direction*, 19(9), p. 19, Sep. 2003..



## THE PHYSICAL SPHERE

*Energy conservation and efficiency:* A sustainable framework should focus on conservation, improved efficiency, greater energy intensity (less energy required per unit of product), and the introduction of cleaner, more efficient technologies. Conservation and efficiency measures should begin with easy to implement measures that show immediate results.

The use of resources and energy are of particular importance to a sustainable framework. Despite the recent rise in environmental consciousness, the World Energy Outlook 2005 indicated that world energy demand could be up to 50% higher in 2030 than today, with most of the growth coming from Asian economies (Punte et al, 2005, p.42). Punte et al.'s research shows that companies with management systems in place (such as the sustainable framework detailed in this paper) are likely to experience continued progress in both resource and energy efficiency. The study also recommends amending policies to promote energy efficiency and that efforts should be extended to other resources, in particular, water.

In the latter part of the 20<sup>th</sup> century, the answer to the problem of sustainable development was often a technological fix (Hay, 2005). However, companies are learning that an effective sustainable framework begins with simple conservation measures. Many studies have lauded the benefits of beginning a greening program by picking the “low hanging fruit” (Larson and Peck, 2001; Anderson R, 2007). Focusing on these simple measures can bring about quick environmental and economic gains and help to maintain focus and motivation.<sup>26</sup> Research in ASEAN member countries has even found that energy efficiency improvements through simple and cost-effective methods could help lessen foreign debt (Karki et al, 2005).

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<sup>26</sup> Henri J, Giasson A. “Measuring environmental performance; a basic ingredient of environmental management”, *CMA Management*, 80(5), p. 32 Aug/Sep 2006.

With the growing threat of global warming and the economic pressures to maintain economic growth, energy security will be a major issue in Asia, and to combat that threat, energy efficiency will play an important role.<sup>27</sup> For Taiwan specifically, energy security is critical, given that more than 97% of the country's energy demand is satisfied by foreign imports.<sup>28</sup> However, research shows that, despite a number of government action plans aimed at improving energy efficiency and curbing greenhouse gasses, there is no evidence of measurable improvements in Taiwan's energy efficiency.<sup>29</sup>

*Resource conservation and dematerialization:* This entails the reduction of the amount of materials used through the conservation and redesign of products and/ or processes. Material intensity must be improved and the use of virgin raw materials decreased or avoided. Finally, any waste resulting from business activities should be reused or recycled wherever possible.

Ecological sustainability is threatened in large part by the increasing materials flows used to drive our businesses; however, we face opposing pressures from population growth and economic development that raise demand for materials (Fiskel, 2006). Therefore, to remain viable, the sustainable framework requires a decoupling of economic growth and profit from the amount or intensity of materials used. This decoupling would allow for external environmental costs to be reflected in market prices and allow the market mechanism to determine levels of

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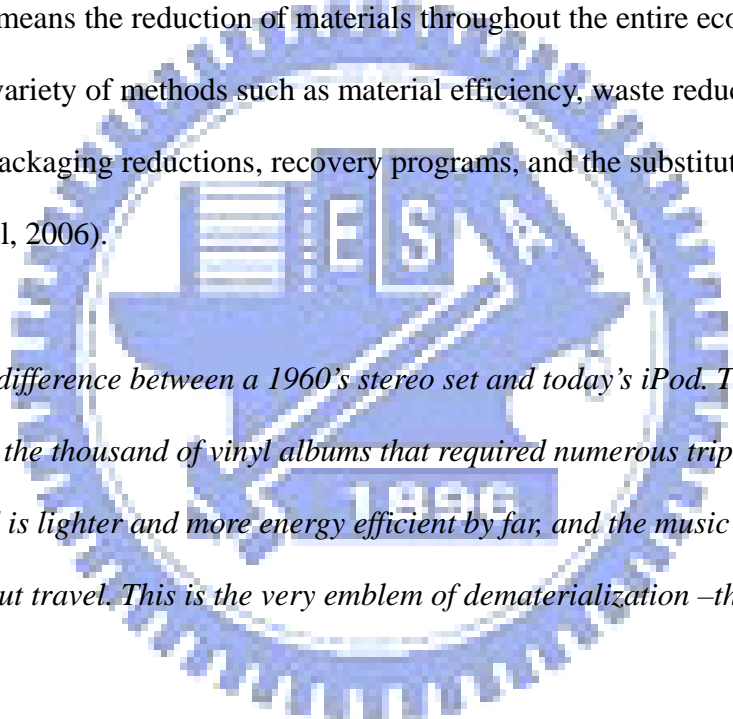
<sup>27</sup> Karki et al. "Energy and environment in the ASEAN: challenges and opportunities", *Energy Policy*, 33, p. 503, 2005.

<sup>28</sup> Wu Li-ming et al. "Structure model of energy efficiency indicators and applications" *Energy Policy*, 35, p. 3768, 2007.

<sup>29</sup> Wu Li-ming et al. "Structure model of energy efficiency indicators and applications" *Energy Policy*, 35, p. 3768, 2007.

use<sup>30</sup> However, until now, the overuse and abuse of resources is largely due to the perception that they are free and limitless.<sup>31</sup> While there are many examples of companies who have achieved commendable results in material conservation, overall material use continues to grow around the world. Research by Huesseman (2003) shows that even within the European Union, which is leading the world in the sustainable movement, there is no absolute decline in the volume of resource requirements and that reductions in material intensity are often obtained through the import of material-intense products, thereby shifting the burden to other regions of the world.

Dematerialization means the reduction of materials throughout the entire economic system and can include a variety of methods such as material efficiency, waste reduction, design for the environment, packaging reductions, recovery programs, and the substitution of services for products (Fiskel, 2006).



*“Consider the difference between a 1960’s stereo set and today’s iPod. The 1960’s stereo is bulky, as are the thousand of vinyl albums that required numerous trips to the music store. The iPod is lighter and more energy efficient by far, and the music is usually accessed without travel. This is the very emblem of dematerialization –though design.”<sup>32</sup>*

While the original consideration behind ideas such as the Sony walkman or the iPod were not ecological, the reduction of materials can reap both environmental and financial benefits. One example is Ray Anderson’s Interface flooring company whose waste management programs reduced waste by 50 percent in the first three years, which resulted in savings of over US\$125 million (Paehlke, 2006). Zero waste programs at a number of corporations such as Xerox,

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<sup>30</sup> OECD. “Indicators to measure Decoupling of Environmental Pressure from Economic Growth”, 2002.

<sup>31</sup> Millennium Ecosystem Assessment. “Living Beyond Our Means: Natural Assets and Human Well-being”, 2005.

<sup>32</sup> Robert Paehlke. “Lighten Up”, *Alternatives Journal*, 32(1), p. 20, 2006.

Hewlett Packard, Bell Canada, Quaker Oats, and the Beer Store of Ontario have lowered costs while achieving over 90 percent reductions in waste production.<sup>33</sup> Intel has saved millions of dollars by using lighter-weight plastics in its manufacturing processes and is also working to develop a closed-loop system for some of its components to ensure zero-waste (Fiskel, 2006).

Overall, in adopting a sustainable framework, material use must be examined from a broad perspective and, where possible, include the entire lifecycle of the materials used, including the “sources of materials, their pathways throughout the natural and built environments, and their eventual sinks”.<sup>34</sup> The use of virgin materials must be reduced wherever possible, and recycling rates for waste that is created must be increased.

*Cleaner and more natural methods:* Current methods and practices should be examined and cleaner more natural substitutes adopted where possible. Where not possible, the negative effects of environmentally harmful or toxic practices should be minimized.

Over the last century our economic growth and industrial advancement have created a wide array of chemicals and toxins that have found their way into our ecosystem. However, these materials can have harmful effects not only to our health and but also to our economy through cleanup, waste storage and management costs, rising healthcare costs and environmental damage.

Therefore, an important element of the sustainable framework is detoxification, which refers to the reduction, removal and replacement of environmentally harmful materials through measures such as cleaner technologies, elimination of toxic or hazardous materials in products and subsequent waste streams, alternative fuels and combustion techniques, restricting materials, as

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<sup>33</sup> Connett P. “Zero Waste Wins”, Alternatives Journal, 32(1), p. 15, 2006.

<sup>34</sup> Fiskel J. “A Framework for Sustainable Materials Management”, Journal of Minerals, Metals and Materials Society, 58(8), p. 15, 2006.

well as waste containment and treatment (Fiskel, 2006).

While still not yet mainstream practice, there are many large multinational corporations that have seen both ecological and financial benefits of cleaner business practices. Between 1987 and 1993, chemical giant Dupont reduced toxic emissions by 74%, halved its landfill waste and cut its \$1 million per year waste treatment bill by \$200 million. DuPont has also cut its emissions of cancer-causing chemicals by almost 70% since 1987. 3M's Pollution Prevention Pays program eliminated more than 1.5 billion pounds of air, land and water pollution for a total cost savings of \$790 million.<sup>35</sup>

Do to the fact that the subject of this paper is a service industry, there are fewer issues regarding the use of environmentally harmful chemicals or materials. However, the materials and processes at WP should be examined and any harmful chemicals or toxins removed wherever possible.

### SECTION THREE: INTRODUCTION OF WINKLER PARTNERS

Winkler Partners is a medium-sized law firm that employs 57 people (including its environmental legal defense association, Wild at Heart) and operates out of the top two floors of a 13 storey building in downtown Taipei (See Appendix II). While in its current form since 2002, Winkler Partners is a continuation of a consulting practice founded by Robin Winkler in 1989. The firm handles legal matters mostly for international clients, including some of the world's largest companies. Winkler Partners is a full-service firm, with practice areas in litigation and arbitration, criminal, general commercial and administrative law, tax, intellectual property, general corporate and investment, M&A, insurance, and lobbying. Robin describes his desire to

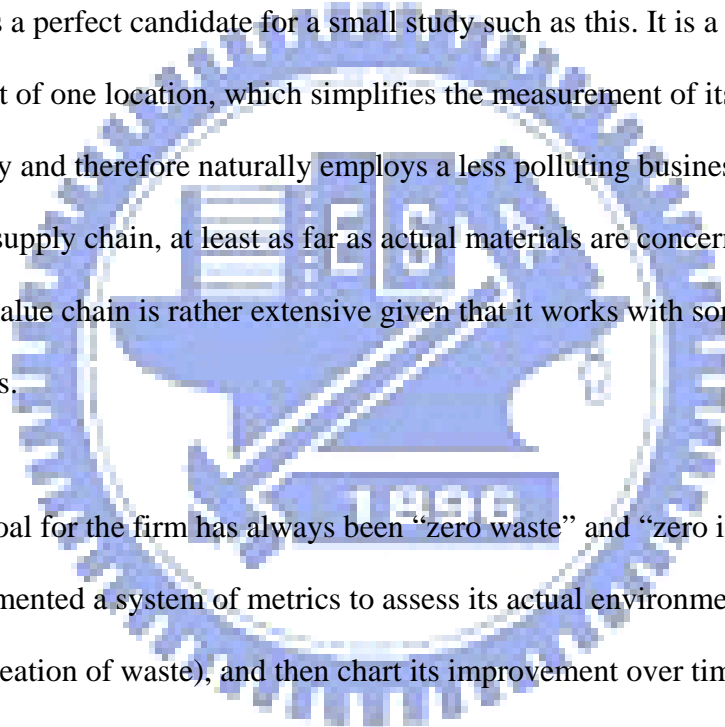
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<sup>35</sup> Anderson, Ray. Mid-Course Correction, Perengrinzilla Press, Atlanta, 1997, p. 128.

pursue a more sustainable life and work as the implementation of something he had “always felt was right”. His efforts gained momentum when an illness in 1992 caused him to reexamine his life’s goals. The current sustainability drive began in 2004 when the firm moved its offices to its current location. His inspiration came from works by authors such as Daniel Quinn (Beyond Civilization), Paul Hawken (The Ecology of Commerce, Natural Capitalism), E.F. Schumacher (Small is Beautiful), Joe Dominguez and Vicki Robin (Your Money or Your Life), and the book “Mid-Course Correction” by Interface Inc. founder Ray Anderson.

Winkler Partners is a perfect candidate for a small study such as this. It is a relatively small operation based out of one location, which simplifies the measurement of its efforts. Secondly, it is a service industry and therefore naturally employs a less polluting business model. It does not have a significant supply chain, at least as far as actual materials are concerned, although it could be argued that its value chain is rather extensive given that it works with some of the world’s largest corporations.

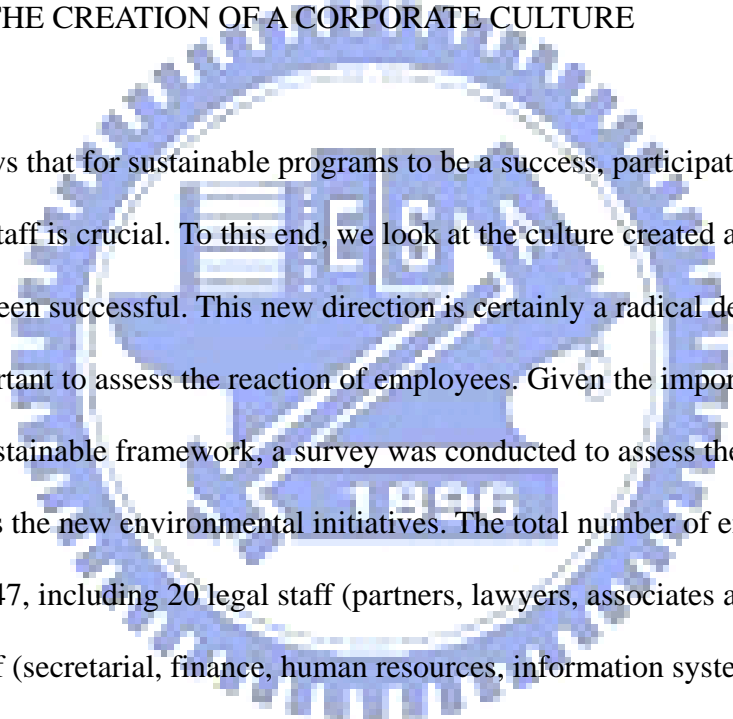
Robin Winkler’s goal for the firm has always been “zero waste” and “zero impact”. Therefore, the firm has implemented a system of metrics to assess its actual environmental impact (the use of resources and creation of waste), and then chart its improvement over time.



## CHAPTER THREE: INTRODUCTION OF THE RESEARCH METHOD

This section examines how the implementation of the sustainable framework was measured at Winkler Partners. Methods include assessing the perceptions of the employees towards this new framework and the examination of energy and resource conservation using concrete metrics. Finally, for sustainable initiatives where metrics are not available a description of WP's efforts is provided.

### SECTION ONE: THE CREATION OF A CORPORATE CULTURE



The literature shows that for sustainable programs to be a success, participation and support of management and staff is crucial. To this end, we look at the culture created at WP and whether its “green shift” has been successful. This new direction is certainly a radical departure for a law firm and it is important to assess the reaction of employees. Given the importance of culture in implementing a sustainable framework, a survey was conducted to assess the attitude of employees towards the new environmental initiatives. The total number of employees at the time of the survey was 47, including 20 legal staff (partners, lawyers, associates and paralegals), 22 administrative staff (secretarial, finance, human resources, information systems and general affairs) and 5 translators. Surveys were given to the total population (47) and 44 responses were received, yielding a response rate of 94.6 percent. All the responses received were useable (see Appendix III).

The survey contained twenty questions to determine increased awareness of environmental issues, general support for the firms efforts, perceived impact on the working environment, participation levels (in the firms efforts), the effect of the program beyond the office, the perceived success or failure of the program and thoughts on communication of the results (both

internal and external). The survey used a five point scale ranging from 1 (strongly disagree) to 5 (strongly agree), with 3 representing no opinion on the issue/question. Respondents were also encouraged to provide personal comments. The following are detailed descriptions of the question groupings:

- 1) Awareness of environmental issues was determined by two questions in the survey (Questions 3, 7) that asked whether working at the firm had increased awareness of environmental issues and/or caused a reconsideration of consumption patterns.
- 2) General support for the firms efforts was determined by six questions in the survey (1, 10, 11, 12, 13, 15) and covered issues such as the general importance of environmental issues, support for the firms efforts to become more sustainable, whether environmental considerations should figure into business decisions, and whether the firm devoted too much time to environmental issues.
- 3) The perceived impact on the working environment (positive or negative) was measured by four questions (2, 9, 16, 17) and asked whether WP's environmental efforts had improved the working environment, whether adjusting to the new sustainability measures was perceived as difficult or whether these measures had disrupted respondents' work.
- 4) Participation levels were measured by four questions (4, 5, 7, 8) including general questions such as whether working at WP had caused respondents to live in a more sustainable manner, or specifics such as whether respondents used reusable items such as water bottles, chopsticks and food containers. Given that such a small study would be unable to assess real participation, it should be noted that the survey measures perception of participation, reflecting whether or not the sustainable ideas have been ingrained in thinking and culture.



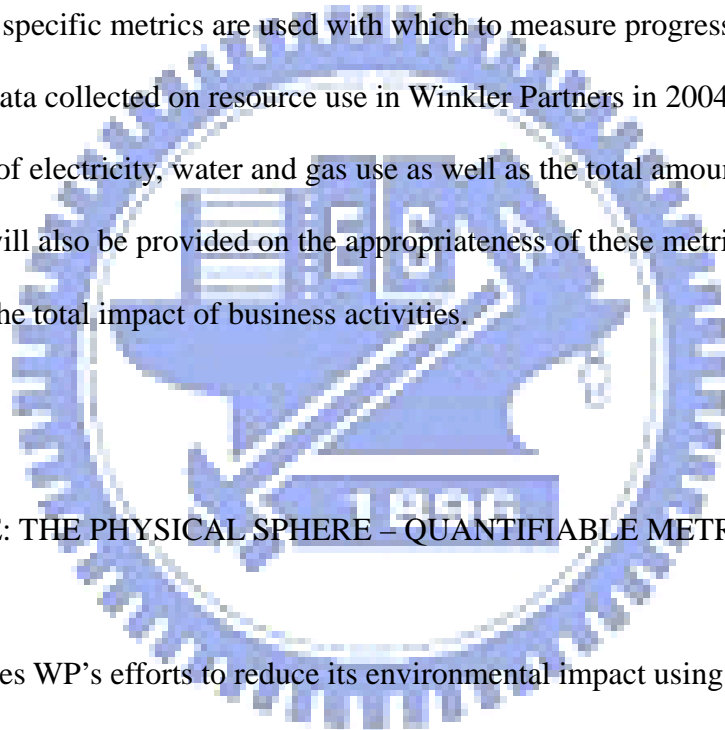
- 5) Conservation beyond the office refers to whether the measures taken at WP were used beyond the office, at home and whether employees general behavior was affected. This item was measured by three questions (4, 6, 7) and covered the use of reusable items such as water bottles, chopsticks and food containers and general changes in lifestyle and consumption patterns.
- 6) The perceived success/ failure of the program was covered by two questions (18, 20) that asked about the general progress and perceived success of WPs efforts towards sustainability.
- 7) Communication and promotion of the firm's efforts was covered by two questions (14, 19) measuring whether the firm's sustainable activities and results were successfully communicated internally and whether employees believed that these efforts/results should be communicated to clients. Only question 19 (internal communication) was included in the statistics reported in Chapter Four. Ideas on external communication were asked for management consideration.

The question groups and specific questions posed in the questionnaire reflect various cultural factors compiled from the literature review for this paper as well as conversations with firm partners regarding information they would like to obtain on the cultural transformation at the firm.

## SECTION TWO: THE USE OF TRACKING TOOLS

For any assessment of change, a benchmark must be established and metrics created to measure the change in relation to the benchmark. Polly Coultice, co-director of the Business and the

Environment Programme at Cambridge University, says that businesses are often unaware of exactly the impact they are having and that “ it is the companies that do measure [environmental and social impact] that know and understand that impact and so are best able to mitigate the negative” (Hanson, 2005, p. 48). Barnhizer (2006) admits “to an absolute distrust of cheap and easy proclamations of lofty ideals and commitments to voluntary or unenforceable codes of practice. The only thing that counts is the actor’s actual behavior”. Therefore, our examination of the sustainable framework implemented at Winkler Partners is not based on rhetoric and stated goals, but on actual measurable data. Various areas are targeted for changes, adjustments and improvements and specific metrics are used with which to measure progress. For this study, the benchmark is the data collected on resource use in Winkler Partners in 2004. The data collected are measurements of electricity, water and gas use as well as the total amount of recycling and waste. Comment will also be provided on the appropriateness of these metrics and whether they accurately reflect the total impact of business activities.



### SECTION THREE: THE PHYSICAL SPHERE – QUANTIFIABLE METRICS

This section assesses WP’s efforts to reduce its environmental impact using specific quantifiable metrics. Discussion is also provided on the methods used to that have brought about these measurable changes. To assess WP’s progress in *energy conservation and efficiency*, we examine metrics for electricity use (with specific discussion on WP’s efforts relating to general efficiency, lighting, and air-conditioning) and gas use. Efforts at *resource conservation and dematerialization* are then evaluated using metrics for water use as well as for waste and recyclables (including efforts relating to sorting and recycling, purchasing, reducing food-related waste and the use of web-based systems). Finally, there is a brief discussion on how WP has implemented *cleaner and more natural methods* around the office. These metrics are all posted

on the company's intranet, so that employees can track progress. Reports are also given to employees once or twice times a year to highlight new initiatives, provide a progress update and to discuss possible further improvements.



# CHAPTER FOUR: THE IMPLEMENTATION OF THE SUSTAINABLE FRAMEWORK/ ANALYSIS OF RESULTS

## SECTION ONE: BUILDING A CULTURE OF SUSTAINABILITY

This section examines the results of the survey to understand the degree to which WP has established a culture of sustainability. Given the importance of leadership noted in the literature, separate results are provided for the four partners (Figure 2), as well as for the firm as a whole (Figure 3). Figures 2 and 3 below show the average value of all answers in each question group. For example, “general support for the firms efforts” includes the average value of all answers to questions 1, 10, 11, 12, 13 and 15. Low values indicate negative responses and high values indicate positive responses.

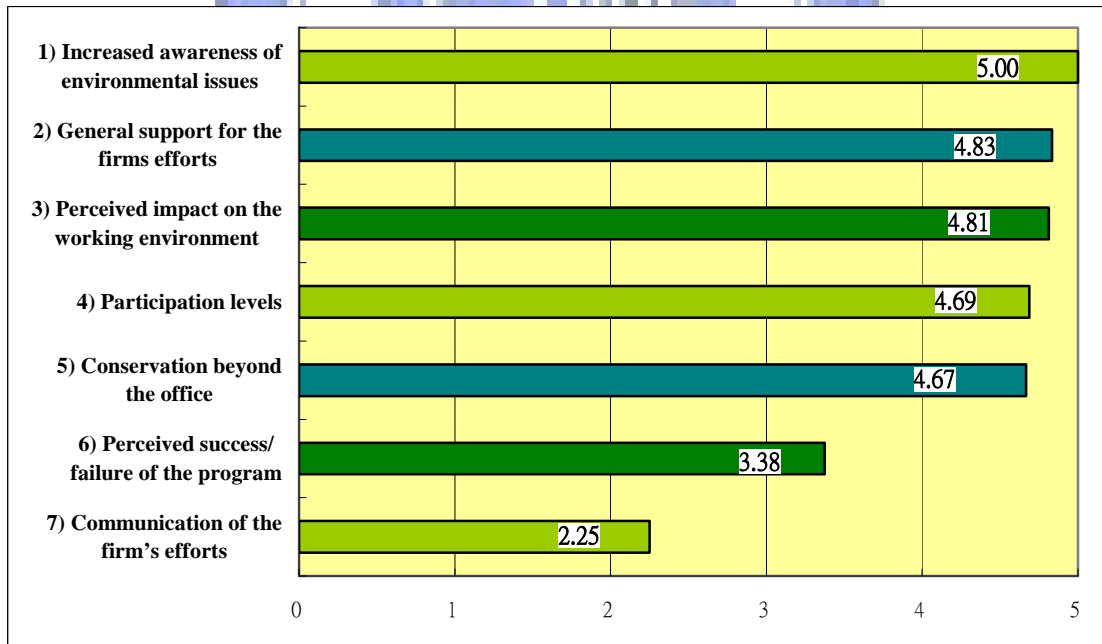


Fig. 2. Survey results – Partners

\* The figures listed above show the average results of all four partners for each question group.

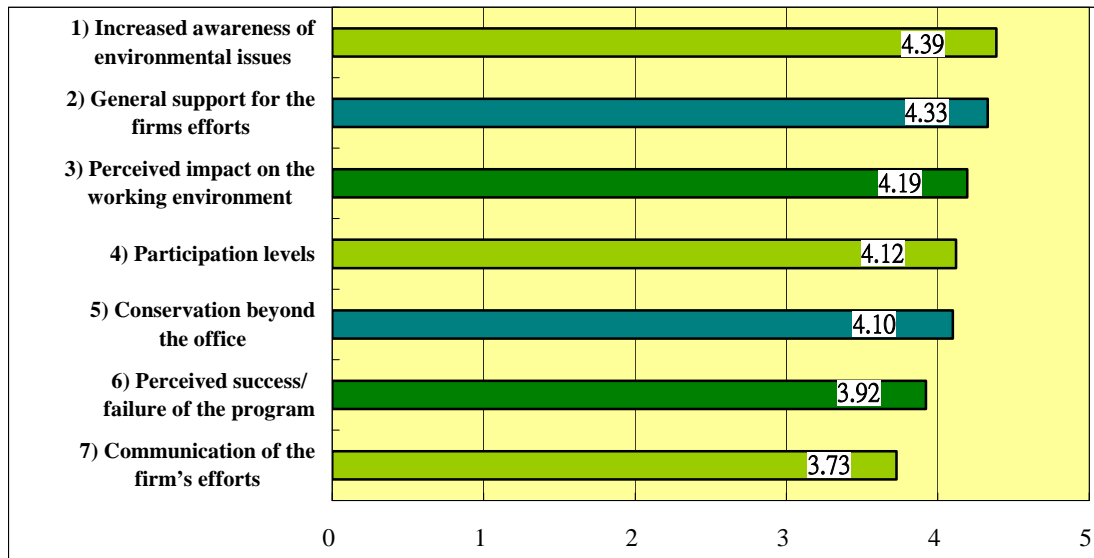


Fig. 3. Survey Results – Population

\* Results for all staff including partners

#### Results from Partners

Figure 2 shows the results of the survey for WP's four partners and can be compared with Figure 3, which shows the results for the entire firm. On average, figures for the partners for question groups 1 through 4 (related to awareness, general support for the initiatives, perceived positive impact on the working environment, and participation in the firms efforts) indicate that WP has the strong leadership support that is required for the successful implementation of a sustainable framework. All values were above 4.5, which indicates strongly positive answers. However, the partners (average value of 3.38) perceived the program to be less successful than the overall population (3.92). Through conversations with employees and comments provided on the survey, it was found that this discrepancy is due to a more pervasive attitude among the partners that "we can be doing more/better". The majority of the staff, however, seemed happy with progress and answered higher to indicate "we are doing well" in our efforts. Also, the partners were split on whether they believed that sustainable programs and results were being successfully communicated internally within the firm. Two partners felt that not enough was being done,

while two indicated that they felt internal communication was relatively successful. This explains why the partners average answer to question group 5 is 2.25 compared to 3.73 for the whole firm. One partner's overall comments included the following, which sums up some of the key points in this section.

*“I think that sustainability is key for every entity in every industry. The more we can learn and apply in our daily lives (whether at the office or at home) the better off we will be, and the more we can help others become more sustainable. Lately, I have been a little frustrated by what I perceive as a lack of engagement by more of our colleagues, but that is part of the learning curve, and I think comes back to our need to promote these activities (and changes in behavior) more effectively.”*

## Overall results

### 1) Awareness of environmental issues

This area showed the strongest results. All 44 respondents agreed or strongly agreed that the environment is an important issue. All respondents except for two felt that working at the firm had increased their awareness of environmental issues. The two respondents who answered in the negative, indicated that they had always been concerned with and aware of ecological issues and therefore did not agree that working at WP specifically increased their awareness. These results are not surprising considering the atmosphere at WP. Environmental issues and initiatives are often the focal point of firm meetings and retreats, and continued education is promoted using emails on environmental issues, guest speakers, and a wide variety of posters, brochures and other informative material found throughout the office. In recent years, potential employees have been informed of the firm's goals during interviews and while it is not a critical factor in hiring decisions, WP does attempt to bring in like-minded individuals.

## 2) General support for WP's efforts

The findings generally show a great amount of support for the sustainable movement at WP (4.33). This consensus will likely increase the success of the program and help overcome obstacles. The results also seem to show that WP has successfully infused environmental ideas into corporate culture with 84% of respondents agreeing that sustainability should be a key factor in business decisions. The backing of the partners has likely contributed to these results

## 3) The perceived impact on the working environment (positive or negative)

The data shows that employees generally perceive that measures to improve sustainability also improved their working environment (4.19). Only one colleague felt that the firm was spending too much time on environmental issues and commented that the firm should not lose focus on its core legal business. Some other staff indicated the need to ensure focus on the legal business and two mentioned that increased profits by the firm could help fund more environmental efforts (see Appendix VII on Wild at Heart). Three respondents did comment that at times it was too hot in the summer making it difficult to concentrate, causing more irritability and causing delays in accomplishing tasks.<sup>36</sup> Generally, however, the large majority of employees felt that sustainability initiatives did not disrupt work. Over 60 percent did not perceive adjusting to the new measures as difficult. One respondent noted “To date, I don’t think the adjustments have been difficult at all. They may become more difficult as we become more ambitious” This lends weight to the fact that WP might hit a “green wall” at which point, research tells us that a corporate cultural consensus is even more important.

## 4) Participation levels

The data also shows a high perception of participation among employees (4.12). It was also

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<sup>36</sup> See comments on air conditioning use under “The Physical Sphere” below.

found that in addition to general participation, employees were taking measures to use reusable items such as water bottles, chopsticks and food containers. There seemed to be a general desire to use these items but several people commented that they often forgot to bring chopsticks or food containers when they went out for lunch. Answers in this section, however, do conflict somewhat with comments indicating that cooperation and participation by employees could be improved.

#### 5) Conservation beyond the office

The data shows some success at getting employees to conserve beyond the office (4.10). This is likely due to the general support for the environment and the implementation of sustainable policies at the firm. Overall, 42 of 44 respondents agreed or strongly agreed that working for WP had caused them to live in a more sustainable manner. This shows that WP has achieved some success in promoting sustainability beyond the walls of the office. One colleague comment that she “..hoped our efforts would effect those around us. The more people that get involved, the more things will improve”.

#### 6) The perceived success/ failure of the program

WP’s drive towards sustainability is generally perceived to be successful by most employees (3.92). However, as noted above, the partners were slightly more reserved in expressing their satisfaction with the results. There were some notes of caution as some employees indicated that the firm should not try to “bite off more than it could chew”. One respondent indicated that “we should focus on what we are trying to do at the moment and do it well before pushing ahead further”.

#### 7) Communication of WPs efforts

While it is generally perceived that the communication of sustainable activities and results was



successful, the results for this section were the weakest in the survey (3.73). There was one strong comment complaining of too much internal communication, "...at times though to the point of distraction. Too many e-mails and too much material in conference rooms, lobby, storage spaces, and such". As to whether the firm should promote its environmental focus to clients, 40 percent responded either "strongly disagree" "disagree" or "no opinion". While many did agree with the question, in comparison with other questions, there was not such a strong level of agreement. Perhaps this would indicate that WP should take an indirect approach to promoting its activities externally (such as posting its sustainability metrics on its website), rather than directly and consciously communicating its environmental focus to clients.

Overall, the survey results indicate that WP has achieved a fair measure of success in creating a culture of sustainability. As suggested by Petts et al., these initiatives are driven by leadership with strong personal commitment to environmental issues. Our results also show that a general cohesiveness and consensus has emerged with regard to the firm's efforts, which will be beneficial as it moves forward. However, it is possible that internal resistance will increase as projects become more ambitious and it is important that WP take appropriate steps to maintain and deepen that culture without provoking a backlash. Comments provided in the survey also point out that, while there is significant support for the program, efforts should be made to strengthen the legal practice and maintain both environmental and financial goals.

## SECTION TWO: THE PHYSICAL SPHERE – QUANTIFIABLE METRICS

This section looks at WP's efforts at energy and resource conservation and examines data collected on physical metrics. More specifically, figures for electricity, gas and water use, as well as measurements of waste and recyclables are presented. While some preliminary sustainability

efforts began at the firm as early as 2002 when its offices were moved to its current location, substantial efforts were begun in 2004. Therefore, data collected in 2004 serves as a benchmark for comparison with 2005 and 2006 data. It should be noted that from 2004 -2006 there were no significant changes in office facilities or equipment that would affect energy or resource use. Also during this period the number of staff has fluctuated minimally, from 51 to 46 employees. In contrast, WP's billed revenue in 2005 was 6% higher than the 2004 figure. Furthermore, the billed revenue for 2006 was a full 45% higher than the 2004, which shows an increasing trend of business volume over the study period. This background information should be considered when examining the results below.

## ENERGY CONSERVATION AND EFFICIENCY ELECTRICITY

### General

As recommended in the literature review, simple methods for cutting electricity use are emphasized. Employees have been encouraged to cut down on electricity whenever possible by turning off lights, air conditioners, fans, computers at lunch, after work, or when they are away from their desk for an extended period of time.<sup>37</sup> Responsible persons are assigned for each portion of the building to ensure that electrical items are not left on over night. Employees are encouraged to take the stairs instead of the elevator, both to promote exercise and save energy (especially in the cooler weather) and periodic emails provide reminders of ways to save energy. Staff are also encouraged to implement these measures at home as well (in the hopes of expanding the overall effect).

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<sup>37</sup> Almost 10% of electricity can be saved by unplugging electrical appliances that are not in use.

## Lighting

The building itself was chosen for its abundant natural light. All offices have large windows that let in light and walls into the central part of the building are also made of glass to allow as much natural light into the environment as possible. Shades were also installed to keep heat out during times of direct sunlight. As for lighting fixtures, the firm has been replacing any old incandescent light bulbs with new energy-saving bulbs.<sup>38</sup> Also, fixtures that are not used, are purely decorative or are simply unnecessary, have been removed.

## Air conditioning

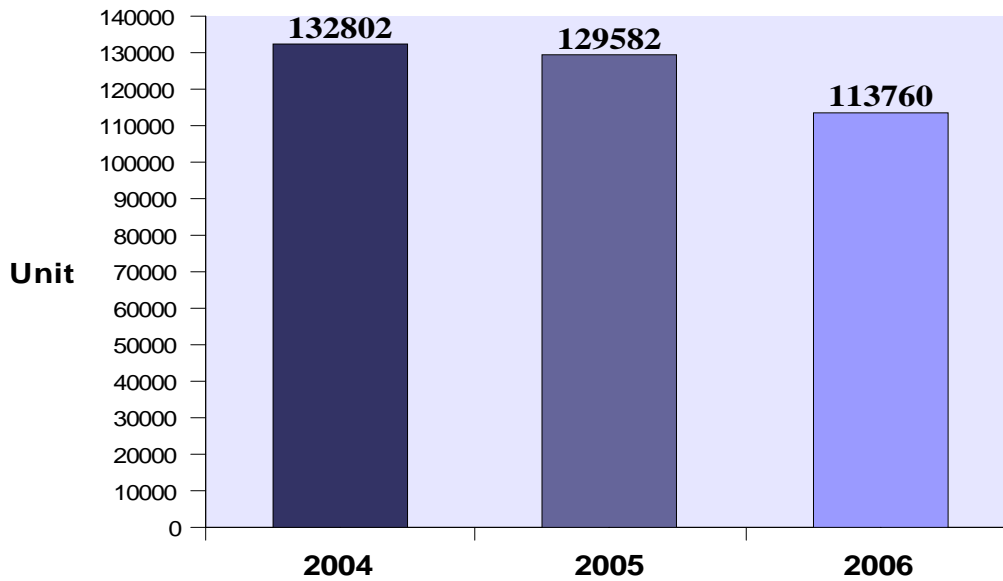
Having a semi-tropical climate, the weather in Taiwan is hot and humid for much of the year. This is complicated by urban heat island effect<sup>39</sup> as well as the fact that Taipei lies in a basin, which captures heat. Accordingly, a significant portion of energy use can be attributed to the use of air conditioning. The firm has struggled to find a balance between conservation and providing a comfortable work environment. First, air conditioners have been covered (using wood or bamboo) to avoid direct sunlight and increase efficiency. Second, employees are encouraged to dress appropriately for the weather. Suits and jackets are not required, unless for meetings with clients. Dress casual or even casual attire during the hot summer months is accepted. Because employees are dressed in a more appropriate manner, air conditioning is not activated until 28°C and cools to 26%.<sup>40</sup> Employees are also encouraged to open windows on breezy days (the office is up high where the wind is stronger) or use electric fans, which use much less electricity than air conditioning. Air conditioning is also only turned on between 10am and 6pm. It should be noted that the survey found that some respondents found it difficult to work in the higher temperatures.

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<sup>38</sup> The life of fluorescent light bulbs is up to 6 times as long as that of incandescents, and use only 2/3 of the energy.

<sup>39</sup> An Urban Heat Island is a metropolitan area that is significantly warmer than its surroundings. As population centers grow in size, they tend to have a corresponding increase in average temperature;

<sup>40</sup> For every degree higher the air conditioner is set, approximately 6% electricity is saved.



**Fig. 4. Comparison of Electricity Use (2004-2006)**

**Electricity Savings**

2005: 3220 units of electricity saved over 2004

2006: 15822 units of electricity saved over 2005

2004-2006: 22,262 units of electricity saved.(on 2004 baseline)

Savings: NT\$66,786 (approximately NT\$3 per unit)

1 unit of electricity=1000 watt hours (Wh) =860 kilocalories (Kcal)

In 2006 alone, 17,802 units of energy were saved over 2004 levels. This is equal 17,802,000 Wh of electricity. Due to these savings, WP has indirectly reduced its CO<sub>2</sub> emissions by 11,749.32 KG. (See Appendix IV)

**Further Savings**

To create further savings, Winkler Partners has removed even more unnecessary lighting fixtures. Also, many areas of the office previously used indirect light embedded in the ceiling. Most of this lighting has been replaced and, in some cases, up to 8 fluorescent tubes were replaced by two high-efficiency pot lights.

The rooftop garden was completed in March of 2007 and it is hoped that the green space have a cooling effect by reducing direct sunlight on the building which will, in turn, reduce air conditioning costs. Vines have also been planted to grow over the outer surface of the building, with the same intended effect. Mark Ongg of HOY Architects and Associates in Taipei has said that rooftop gardens can cost more to build than a standard roof but that expenses can be recovered in as little as three years due to energy savings, and that air conditioning use for the top floor apartment can be reduced by as much as 10%.<sup>41</sup>. The rooftop garden also serves as a rest area for employees, provides some amount of carbon offset provided by the various plant life, improves the aesthetic environment and provides some educational benefits.

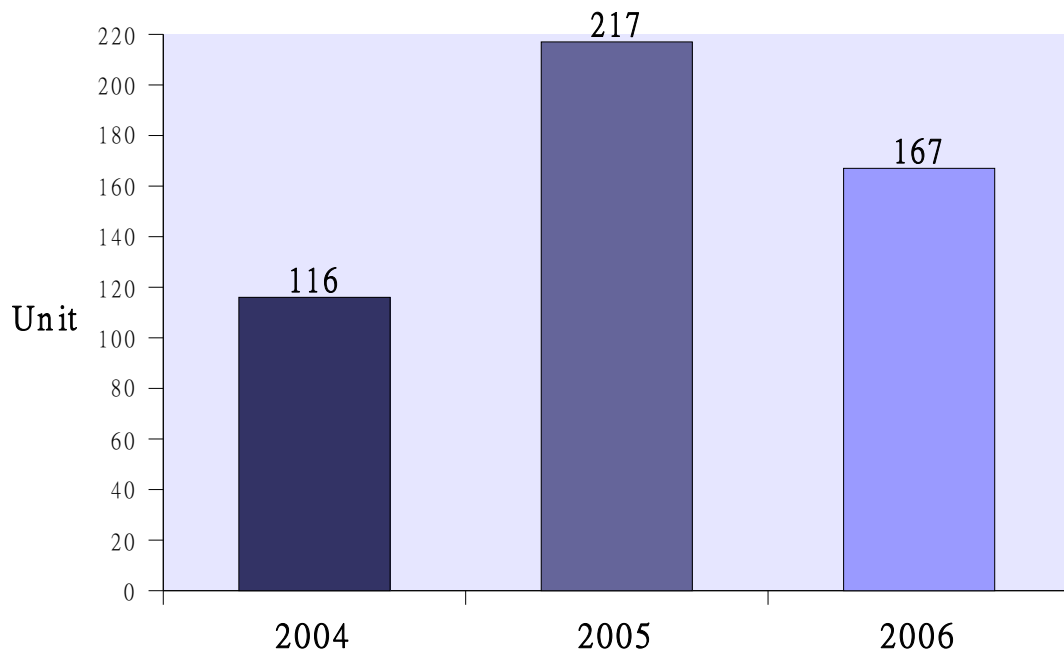
Long term projects include the possibility of creating our own electricity through solar panel or wind turbine installations on the roof. No detailed budgeting or planning has begun on these projects.

## GAS

Natural gas is used at Winkler Partners for cooking. The amount of gas use increased significantly in 2005 when the firm added day care facilities (two baby rooms). As such, food is cooked much more often in the office. Lunches are often cooked for the employees and while this adds to the gas use at the firm, the same amount would likely be used if employees were eating out. It also cuts down on garbage (lunch boxes, chopsticks, napkins) used when eating out of the office.

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<sup>41</sup> <<http://www.taipeitimes.com/News/feat/archives/2005/06/12/2003259053>>  
Freundl, Diana. 12 Jun. 2005, "Rooftop Gardens", accessed on 9 June 2007.



**Fig. 5. Comparison of Gas Use (2004-2006)**

**Gas Savings**

2005: increase of 1001 units used over 2004

2006: 50 units of gas saved over 2005

2004-2006: overall increase of 151 units.

2006 saw NT\$750 in savings over 2005 (approximately NT\$15 per unit)

but a total of approximately NT\$2,265 increase over 2004.

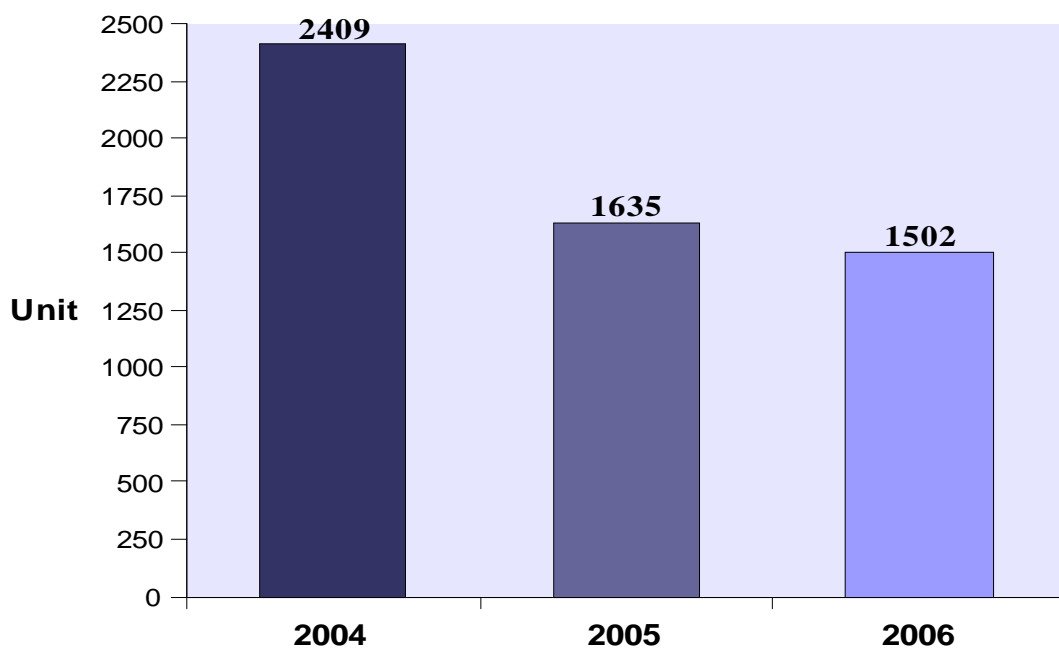
1 unit of gas = 1square meter in volume

A total of 50 units or 50 square meters of natural gas were saved between 2005 and 2006, which would create 105 Kg of CO<sub>2</sub> (See Appendix V). Currently, the only possible options to reduce gas use would be to use a solar water heater, which would reduce the need to boil water.

**RESOURCE CONSERVATION AND DEMATERIALIZATION**

**WATER**

Water conservation methods have included the lowering of water pressure, installation of high efficiency faucets and education of employees on water consumption. The most surprising fact is that the results listed below were achieved without any radical measures (picking the “low hanging fruit”). WP has already installed a rainwater catchment system on its roof and has plans to use rainwater not only for its 12<sup>th</sup> floor and rooftop gardens, but also to flush its toilets. Currently, there are also plans to replace all the toilets in the firm with dual-flush, water saving models. Current models use up to 12L per flush while the newer models will use between 3 and 6L per flush (savings of 50-75% per flush). Since the majority of the firm’s water consumption goes towards watering the gardens and for flushing toilets, it is expected that the implementation of these measures will bring water use well below 50% of 2004 levels.



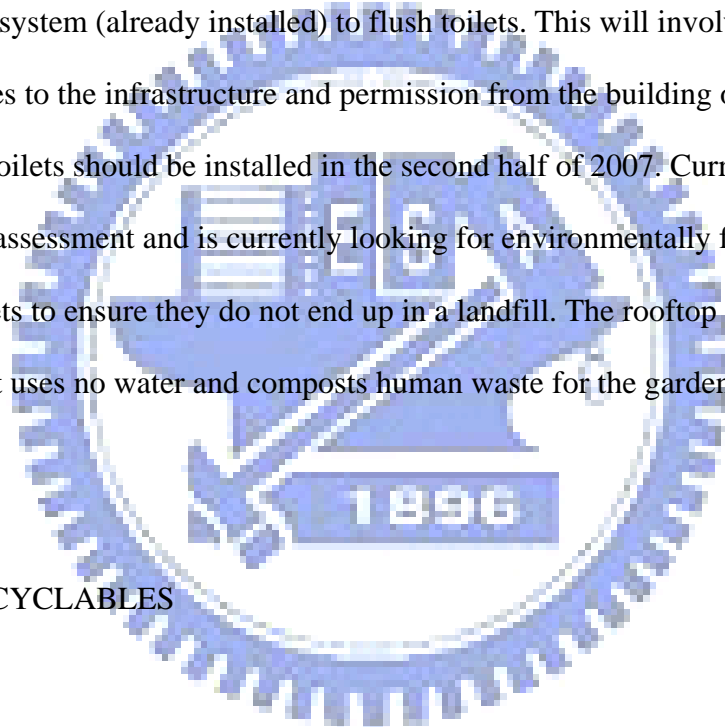
**Fig. 6. Comparison of Water Use (2004-2006)**

Water Savings  
 2005: 774 units of water saved over 2004  
 2006: 133 units of water saved over 2005  
 2004-2006 1681 units (1,681,000L) of water saved. (on 2004 baseline)  
 1 unit of water = 1 square meter or 1000 litres  
 Savings: NT\$16,810 (approximately NT\$10 per unit)

In total, 1,681,000 litres of water have been saved in two years, just from the most basic of conservation methods. Water use in 2005 was 30% lower than in 2004 and use in 2006 was 15% lower than in 2005. This represents a reduction of almost 40% in total over 2004 levels. (see Appendix VI)

### Further Savings

Winkler Partners plans to further consider the water output on its faucets and toilets. It is also currently investigating the costs and procedures involved in using rainwater collected from a rooftop catchment system (already installed) to flush toilets. This will involve significant investment, changes to the infrastructure and permission from the building owners. Also, water saving dual-flush toilets should be installed in the second half of 2007. Currently, WP has completed a costs assessment and is currently looking for environmentally friendly ways to recycle its old toilets to ensure they do not end up in a landfill. The rooftop garden also contains a composting toilet uses no water and composts human waste for the gardens.



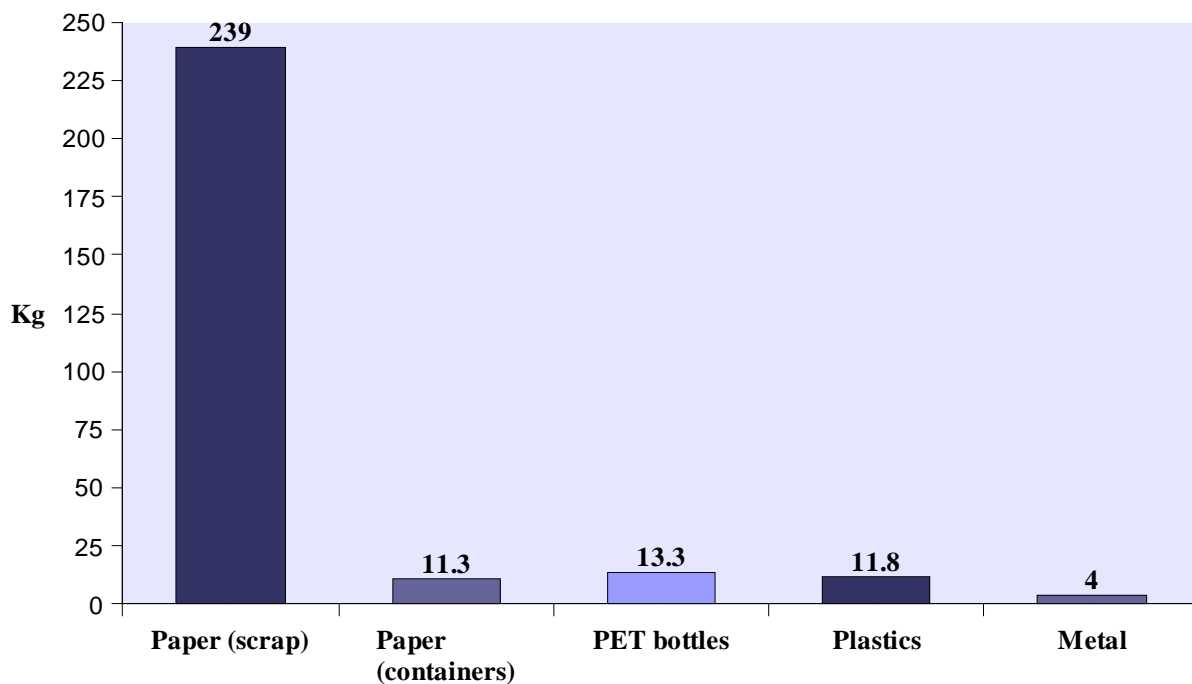
### WASTE AND RECYCLABLES

No program for sustainability would be effective without tackling the issue of material consumption. Winkler Partner's has set a target to become a "zero waste" office, which includes waste of all kinds and seeks to decouple material intensity from profitability. An important part of that goal is tackling the amount of waste created. Note that Figure 7 below shows that the greatest amount of waste created is in the form of paper. Metrics were only put into use this year so we are currently unable to assess the amount of progress made.

Winkler Partner's has already implemented a fairly comprehensive recycling plan, but that does



not get to the heart of the issue, the reduction of waste in the first place. Employees are urged to think about the garbage they create. Individual garbage cans have mostly been removed. Also, the firm has recently held several successful “garbage can rest days”, where waste containers (with the exception of paper recycling and kitchen waste collection) are completely removed during the day. Employees are encouraged not to bring waste in from outside the office including beverage containers, lunch boxes etc. Successful efforts have also been made to get staff to use their own chopsticks, water bottles, food containers out for meals/ drinks etc. These programs are not necessarily about depriving employees of these items but rather provide an opportunity to reflect on consumption patters. Much of our waste, after all, is a matter of habit. This, however, is an area that could bring about a backlash by employees. Hence, questions assessing the disruptiveness of these policies were included in the survey. It should be noted, however, that the great majority staff did not consider “garbage can rest day” an inconvenience.



**Fig. 7. Resource Recycling Figures between Nov. and 2006 and Jan-2007**

## Sorting of recyclables

On both the 12<sup>th</sup> and 13<sup>th</sup> floor, there are recycling containers for general waste, scrap paper, plastic bags, styrofoam, glass, metals, used batteries, used CDs and kitchen waste (now composted on site). Given the amount used, much of the recycling effort focuses on paper. Boxes are provided beside printers separating them into scrap paper, paper to be shredded and recyclable paper. Reusable recycled paper (generally printed on one side), is placed beside printers so that it can be used again. General affairs checks to ensure that none of the reused paper contains confidential client information. Finally, Old documents, files, books and other paper products are routinely collected and recycled. Documents containing confidential information are first shredded before recycling.

## Purchasing

Purchasing practices should consider overall material use and WP tries to buy recyclable materials whenever possible. Another important consideration is buying local whenever possible. This ensures low transportation impact to get the goods to the office. However, some environmentally friendly products are unavailable in Taiwan and therefore must be imported.

## Food-related waste


Activities surrounding food can create a great deal of waste, especially in Taiwan, where convenience foods are ubiquitous and come in often excessive packaging. Therefore, several measures have been taken to reduce food-related waste including, encouraging employees to use re-useable spoons, chopsticks and food containers when eating out, providing extra cups, plates and bowls for when employees forget. While there has been some improvement, there is still a fair amount of waste in the form of paper cups, plastic bags. Part of the reasoning behind “garbage can rest day” is to encourage employees to reexamine their habits and hopefully find new ways to reduce waste. Food waste is also “recycled” through composting. This food waste is

composted on the roof and the soil obtained as a finished product is used in the rooftop garden.

#### Web-based systems

Finally, the firm has tried to cut waste through the use of web-based systems. Employees are encouraged to use PowerPoint or projector presentations at meetings rather than providing paper printouts. Also, WP has converted to a mainly electronic billing system, whereas previously bills were printed out and sent to clients using traditional mail. Now, bills are only mailed when specifically requested by clients. Efforts continue to decrease the paper use at WP with the ultimate goal of creating a paperless office.

#### CLEANER AND MORE NATURAL METHODS



As mentioned above, the use of toxic or harmful materials is not as critical an issue in Winkler Partners as it would be in a manufacturing industry, however, there are still many areas that can be improved upon. One of the most important areas is the use of natural cleaning products (general cleaners, dishwashing liquid, hand soap etc.) instead of chemically based ones and if possible non-natural products are diluted. That being said, conversations with members of general affairs found that very few non-natural cleaners are now in use. The company also employs a carpet cleaning company that uses environmentally friendly cleaners. Natural methods are also used whenever possible for pest control (e.g. cockroaches and ants). As for purchasing, there is an emphasis on purchasing environmentally-friendly recycled copy paper and recycled non-bleached toilet paper. The supply chain is constantly being assessed and environmentally friendly choices made where possible.

## CHAPTER FIVE: CONCLUSION AND DISCUSSION

This paper has discussed the general environmental crisis and highlighted both the motivations and barriers and motivations facing small and medium-sized businesses when implementing sustainable practices. In particular, the efforts of Winkler Partners to create an environmentally friendly culture and implement specific sustainable initiatives have been described and documented.

### SECTION ONE: THE CULTURAL SPHERE:

An assessment of WP's corporate culture and perceptions of employees in response to the new sustainable framework.

Winkler Partners has recognized and taken a proactive approach to the environmental mega-trend and the firm has been successful in infusing environmental ideas into company culture and practices. A strongly motivated and supportive management team has been likely key in this success. This study has documented increased awareness of environmental issues by employees and a significant measure of support and participation. All of these indicators bode well for overcoming of obstacles as more ambitious projects are implemented. These results are also impressive considering that Winkler Partners had no overall strategy for the promotion and dissemination of cultural objectives. There were, however, some strong comments among the survey responses that indicate minor levels of dissatisfaction, a fact that should be taken into consideration moving forward.

## SECTION TWO: THE PHYSICAL SPHERE

An assessment of sustainability initiatives at WP using quantitative metrics and an analysis of whether the firm has implemented the ideals of the sustainable framework.

This paper covers the beginning phase of the drive for sustainability at WP. To date, most of the initiatives have been fairly simple and easy to implement, a strategy that the extant literature suggests is effective for new sustainability programs. In light of this, the improvements in energy and resource use are significant. However, it may mean that future efforts will be more difficult to implement and require more significant capital outlays. It should be noted, however, that during the period covered (2004-2006), there were no significant changes in office facilities and equipment and that the number of staff fluctuated minimally, from 51 to 46 employees. Also, the savings in energy and resource use during the same period are further emphasized by the fact that WP's billed revenue increased by 45% from 2004-2006. Therefore, this shows that, to a certain degree, revenue has been decoupled from resource use. Finally, Winkler Partners results are significant given the lack of government regulations or initiatives in this for sustainable programs in Taiwan.

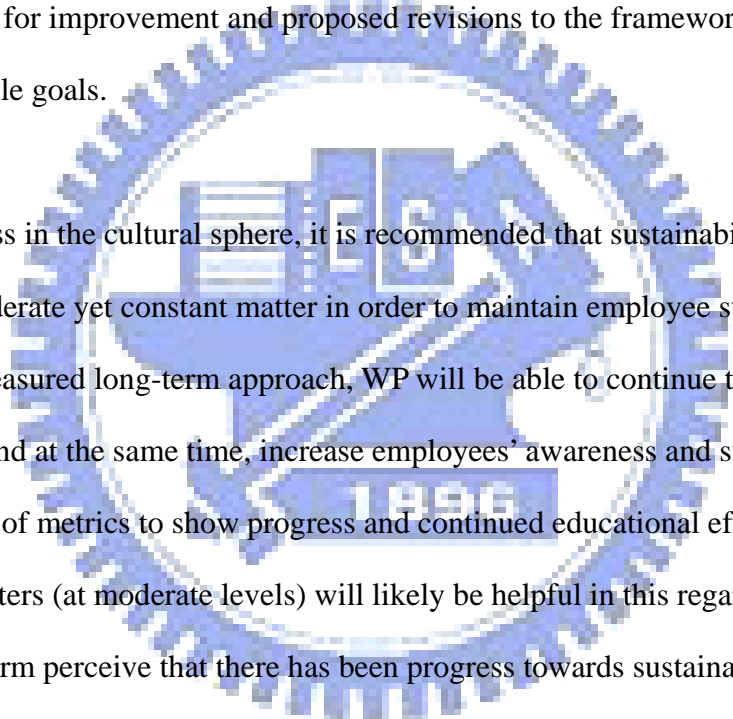
Winkler Partners has collected significant data on its resource use, set benchmarks on which data can be measured, and instituted a reliable set of metrics to quantify its efforts. Furthermore, the firm has concentrated on data that is easily measured and comprehended. Overall, fairly significant savings were noted in water and electricity, while total gas use has risen since 2004. WP currently uses several of the environmental performance indicators recommended by Henri and Giasson (2006), however, a modification of its system of metrics to include an overall impact measurement is recommended below.

The cost savings realized by WP to date have not been significant but should continue to increase

over time. The uncertainty over future resource costs also complicates the equation. If the predictions of scientists and environmentalists bear out, the costs for water, gas and electricity could rise significantly in the future, at which point a 40, 60, or 80% reduction in the amount resource use could mean significant financial savings. Overall, economic benefits are most effectively measured over the long term.

### SECTION THREE: RECOMMENDATIONS

Recommendations for improvement and proposed revisions to the framework to reflect reality and meet sustainable goals.



Given WP's success in the cultural sphere, it is recommended that sustainability initiatives be continued in a moderate yet constant matter in order to maintain employee support. It is believed that by taking a measured long-term approach, WP will be able to continue to make progress towards its goals and at the same time, increase employees' awareness and support for these programs. The use of metrics to show progress and continued educational efforts on environmental matters (at moderate levels) will likely be helpful in this regard. Overall, employees at the firm perceive that there has been progress towards sustainability goals and that initiatives have had a positive impact on their work environment. However, concerns raised in the survey (some disruption of work, lack of focus on the core legal business) should be taken seriously to avoid any erosion of support.

In the physical sphere, WP has collected some worthwhile data. Some modifications, however, could provide a more complete picture. The extant literature shows that metrics should reflect the entirety of business activities as much as possible and, therefore, revisions to the system of metrics are proposed as follows:

### An Overall Impact Metric

To reflect the total impact of business activities, an overall carbon footprint should be calculated. This is a universally used measurement and all current data can be easily converted into measures of carbon. This will not only keep track of overall progress but will ensure that gains in one area are not offset by losses in another and would also allow for comparison with other firms or businesses. This overall impact metric should also include rough estimations for transportation. To this end, the firm is currently collecting data on carbon emissions incurred through commuting and for flights related to business. To maintain simplicity, rough calculations can serve as a baseline and added to the overall carbon footprint of the company.

### Revisions to Waste Management Metrics

Although WP's waste management and recycling programs have been in place for some time, the firm has only recently begun to measure waste volume. The current metrics, however, do not assess the total material flows for the business. Ideally, total material use and waste should decrease over time. Total recycled materials, in turn, should also decrease. However, the percentage of total waste that is recycled should rise. A measurement should also be available for total non-recyclable waste (waste that goes to landfill). With proper waste management statistics, more accurate assessment can be made as to whether profits have been decoupled from resource use.

### Carbon Offsets

As WP's efforts in the environmental sphere continue to grow, there may be instances, such as the creation of the rooftop gardens, which actually decrease the total carbon impact of the firm. A measurement of these offsets should also be included in the total calculation to ensure greater accuracy of records.

## Recommendations to other SME's

This study hopes to highlight the need for a proactive approach to environmental sustainability. For other small to medium-sized businesses seeking to implement a sustainable business model, they must first gain an understanding of the motivations for their program (internal or external) and anticipate future barriers (financial, social, technical regulatory etc.). Once firm goals are set, initial efforts should focus on programs that are easy to implement. A continual moderate approach combined can with educational programs on general environmental problems and firm-specific issues can help build a culture of sustainability and galvanize support. Results should be measured with a system of metrics that is both comprehensive and easy to understand and those results should be shared with employees to increase motivation. Furthermore, employee attitudes should be monitored to ensure continued support for new initiatives.

## SECTION FOUR: DIFFICULTIES AND LIMITATIONS

Some staff members intimately involved in the greening process at WP have noted that the general environment in Taiwan creates significant obstacles to their efforts. First, the environmental ethic does not seem to be strongly ingrained in Taiwanese society. Therefore, as in Hong Kong, green initiatives often center around compliance. To create a broader and more significant impact on the environment, government leadership is sorely needed. Clear regulations would be beneficial in helping SME's focus their efforts and set targets for conservation. This coupled with a series of incentive programs for companies that meet targets and to offset capital outlays for conservation projects would provide greater motivation for companies to implement sustainable measures. Currently, there are few government initiatives supporting sustainable programs, even for proactive SME's like WP. For example, an application to obtain government subsidies for its rooftop garden project was rejected. Efforts are still underway to obtain some



financial assistance for its “green” investments.

WP staff noted that research into sustainable practices can be difficult in Taiwan and that many environmentally friendly products or alternatives are simply not available. One example is the use of environmentally-friendly toner for printers and copiers. While the toner is available, the companies that rent the printers do not have compatible models or are unwilling to accommodate the firm’s request. Another example is the firm’s carpeting. While the WP was able to purchase environmentally friendly carpeting from Interface Inc., Interface’s recycling efforts do not extend to Taiwan. Therefore, under present circumstances, if the carpet were removed it would end up in landfill.

The initial condition of the building in which WP has its offices also poses significant challenges, namely centering around the fact that it was not built using “green principles”. There is also a lack of support from owners of the building. The rooftop garden plan was scaled down considerably due to protests from the owners.



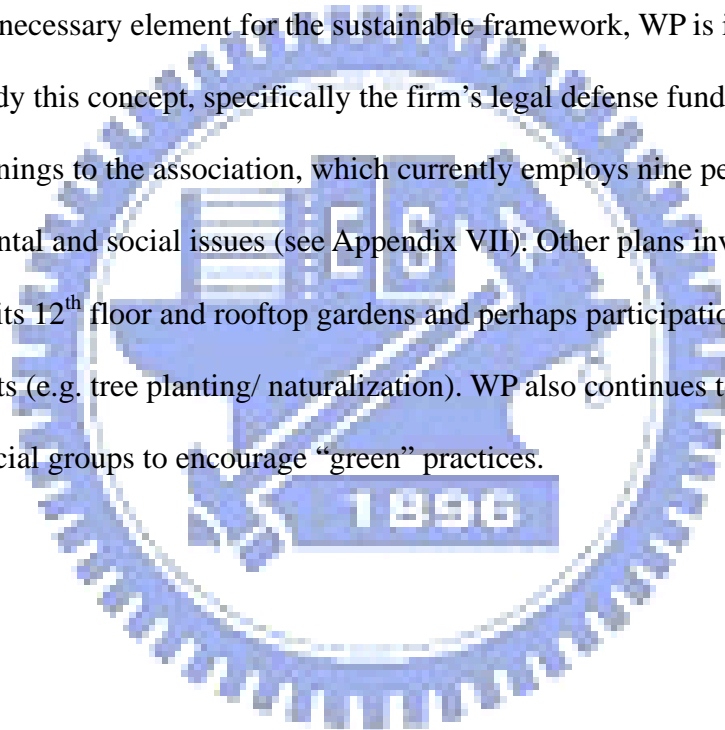
## SECTION FIVE: FROM “SUSTAINABLE” TO “RESTORATIVE”

Moving forward, Winkler Partners has aspirations beyond just sustainability. As proposed by Anderson (1997), companies should strive to move from a “sustainable” to a “restorative” business model. This is more of a deep ecology perspective and encompasses an actual overall benefit not only to the firm’s customers and clients but also to the natural world and society in general. It is a long-term goal and entails efforts to make up for previous ecological damage through programs such as carbon offsets and ecological recovery campaigns. In essence, a restorative model is an extension beyond the sustainable framework. Ray Anderson’s Interface

has incorporated this ideal into its company mission statement.

*“We will honor the places where we do business by endeavoring to become the first name in industrial ecology, a corporation that cherishes nature and restores the environment. Interface will lead by example and validate by results, including profits, leaving the world a better place than when we began, and we will be restorative through the power of our influence in the world.”<sup>42</sup>*

While this is not a necessary element for the sustainable framework, WP is involved in several projects that embody this concept, specifically the firm’s legal defense fund, Wild at Heart. WP gives 3% of its earnings to the association, which currently employs nine people working on various environmental and social issues (see Appendix VII). Other plans involve carbon offsetting through its 12<sup>th</sup> floor and rooftop gardens and perhaps participation in ecological reclamation projects (e.g. tree planting/ naturalization). WP also continues to work with various community and social groups to encourage “green” practices.



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<sup>42</sup> < <http://www.interfaceinc.com/goals/mission.html>>, accessed on 1 May 2007.

## References:

Adler J. "The Greening of America", Newsweek, p. 45-48, 14 August 2006,

Ammenbery J, Hjelm O. "Tracing business and environmental effects of environmental management systems – a study of networking small and medium-sized enterprises using a joint environmental management system", Business Strategy and the Environment, 12(3), pp. 163-174, 2003.

<<http://www.thestar.com/printArticle189892>>

Ames P. 9 March 2007, *EU agrees on global warming plan*, accessed on 10 March 2007.

Anderson, Dan R. "The Critical Importance of Sustainability Risk Management", Risk Management, 53(4), pp. 66-74, April 2006

Anderson Ray C. Mid-Course Correction. The Peregrinzilla Press, Atlanta, 1997.

Anonymous. "As Biodiversity goes, So Go the Fish", Environment, 48(10), p. 5, Dec 2006.

Bansal P. "From issues to actions: the importance of individual concerns and organizational values in responding to natural environmental issues", Organizational Science, 15(5), pp. 510-527, 2003.

Barnhizer, David. "Waking from Sustainability's 'Impossible Dream': The Decisionmaking Realities of business and Government", Georgetown International Environmental Law Review, 18(4), p. 596-690, Summer 2006.

Beaumont et al. Managing the Environment – Business Opportunity and Responsibility, Butterworth-Heinemann, Oxford, p. 198.

<<http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/6108424.stm>>

Black R. 2 November 2006, "'Only 50 years left' for sea fish", accessed on 31 March 2007.

<<http://news.bbc.co.uk/2/hi/science/nature/6321351.stm>>

Black R. 2 February 2007, "Humans blamed for climate change", accessed on 17 Mar. 2007.

Brown, Doug. Insatiable is not Sustainable, Praeger, London, 2002.

<<http://www.guardian.co.uk/print/0,,329674684-105193,00.html>>

Carrel S. 3 January 2007, "Scottish experiment may help turn the tide for Britain's dwindling fish stocks", accessed on 31 March 2007,

<<http://www.taipeitimes.com/News/taiwan/archives/2006/02/01/2003291262>>

Chiu Yu-Tzu 1 February 2006, "Government urged to focus on sustainability", accessed on 25 August 2006.

Crane A. "Corporate greening as amoralization", Organization Studies, 21(4), pp. 673-96, 2000.

Demirdijann, Z. S. "Sustainability and Social Cost: The Becoming of a Sexy Subject in Business", Journal of American Academy of Business, 10(1), p. 1. Sep. 2006.

Deutsch, C. "For Wall Street, Increasing Evidence That Green Begets Green", New York Times, 19 July 1998, A7.

<<http://www.thestar.com/printArticle189556>>

Ditchburn, Jennifer. 8 March 2007, "Economists favour global warming tax", accessed on 10 March 2007.

Elkington, John. "The Power of Disruption", Director, 60(7), p. 24, Feb. 2007

Engardio et al. "Beyond the Green Corporation; Imagine a world in which eco-friendly and socially responsible practices actually help a company's bottom line. It's closer than you think", Business Week, 4019; p. 50, Jan 2007

Farrell Tucker, Molly. "Creating Sustainability at a Chocolate Factory", In Business, 29(1), p. 10-14, Jan/Feb 2007

Feldman et al. Does Improving a Firm's Environmental Management System an Environmental Performance Result in a Higher Stock Price?", ICF Kaiser International, Inc., 1996.

Feng, Hui. "China and the Challenge of Economic Globalization: The Impact of WTO Membership", The China Journal, 57, pp. 243-246, Jan. 2007

Fineman S, Clarke K. "Green stakeholders: industry interpretations and response", Journal of Management Studies, 33(6), pp. 715-730, 1996.

Finnegan, Lisa. "Sustainable Development: Business Without Footprints", Occupational Hazards, 61(5), pp.54-56, May 1999

Fiskel J. "A Framework for Sustainable Materials Management", Journal of Minerals, Metals and Materials Society, 58(8), p. 15-22, 2006.

Gerstenfeld A, Roberts H. "Size matters: barriers and prospects for environmental management in small and medium-sized enterprises", Small and Medium-Sized Enterprises and the Environment. Greenleaf, Sheffield, 2000, pp. 106-118.

Ghadar, Fariborz. "Environmental Degredation: Our Failing Earth", Industrial Management, 48(3), p. 12-17, May/Jun 2006.

<<http://www.thestar.com/printArticle/182867>>

Gorrie, Peter. 17 February 2007, "Toronto's Green Blueprint", accessed on 17 February.

Groundwork. Small Firms and the Environment, a Groundwork Report, Groundwork, Birmingham, 1995/1998.

Hansen, Fay. "A Home for HR Metrics: Global standards for sustainability reporting require the disclosure of workforce data that relect the potential for future performance and profitability", Workforce Management, 86(2), p.10-11, Jan 2007

Hanson, Sarah. "Leaner and Greener", Director, 58(11), pp. 48-52, Jun 2005.

Harris L, Crane A. "The greening of organizational culture: management views on the depth, degree and diffusion of change", Journal of Organizational Change Management, 15(3), pp. 214-234, 2002.

Hass J. "Environmental ('green') management typologies: an evaluation, operationalization and empirical development", Business Strategy and the Environment, 5(2), pp. 59-68, 1996

Hawken, Paul. The Ecology of Commerce, Harper Collines, 1993.

Hawser Anita. "Green Begets More Green", Global Finance, 21(1), p.8, Jan. 2007.

Hay R. "Becoming Ecosynchronous, Part 1. The Root Causes of Our Unsustainable Way of Life", Sustainable Development, 13, p. 311-325, 2005.

Henri J, Giasson A. "Measuring environmental performance; a basic indredient of environmental management", CMA Management, 80(5), pp.28-32, Aug/Sep 2006.

Herro, Alana. "M.B.A. Programs with a New Look", In Business, 29(1), p. 22, Jan/Feb 2007.

Heugens P. "Environmental Issue Management: towards a Multi-Level Theory of Environmental Management Competence", Business Strateby and the Environment, 15, pp. 363-376, 2006.

Hillary R. Small Firms and the Environment: a Groundwork Status Report, Groundwork: Birmingham. 1995.

Hillary R. "Environmental management systems and the smaller enterprise. Journal of Cleaner Production, 12, pp. 561-569, 2004.

Hoffman A. "Integrating Environmental and Social Issues into Corporate Practice", Environment,42(5), pp. 22-33, Jun 2000

Hoffman A, Ocasio W. "Not all events are attended to equally: toward a middle-range theory of industry attention to external events", Organizational Science, 12(4), pp. 414-434, 2001.

<<http://www.taipeitimes.com/News/editorials/archives/2006/07/31/2003321238>>

Huang, Ter-yuan. 31 July 2006, "Sustainable economy must place nation first", accessed on 31 July 2006.

Huessemann M. Clean Technology and Environmental Policy, Springer Verlag, New York, pp. 21-34, 2003.

Jennings P, Zandergergen P. "Ecologically sustainable organizations: an institutional approach", Academy of Management Review, 20(4), pp. 1015-1052, 1995.

Jorgensen, A. L. and Knudsen, J. S. "Sustainable competitiveness in global value chains: how to small Danish firms behave", Corporate Governance, 6(4), pp. 449-462, 2006.

<<http://news.bbc.co.uk/go/pr/ft/-/2/hi/science/nature/3747724.stm>>

Kirby, Alex. 19 October 2004, "Water scarcity: A looming crisis?", accessed on 31 March 2007.

<<http://news.bbc.co.uk/go/pr/ft/-/2/hi/science/nature/3995135.stm>>

Kirby, Alex. 9 November 2004, "Energy: Meeting soaring demand", accessed on 31 March 2007.

<<http://news.bbc.co.uk/go/pr/ft/-/2/hi/science/nature/4086809.stm>>

Kirby, Alex. 13 December 2004, "Pollution: A life and death issue", accessed on 31 March 2007,

Laurence et al. "Sustainability Practices of SMEs: the Case of NZ", Business Strategy and the Environment, 15, pp.242-257, 2007.

Lee, K. 2000. "Strategic corporate change towards sustainable enterprise in the environmental era". Proceedings of the Business Strategy and the Environment Conference. European Research Press: Shipley, pp. 271-278.

Lin S, Lu I and Lewis C. "Grey relation performance correlations among economics, energy use and carbon dioxide emission in Taiwan", Energy Policy, 35, pp. 1948-1955, 2007.

Naisbitt J, Aburdene P. Megatrends 2000, HarperCollins, New York ,1900.

O'Laoire D, Welford R. "The EMS in the SME", Corporate Environmental Management: Systems and Strategies,

Earthscan, London, 1996.

O’Riordan, Timothy. “China and the Agony of the Sustainable Transition” Environment , 48(7); pp. 0-2, Sep. 2006.

Paehlke, Robert. “Lighten Up”, Alternatives Journal,32(1), pp. 20-22, 2006.

Palmeri, Christopher. “Green Homes: The Price Still Isn’t Right; Buyers are declining environmentally friendly features. That may change”, Business Week New York, 12 Feb. 2007, p. 67.

Peck L. “Making Change”, Alternatives Journal, 27(2), p.17, Spring 2001.

Petts J, et al. “The climate and culture of environmental compliance within SMEs”, Business Strategy and the Environment, 8, pp. 14-30. 1999.

Porter ME. “Towards a dynamic theory of strategy”, Strategic Management Journal, 12, pp. 95-117, 1991.

Post J, Altman B. “Managing environmental change process: barriers and opportunities”, Journal of Organizational Change Management, 7(4), pp. 4-14, 1994.

Punte S, et al. “Improving Energy Efficiency in Asia’s Industry”, Greener Management International, 50, p. 41, Summer 2005.

Purser D. “‘shallow’ vs ‘deep’ organizational development and environmental sustainability”, Journal of Organizational Change Management, 4, pp. 4-14, 1994.

Ray P, Anderson S. The Cultural Creatives: How 50 Million People are Changing the World, Harmony, New York, 2000.

<<http://www.cnn.com/2007/WEATHER/03/15/warmest.winter.reut/index.html>>

Reuters. 16 March 2007, “Winter has been world’s warmest on record”, accessed on 16 March 2007.

Robert, Karl-Henrik. The Natural Step Story, New Society Publishers, 2002.

Robinson et al., “Climate Change and Sustainable Development: Realizing the Opportunity”, Ambio, 35(1), p. 2-8, Feb. 2006.

Rothenberg, Sandra. “Sustainability Through Servicizing”, MIT Sloan Management Review, 48(2), p. 82, Winter 2007.

Rowe, J, Hollingsworth D. "Improving the environmental performance of small and medium-sized enterprises: a study in Avon", Eco-Management and Auditing, 3, pp. 97-107, 1996.

<<http://www.taipeitimes.com/News/taiwan/archives/2007/03/17/2003352662>>

Shan, Shelley. 17 March 2007, "Renewable energy bill 'very likely' to pass, insiders say", accessed on 17 March 2007.

<<http://www.taipeitimes.com/News/taiwan/archives/2006/11/04/2003334741>>

Shan, Shelley. 4 Nov. 2006, "UK's climate review has a message for Taiwan too", accessed on 1 April.

Simpson et al. "Environmental Responsibility in SMEs: Does it deliver competitive advantage" Business Strategy and the Environment, 13, pp. 156-177, 2004.

Stainer A. Stainer L. "Ethical dimensions of environmental management", European Business Review, 97(5), p. 225, 1997.

Stokes A, Rutherford R. "UK environmental policy and the small firm: a comparative perspective". Proceedings of the Business Strategy and the Environment Conference. European Research Press, Shipley, pp. 363-371, 2000.

Studer, Welford and Hills. "Engaging Hong Kong Businesses in Environmental Change: Drivers and Barriers", Business Strategy and the Environment, 15, pp. 416-30, 2006.

Tilley F. "Small-firm environmental strategy: the U.K. experience", Greener Management International, 25, pp. 1-14, 1999.

Vencat, Emily Flynn. "Force of Nature", Newsweek, pp. 29-44, 14 August 2006,

Welford R. Environmental Strategy and Sustainable Development: the Corporate Challenge for the 21<sup>st</sup> Century, Routledge, London, 1994.

Welford R, Gouldson A. Environmental Management and Business Strategy, Pitman, London, 1993.

Willard B. The Next Sustainability Wave: Building Boardroom Buy-In, New Society, Gabriola Island, 2005.

Zimbalist, Katrina. "Clean Sweep", Time, p. 64, Spring 2007.

<<http://news.bbc.co.uk/go/pr/fr/-/2/hi/asia-pacific/5290236.stm>>

BBC News. 27 August 2006, "Third of China 'hit by acid rain'", accessed 28 August 2006,



<<http://www.thestar.com/printArticle189892>>

9 March 2007, "China wakes up to environment crisis", accessed on 10 March 2007.

<<http://www.thestar.com/printArticle189364>>

7 March 2007, "TD urges taxation to fight pollution, global warming", accessed on 10 March 2007.

<<http://www.forbes.com/markets/feeds/afx/2006/12/22/afx3277462.html>>

22 December 2006, "Toyota set to replace GM as world's largest automaker in 2007", accessed on 14 January 2007.



## APPENDICIES

### APPENDIX I: Rooftop Garden

The firm completed construction of a rooftop garden in March of this year. The goals of the project were to increase green space, provide a rest, socialization area for employees, increase direct sunlight on the roof of the building and thereby save on air-conditioning costs. Efforts were taken to use recycled and environmentally friendly building materials. It consists of a covered seating area, several planting areas, a man-made pond for water plants and a composting toilet.

### APPENDIX II: Winkler Partners - space

Winkler Partners operates out of the top two floors of the Kolin Building in Taipei, with a total usable area of 900.22m<sup>2</sup> (272.32 坪).

#### 12 Floor facilities

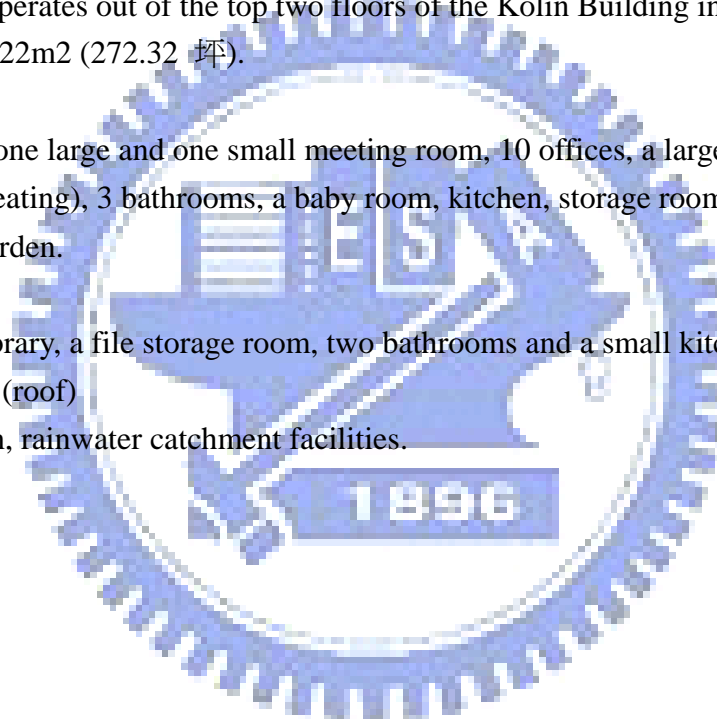
- A large lobby, one large and one small meeting room, 10 offices, a large open office space (cubicle type seating), 3 bathrooms, a baby room, kitchen, storage room, and a large outdoor balcony and garden.

#### 13<sup>th</sup> Floor facilities

- 12 offices, a library, a file storage room, two bathrooms and a small kitchen.

#### 14<sup>th</sup> floor facilities (roof)

- Rooftop garden, rainwater catchment facilities.



### APPENDIX III: Questionnaire:

1–Strongly Disagree 2–Disagree 3–No opinion 4–Agree 5–Strongly Agree

1. 非常不同意 2.不同意 3.沒意見 4.同意 5.非常同意

1.I support the firm’s efforts to do business in a more sustainable way.

我支持事務所以一個更永續的方式營運所做的努力。

2. WP’s efforts towards creating a more sustainable workplace have had a positive effect on my work environment.

博仲法律事務所對創造一個更永續工作場所所做的努力對我的工作環境有很正面的影響。

3.Working at WP has increased my awareness of environmental issues.

在博仲法律事務所工作有提高我對環境議題的意識。

4.Working for WP caused me to live in a more sustainable manner.

為博仲法律事務所工作使我以一個更永續的方式生活。

5.I use reusable items such as waterbottles, chopsticks, food containers etc, when in and around the office (e.g. going out for lunch).

我使用可重複使用物品例如水壺，筷子，食物容器等等當我在事務所內或附近用餐。

6.I use reusable items such as waterbottles, chopsticks, food containers etc, even when away from the office.

我使用可重複使用物品例如水壺，筷子，食物容器等等縱使當我離開事務所。

7.The firm’s efforts caused me to change my consumption patterns (e.g. consume less/ make environmentally-friendly choices).

事務所所做的努力使我改變我的消費模式。(例如：減少消費、對環境更好的選擇)

8.I participate in WP’s efforts to create a more sustainable business.

我有參與博仲法律事務所創造一個更永續營運所做的努力。

9.I have found adjusting to the new measures to increase sustainability difficult.

我對於提高環保永續性的新措施有適應上的困難。

10.The environment is an important issue.

環境是一個重要的議題。

11.The firm should do more to become more sustainable.

事務所對於變成更永續應該更加努力。

12.I am proud to work for an organization that emphasizes the importance of environmental issues.

我以爲一個強調環境議題重要性的組織工作爲榮。

13.Sustainability should be a key factor in business decisions.

我認爲永續性應該是營運決策的關鍵因素。

14. WP should do more to promote its environmental focus to its clients.

事務所應該更努力對其客戶推展其對環境的關注。

15. WP spends too much time on environmental issues.

博仲法律事務所花費太多時間在環境議題上。

16.The implementation of measures to improve the sustainability of WP has disrupted my work.

執行增進博仲法律事務所永續性之措施中斷我的工作。

17.I find “garbage can rest day” to be an inconvenience.

我覺得「垃圾桶休息日」造成不便。

18. WP has been successful in its efforts to create a more sustainable environment.

我認爲博仲法律事務所爲創造一個更永續環境所做的努力是成功的。

19. WP’s successfully promotes its sustainability-related activities, programs and results internally.

有關爲創造一個更永續工作場所所做的努力，博仲法律事務所成功地在所內推展其活動，計畫及結果。

Other Comments:

其他建議：

#### APPENDIX IV

These electricity savings in 2004 alone could:

1. save NT\$53,406 (1 unit of electricity costs approximately NT\$3 and produces approximately 0.66 Kg of CO<sub>2</sub>)
2. provide enough electricity to use 60 average personal computers continuously for 62 days, or one computer for over 10 years (Each computer uses approximately 0.2 units of electricity per hour and produces 0.13 Kg of CO<sub>2</sub>).
3. provide enough electricity to use 20, 14inch electric fans for one year (Each fan uses approximately 0.1 units of electricity per hour and produces 0.07 Kg of CO<sub>2</sub>).
4. provide enough electricity to light 75, 27W energy saving lightbulbs (the kind used in the firm for one year (Each bulb uses approximately 0.027 units of electricity per hour and produces 0.018 Kg of CO<sub>2</sub>).
5. provide enough electricity for 35,604 trips up and down on the elevators at the Kolin Building (the building in which Winkler Partners has its offices). Each trip up and down on the elevator uses approximately 0.5 units of electricity and produces 0.33 Kg of CO<sub>2</sub>.
6. produce enough heat to boil 153,097 Kg of water (raising the temperature of 1KG of water to 100°C requires 100Kcal).

#### APPENDIX V

The monetary savings between 2006 and 2005 were NT\$750 (1 unit of gas costs approximately NT\$15 and creates approximately 2.1 Kg of CO<sub>2</sub>).

1. Burning this amount of gas could raise the temperature of 4500Kg of water from 0°C to 100°C.
2. This amount of gas could power a 2000cc automobile for approximately 577 KM.

#### APPENDIX VI

Water savings could for 2006 amount to approximately NT\$9070 based on 2004 levels and could:

1. fill 7272001.25 L PET bottles
2. provide one day's worth of water for 2582 people (based on 352 litres per person per day).
3. provide one day's worth of water for 227250 chickens (based on 352 litres per person per day).
4. irrigate 9089.7 square meters of farmland (95.34M\*95.34M\*0.1M)

The Wild at Heart Legal Defense Association is a public interest organization dedicated to promoting efforts to restore a healthy relationship with nature. The association, established in August 2003, works for the purpose of restoration, conservation and preservation of the island's fragile environment.

The role played by Wild at Heart varies according to the nature of each individual case. In one of our major cases, we are representing members of the Taroko Tribe in a lawsuit to reclaim lands occupied by the Asia Cement Corporation. In other cases, we argue on the behalf of the "clients" we wish to protect but for whom there is no human representative. Much of our time is spent providing legal assistance and advice to other environmental groups or concerned individuals, often regarding Environmental Impact Assessment (EIA) issues, for example, where parts of the EIA are incomplete or have been carried out in any other way that does not accord with Taiwanese EIA law, other applicable laws, or the precautionary principle.

Wild at Heart also carries out research on issues such as the revision of EIA laws, population policy, laws affecting the rights of Taiwan's indigenous peoples, and noise pollution, as well as participating in discussion on the promotion of environmental awareness through, for example, environmental education. Translation of foreign language books, papers and documentaries has also featured in several of our projects. In January 2005, Wild at Heart funded and arranged the translation of research materials related to GIS and intellectual property, as part of a cultural exchange trip to Taiwan by Canadian scholars and members of indigenous communities. In March 2005, we arranged for the translation of the British documentary McLibel (concerning issues related to globalization, company law, the environment and animal welfare) and have recently provided this to interested university film groups, NGOs and teachers, as well as Taiwan's Public Television Service channel.