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SUSTAINABLE FINANCE

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## **ABSTRACT**

After the major fraud cases occurred in the 20<sup>th</sup> century, there has been increasing interest in the concepts such as sustainability, corporate social responsibility, and business ethics. Therefore, in recent years, sustainability cannot be considered apart from organization's core strategies. The aim of this thesis is to find out the truth about sustainability from a finance perspective, and how much it benefits companies. Thus, the thesis explains the concept and importance of sustainable finance. It also illustrates the financial metrics that are used to measure financial benefits of sustainability projects, stock price changes regarding the projects, and the Dow Jones Sustainability Index (DJSI).

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## Chapter 1

### Introduction

Since business executives started to recognize the business benefits on sustainable development, the sustainability business market has seen rapid growth. Irrespective of the true benefits of sustainability, it already has been a big part of the economy and community. For example, there are about 250 sustainable consulting firms in the United States, and new firms keep entering to the market (“Strategic Sustainability Consulting”).

How is sustainability defined? In 1987, the Brundtland Commission’s report introduced the concept and established the definition of sustainable development as “a development, which meets the needs of current generations without compromising the ability of future generations to meet their own needs” (Bärlund, 2013). Relating this concept to finance as a discipline generates two aspects of sustainable corporate finance. First, there is the storage function of money and capital, which indicates that finance is appropriate to realize or not to realize the needs of “future generations”. Secondly, “if financial processes are assumed to reflect underlying real economic processes, it is important to stress a financial policy aimed at integrity and trust in the longer run” (Soppe, 2004).

This thesis will attempt to answer the following questions to value the past and current sustainability projects and to find the way forward.

- What kind of financial metrics do companies use in order to measure the profits from their sustainability projects? What are the barriers?

- Which one is the best tool to gauge the costs and benefits among those metrics?
- Does the announcement about sustainability projects/investments affect the US stock markets?

### **Research Methodology**

First, a literature review was conducted in order to define sustainability and sustainable finance and to gain a general knowledge about the role of finance in sustainability, sustainability valuation, and sustainability indices.

In addition to producing a literature review, I conducted in-person, e-mail, and phone interviews with business executives to answer these thesis questions in depth. The purposes of the interviews were to gain further information about the subject, and to find any anomalies that apply to a particular company or project. A list of interview questions was developed in advance of interviews, and the questions were subject to change depending on the characteristics of the firms.

Interview Questions:

- Why do you think that sustainability is important?
- Which finance metrics does your company use?
- How accurate do you think those are to assess the costs and benefits of the investments?
- Which financial metrics do you think is the best method of measurement?
- How much are your stockholders favorably inclined towards the sustainability projects in relation to their profits? And why?

## **Chapter 2**

### **Sustainable Finance**

The paper of Aloy Soppe (2004) explores the concept of Sustainable Corporate Finance (SCF) extensively and distinguishes it from traditional and behavioral finance, applying four criteria: Theory of the Firm/Goal Variables; human nature of economic actors; ownership paradigm; and ethical framework. Before we look into sustainable finance and its implementations, the two general schools of finance need to be discussed.

#### **Traditional and Behavioral Finance**

First, the school of traditional finance can be grouped into two time periods: the first and second part of the 20<sup>th</sup> century. During the first part of the century, descriptive methodology and accounting information were emphasized. Ratio analysis, which is based on financial statements, became the theoretical background for securities analysis (Soppe, 2004). During the second part, financial theory adopted the view of Neoclassical Growth Theory, which highlights the influence of technology on economic growth. The mean-variance equilibrium models such as the Capital Asset Pricing Model (CAPM) and the Arbitrage Pricing Theory (APT) were developed. Through this period, the risk/return paradigm was extended from the Traditional Modern Portfolio Theory (MPT). Also, the Efficient Market Hypothesis (EMH), Agency Theory, and the Option Pricing Model

(OPM) were utilized (Soppe, 2004). In traditional finance, investors made rational decisions and invested to maximize utility.

The second school of finance, behavioral finance, started in the mid-1970s. Even though financial theories are well-developed, investors are often irrational and cause anomalies in asset pricing models, which also affects the stock market. Therefore, in behavioral finance, emotion and psychology were studied, and game theoretic approaches became popular.

### **Sustainable Finance**

In traditional finance, sustainability is defined in respect of sustainable dividends or sustainable growth rates. “The sustainable growth rate is defined as the rate at which a firm can grow while keeping its profitability and financial policies unchanged. The sustainable growth rates of general financial planning models aim at a stable risk and return for the owners of the residual risk of the company, and include financial variables only. The rate is a function of: the return on equity, the retention ratio, the asset turnover, the profit margin on sales, and the financial leverage of a company” (Soppe, 2009).

Sustainability in traditional finance only focused on the shareholders’ wealth, so sustainability is defined in terms of a stable operational policy and a stable financial leverage for shareholders. However, the current sustainable finance focuses not only on shareholders, but also on stakeholders.

The research of Soppe (2004) defines sustainable corporate finance as “a multi-attribute approach to finance the company in such a way that all the company’s financial,

social and environmental elements are interrelated and integrated”. In his essay, an alternative financial policy is suggested by illustrating four criteria that differentiate sustainable corporate finance from the traditional and behavioral finance: a) the consisting elements of the ‘theory of the firm’, b) the assumed behavior of the economic agents, c) the discussion on the ownership of the firm, and d) the ethical framework of the company (Soppe, 2004).

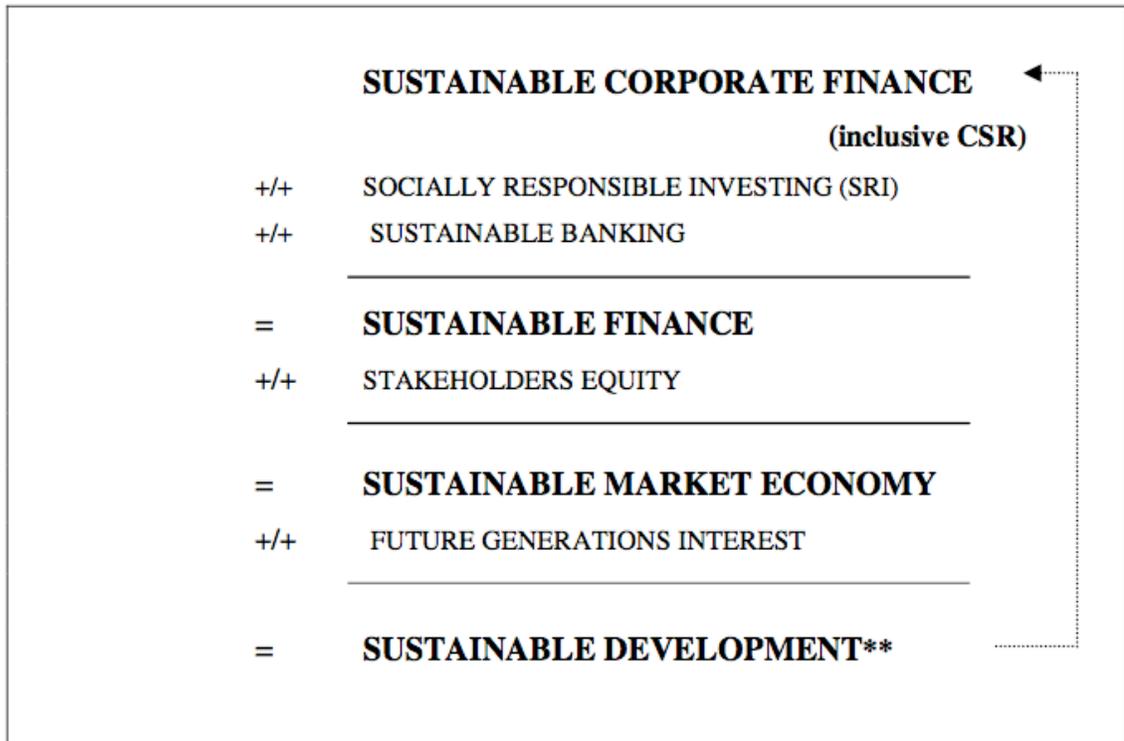
**Figure 1: Building Blocks of Sustainable Corporate Finance**

		<b>TRADITIONAL</b>	<b>BEHAVIOURAL</b>	<b>SUSTAINABLE</b>
<b>Building block:</b>				
1)	'Theory of the firm'; the company as:	Black Box	Hierarchic set of rules	Multi-attribute optimiser (Profit & People & Planet)
2)	Human nature actors	Selfish	Selfish and/or cooperative	Cooperative/trust
3)	Ownership paradigm	Shareholders	Shareholders	'Portfolio' of stakeholders
4)	Ethical Framework	Utilitarian	Duty ethical/ rule based	Virtue-ethical/ integrative

Source: Soppe (2004), p. 220.

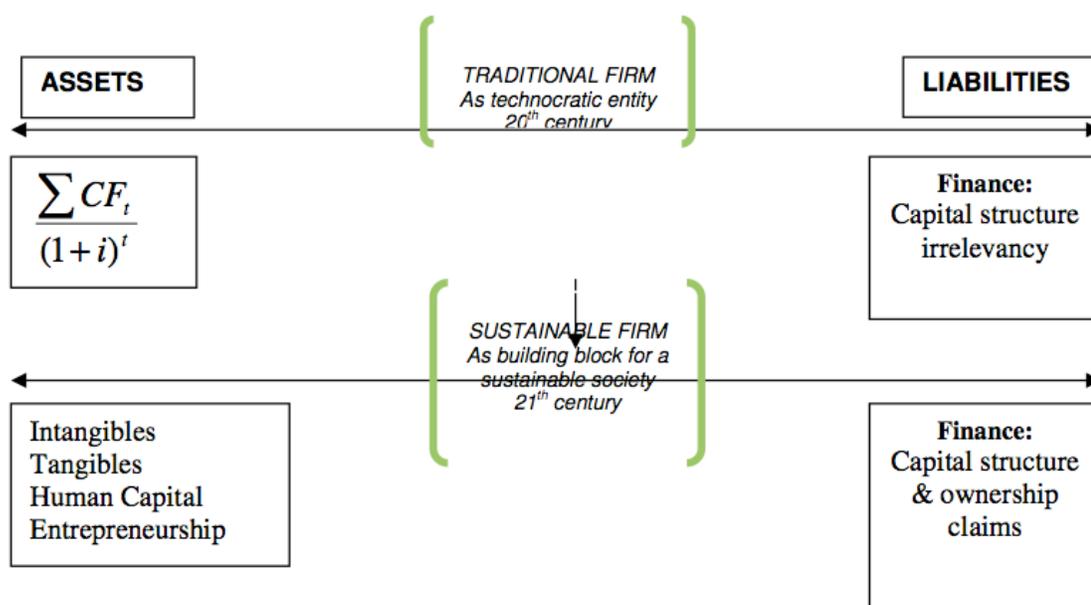
Socially responsible investments (SRI) and corporate social responsibility (CSR) are a foundation of sustainable finance. Sustainable finance encompasses SRI, CSR, sustainable corporate finance and sustainable banking. Thus, “sustainable finance deals with institutional policies, or systems of analysis, where all financial decisions aim at a long term integrated approach to optimize a firm’s social, environmental and financial mission statement. In sustainable finance, shareholders are expected to pay attention to the firm’s total performance that includes the social and environmental performance” (Soppe, 2009). Also, the role of stakeholders becomes crucial for sustainability.

**Figure 2: Summarizing the Sustainability Concepts**



\*\* In the figure above, the concept of sustainable development is positioned at the end of the aggregation. Nevertheless, it could just as well appear at the beginning. Sustainable development is a living concept, active in all levels of the terms portrayed.

**Figure 3: The Transition from Traditional Finance into Sustainable Finance**



Source: Soppe (2009)

### Importance of the Financial Sector to Sustainability

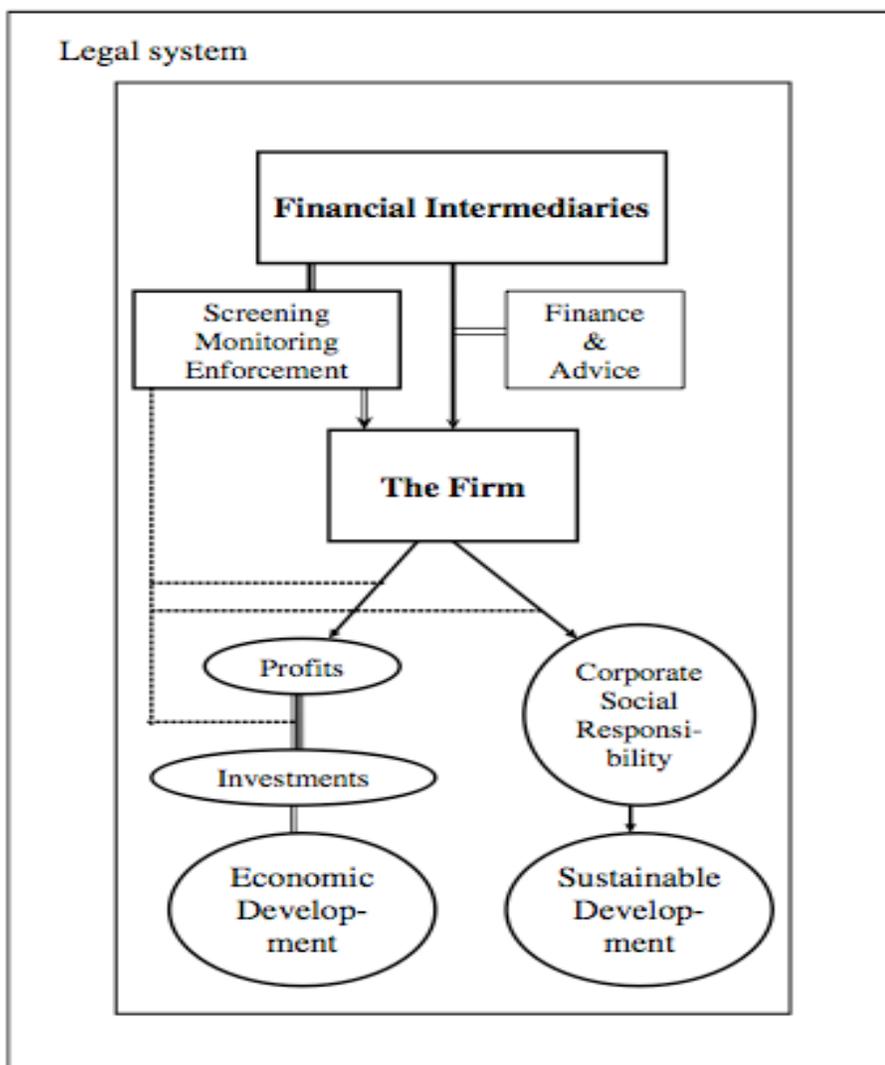
The financial sector is less interested in sustainable development compared to other sectors such as management and marketing, but financial institutions are considered as essential contributors to sustainability. The responsibility of the financial sector is derived from their ability to interact with other sectors and consumers and from their financing, investment and trading activities ("UNEP FI Guide to Banking & Sustainability" 14). Banco Galicia's 2010 Sustainability Report addresses that the financial sector is at the center of society, "being as it is at the core of all savings, investment and lending activities, ... As a result, financial institutions need to consider and define their objectives in the broader context of society, and as a member of the

community they service. Responsible finance further requires financial institutions to be keenly aware of the constant changes around them, so as to be able to meet societies expectations.”

The following framework shows the interaction between finance, the firm, and the economy (Figure 4).

**Figure 4: Cultural and Societal System**

**Cultural and Societal System**



Source: Schotens (2006)

“From a macro-perspective, financial intermediaries affect the marginal productivity of capital by granting funds to particular projects and not to others; the overall level of economic activity by providing and maintaining the payment system; and the costs of intermediation. From a micro-perspective, intermediaries offer risk management to consumer and business households; screen and monitor households; and exert governance” (Scholtens, 2006).

Since economic production has an impact on environmental performance, finance is linked to the sustainability of economic development and to CSR. The relations between finance and sustainability, or CSR, can be described as follows by the Environmental Kuznets Curve (EKC) and the public stock market. The EKC describes an inverse U-shape relationship between various indicators of environmental degradation and the per capita GDP. “The EKC proposes that indicators of environmental degradation first rises, and then fall with increasing income per capita” (Stern, 2004). However, the linkages are weak, and finance has a limited impact on the sustainability of economic performance. Thus, finance shows an indirect and intermediate character when it comes to CSR.

In relation to the stock market as a vehicle of CSR, shareholders activism and responsible investments use the stock of the firm with respect to shareholder rights and the cost of capital in order to guide the firm to sustainability. “However, shareholders have limited effect on CSR, because the amount of funding via the stock market is limited; governance mechanisms are poor; limited liability reduces the incentives to monitor non-financial performance; and share ownership is often widely dispersed. In

contrast, venture capitalists and banks provide the bulk of external finance to the firm.

With lending and venture financing, screening becomes crucial and financiers can affect sustainability more directly than via the public stock market” (Scholtens, 2006).

Therefore, the research concludes that venture capital and bank lending potentially have more impact on CSR than the equity market.

### **CFOs’ Views on Sustainability**

Many executives have emphasized the importance of sustainability in recent years, and they claim realization of the benefits of sustainable efforts. However, in most cases, the benefits are correlated to needs for increasing their brand image and reputation. The intangible benefits are difficult to quantify, so finance executives often face difficulties determining the benefits in the finance aspect. According to a report from CFO Research Services (2008), companies have changed or will change their business strategies due to the pressure from consumers, government leaders, employees, investors, media, and NGOs.

When companies carry forward sustainability projects, finance executives face various obstacles. The following is a list of barriers from the report of CFO Research Services (2008).

- Inability to measure the effect of sustainability initiatives on shareholder value/invertor returns
- Inability to document the effect of environmental factors on financial performance

- Lack of standardized decision-making frameworks that take environmental factors into account
- Inability to make a traditional business case for sustainable practices
- Lack of tools and systems to accurately account for sustainable business practices
- Lack of investor interest in the environmental impact of decisions
- Inability to extract useful, relevant information from IT systems to support decision making
- Difficulty in coordinating work/gathering information across disparate business functions
- Organizational resistance to incorporating sustainability factors in decision making

## **Chapter 3**

### **Sustainability Valuation**

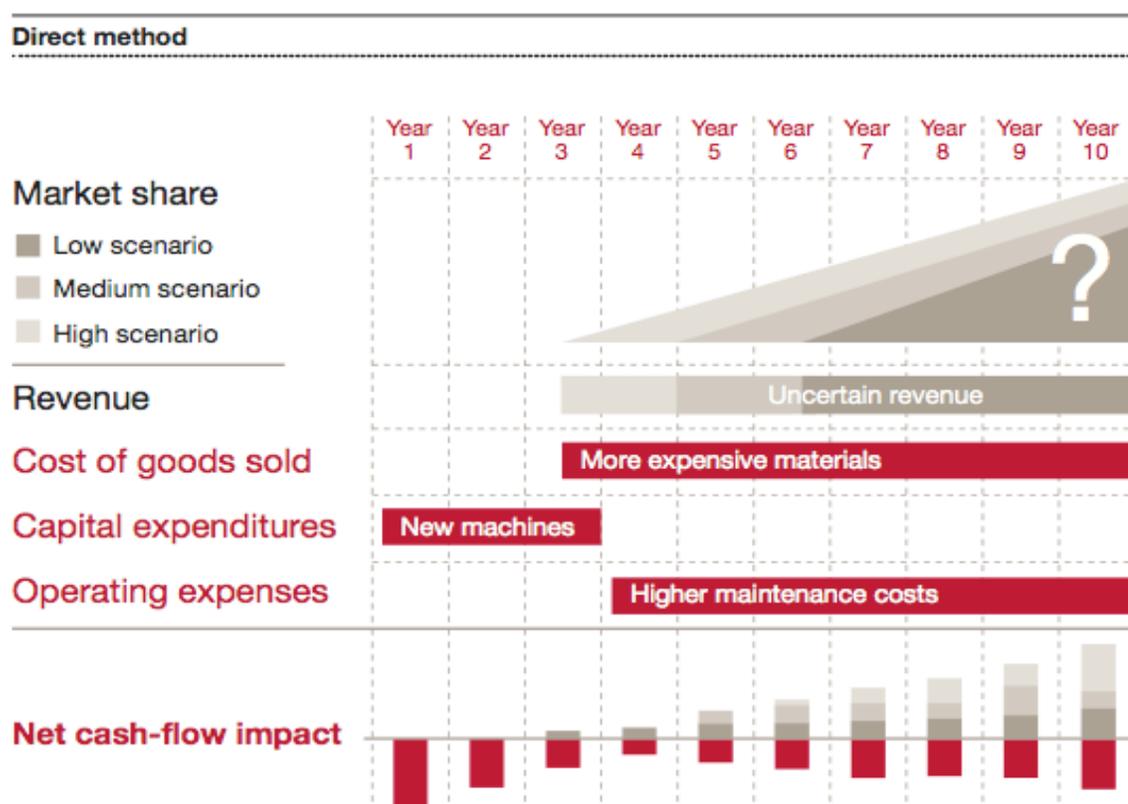
Many companies have carried forward proactive sustainability projects, but some people are still skeptical about the benefits of sustainability projects. Do markets actually respond to sustainability efforts? A research discloses that share price declines when companies voluntarily reduce emissions, but it goes up when companies announce donations to environmental causes (Came, 2011). From this point of view, the markets disregard the sustainability efforts and/or announcements, such as eco-friendly products and LEED certification. The changes in stock prices differ from firm to firm.

Calculating the financial value of sustainability is one of the biggest obstacles for organizations. I initially assumed that the Net Present Value was used to quantify the financial implications. “Traditionally, quantitative value is determined at the project level through a business case demonstrating ROI and the NPV” (“Sustainability: Show Me the Value”). However, this approach is often difficult to apply to sustainability programs. “First, financial management tool, such as a discounted cash flow analysis, are not typically part of the sustainability department’s toolkit. Second, existing investment analysis tools focus on the forward-looking perspective of costs and benefits for planning purposes.” (“Sustainability: Show Me the Value”). So, which types of financial metrics do companies use?

DCF, earnings multiples models, economic value added (EVA), or other traditional financial metrics are often used to measure shareholder value of a sustainable

project. However, “sustainability advocates claim that the shareholder value framework is inadequate because it narrowly focuses on financial performance, and fails to capture the soft benefits of sustainability. Some sustainability benefits cannot be measured on an immediate profit-and-loss basis, and some even appear to be pure cost” (Kieffel, 2012). If so, is the shareholder value framework flawed? Sustainability projects do create shareholder value, but it is tough to quantify the long-term and intangible value.

**Figure 5: Direct Method of the Value Framework**



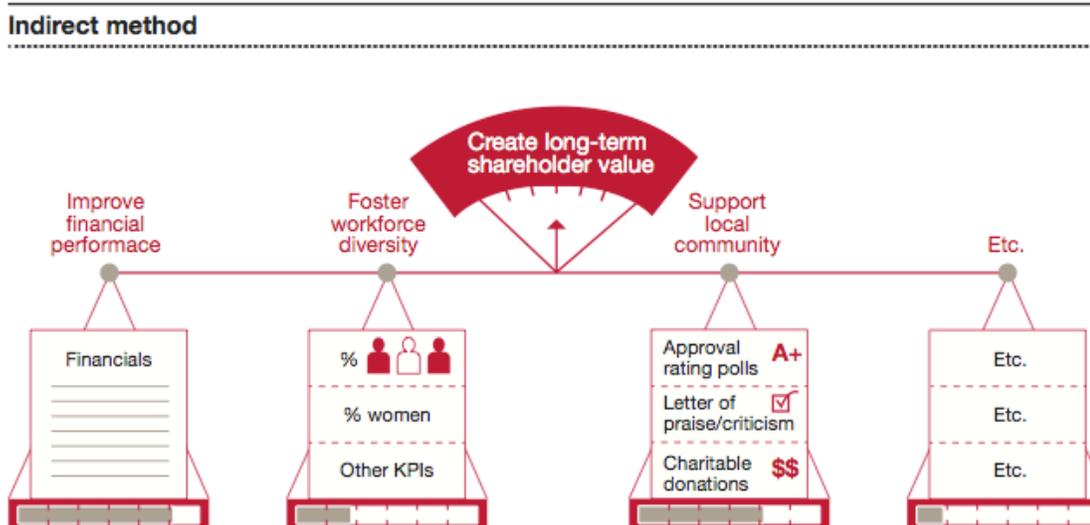
*In this example, investing in recyclable materials triggers immediate and on-going known costs (in red), but yields an uncertain uplift in future market share and, therefore, revenue (in grey). Quantifying multiple scenarios in probabilistic terms allows us to appropriately value this initiative.*

Source: Kieffel (2012)

Then, how can a firm measure benefits of sustainability projects? The research of Kieffel, suggests the expansion of the shareholder value framework to measure the benefits. The framework can be expanded in two ways: the direct method and the indirect method. In the direct method, the research forces the question of the P&L impact of sustainability initiatives. A sustainability project initially increases the on-going costs of good sold, however, the project might have a good impact on the business in the end. As their consumers become more conscious of sustainability, they are more likely to buy products that are sold by socially responsible firms, and it might lead to an increase of market share in the future. Figure 5 illustrates this graphically. Future financial benefits are uncertain, so it is better to use probabilistic than using point estimates. To find a balance, a firm has to acknowledge long-term benefits, and it also has to quantify the risks and uncertainties of the benefits.

“Sustainability projects increase employee satisfaction and productivity, and improve retention. However, companies may not use the direct method, because they cannot explicitly model retention rates and the impact of employee satisfaction on productivity metrics. In that case, the indirect method is more suitable. It also recognizes that the initiatives create shareholder value, but does not directly connect them to the P&L. The intangible benefits are monetized by multi-attribute utility analysis (MUA), which is a rigorous, well documented, academically sound, and customer-proven methodology.” (Kieffel, 2012).

**Figure 6: Indirect Method of the Value Framework**



*Instead of attempting to quantify benefits directly in cash-flow terms, the indirect method purports to measure the impact of sustainability initiatives against specific performance measures for each objective. Trade-off models can then be used to obtain a total impact in dollar terms.*

Source: Kieffel (2012)

According to Kieffel (2012), a firm has to pick the appropriate valuation method depending on its goals, culture, comfort level with assessing probabilistic outcomes, the nature of the initiatives to be valued, and the regulatory and institutional constraints. The following is a list of the benefits of sustainability valuation:

- Organizations will be able to value sustainability initiatives objectively;
- Understand and quantify shareholder value created;
- Compare all initiatives on an equal footing;
- Prioritize them;
- Identify gaps in the portfolio composition;
- Better communicate sustainability strategy to Wall Street

## **Chapter 4**

### **Implementations of Sustainability**

#### **LEED Certification**

One of the common efforts of sustainability is building LEED, or Leadership in Energy & Environmental Design, certified facilities to save energy. In order to get certified, developments must meet the green-building standard of the U.S. Green Building Council. “Building projects should satisfy prerequisites and earn points to achieve different levels of certification. Prerequisites and credits differ for each rating system, and teams choose the best fit for their project. Each rating system groups requirements that address the unique needs of building and project types on their path towards LEED certification. Once a project team chooses a rating system, they will use the appropriate credits to guide design and operational decisions. Within each of the credit categories, there are specific prerequisites projects must satisfy and a variety of credits projects can pursue to earn points. The number of points the project earns determines its level of LEED certification. There are four levels of certification: platinum, gold, silver, and certified. The number of points a project earns determines the level of LEED certification that the project will receive” (“LEED”).

## Consulting Firms

According to a report from Verdantix, which is an independent analyst firm, CH2M Hill, Deloitte, Ernst & Young, ERM, KPMG, McKinsey, PE International and PwC are the leading sustainability consulting firms. Green Quadrant Sustainability Consulting (US) 2013 provides a detailed comparison of the sustainability consulting capabilities of 16 consulting in the US Market, and the following list is the key discoveries of the report:

- Deloitte, McKinsey and PwC lead in sustainability strategy consulting.
- CH2M Hill leads in innovation.
- Deloitte and ICF International lead in reporting and communications efforts.
- Ernst & Young, KPMG and McKinsey offer the strongest sustainability risk assessment services.
- BSR, CH2M Hill and ERM lead the US market in stakeholder and community engagement.
- AT Kearney, CH2M Hill, PE International and PwC have the most compelling capabilities for responsible supply chain and product life-cycle assessment advisory.
- McKinsey continues to lead the market on energy and carbon strategy.
- CH2M Hill and McKinsey offer the deepest expertise for water strategy advisory.

“All of the Big Four accounting firms have sustainability practices. I would say that there are some similarities and some differences in services. For example, some may specialize more in the area of risk, others innovation, etc. All of the Big Four have been

recruiting staff for their sustainability practice areas. The analyst firms cover the sustainability market and the service providers. They provide information such as what company needs are (market drivers), what they value in a service provider. Some have attempted to value the size of the market for sustainability services as well. The combination of client needs and the value of the market for services have been strong incentives for the Big Four to enter into and/or increase presence in this market” (Monvignier, 2014).

### *Deloitte*

Deloitte cooperated with a major aluminum firm and International Finance Corporation (IFC) and developed a sustainability planning and financial valuation tool, which allows the firm to measure the value of sustainability projects. Extractive industries saw the significant value of sustainability investments, which consists of direct value creation and/or indirect value protection. The tool is designed for extractive industries and industries that manage large capital projects and significant sustainability-related risks (“Sustainability: Show Me the Value”). Deloitte came up with a new measurement, and it is a good example of financial metrics.

### **Meat Processing**

#### *Smithfield Foods*

Smithfield Foods, Inc. is one of the largest pork producers in the United States, and sustainability is an essential part of their business. The company had been criticized

for industrial pollution and animal maltreatment, so they needed a change to remold their public image. Smithfield Foods hired Dennis Treacy as Executive Vice President and Chief Sustainability Officer, and they have developed and implemented sustainability programs. The company focuses on value creation, which applies to their stakeholders as well as financial performance, and they also place emphasis on environmental compliance, animal care, employee welfare, food safety, and helping communities.

Mr. Treacy said the company has significantly improved public image, and it led to higher profits and increased employee morale (Treacy, 2013). In 2013, sales were \$13.2 billion with net income at \$183.8 million, and the pork segment created its second biggest operating profit in company history. The company has adopted a set of goals and sustainability targets for its independent operating companies (IOCs) that exceed regulatory guidelines. Below are some examples of the achievements of fiscal year 2013 (Pope, 2013), and Appendix B shows the data of its final projects costs savings in 2013, which was received from Dennis Treacy.

- Animal Care: 100% Pork Quality Assurance Plus (PQA Plus) compliant farms and suppliers, 100% USDA Process Verified Program (PVP) certified pig farms, 100% of facilities manage animal handling based on American Meat Institute guidelines, 100% Transport Quality Assurance (TQA) certified drivers
- Employees: more than 50% of locations beat industry and national average for injuries, 100% safety leadership training, Safety Roundtable meetings
- Environment: 14% decreased water usage, 4% decreased energy usage, 14% decreased greenhouse gas emissions, 20% decreased solid waste, a zero-waste-to-landfill facility, packaging reduction

- Food Safety & Quality: 100% Global Food Safety Initiative (GFSI) certified facilities, 100% IOCs assessed nutritional issues, 95% of facilities has no recalls
- Helping Communities: donated 8.4 million servings of food, sponsored local community cleanup event, participated in World Water Monitoring Challenge
- Value Creation: more than 100 new branded products launched, increased packaged meats sales, saved on \$15.4 million in operating costs through environmental improvement projects, boosted production of lower-input sorghum

## **Consumer Products**

### *Nestlé Waters North America*

“Nestlé Waters North America (NWNA) is the largest bottled water and third-largest nonalcoholic beverage company in North America by volume. NWNA was the first beverage manufacturer in the country to build a plant certified by the U.S. Green Building Council for Leadership in Environmental Efficiency and Design (LEED). Today, they have 10 LEED-certified facilities, encompassing 3.7 million efficient square feet” (“2012 Creating Shared Value Report”).

Nestlé has actively engaged in sustainability projects. They reduced water per unit produced by 3.2 percent from 2008 to 2012, and they use 1.35 gallons of water to produce 1 gallon of water, which is significantly less than soda (2 gallons) and beer (4 gallons) productions. They are involved with water education and water-related programs to conserve water resources for the future generations. In addition, they reduced carbon

intensity by nearly 20 percent, and they continuously try to lightweight their bottles, reduce packaging, and improve recycling. For example, they have reduced the PET plastic content of half-liter water bottles by 60 percent and saved more than 3 billion pounds of plastic (“2012 Creating Shared Value Report”).

Kim Jeffery, the former CEO and Chairman of Nestlé Waters North America, said it is not difficult to measure the benefits of their sustainability projects, because their business and preserving natural resources are strongly correlated. It is in contrast to other companies that have sustainability projects. He also said that sustainability efforts have a good effect on the shareholders, since it helps save money (Jeffery, 2014).

## Chapter 5

### The Dow Jones Sustainability Index

“The Dow Jones Sustainability World Index was launched in 1999 as the first global sustainability benchmark. The DJSI family is offered cooperatively by RobecoSAM Indices and S&P Dow Jones Indices. The family tracks the stock performance of the world's leading companies in terms of economic, environmental and social criteria. The indices serve as benchmarks for investors who integrate sustainability considerations into their portfolios, and provide an effective engagement platform for companies who want to adopt sustainable best practices” (“DJSI Family Overview”).

The DJSI family consists of global, regional, and country benchmarks: DJSI World, DJSI Asia Pacific, DJSI Emerging Markets, DJSI Europe, DJSI North America, DJSI Australia, DJSI Korea, and DJSI World Enlarged.

How influential is the Dow Jones Sustainability World Index (DJSWI) in the market? The impact of the DJSWI on the US stock markets was analyzed by measuring stock returns, risks and liquidity (Cheung, 2010). “The paper could not find strong evidence that the event announcement has a significant impact on the stock returns, however, there are some temporary impacts on the day of change or on the days nearby. The index inclusion stocks experience an increase in stock returns, and trading volume is lower temporarily after the announcement. Systematic risk changes not much after the announcement, and idiosyncratic risk depicts the opposite” (Cheung, 2010). The paper

concludes there is some indication that US investors value sustainability, but they do in a temporary way.

## **Chapter 6**

### **Conclusion**

There has been a growing interest in sustainability, and this thesis highlights the importance of sustainable finance. It explores the concept of traditional, behavioral and sustainable finance. Sustainable finance is defined as “a multi-attribute approach to finance the company in such a way that all the company’s financial, social and environmental elements are interrelated and integrated”. Even though the financial sector has a great impact on sustainability projects, the sector has responded slowly to sustainability compared to other sectors. This thesis illustrates the impact of the sector on sustainability.

This thesis also presents valuation of sustainability. For sustainable projects, conducting the traditional valuation analysis such as discounted-cash-flow (DCF) is not enough to grasp the true values of the projects, and firms need to develop financial metrics that are suitable for characteristic of the industries and projects. The framework can be expanded in two ways: the direct method and the indirect method. If a firm cannot or does not want to use the direct valuation method, the indirect method is used to measure the benefits of sustainability projects.

The importance of sustainability has been recognized in various industries, and firms have had sustainability projects for certain goals. As part of the sustainability efforts, LEED certification is explained. Companies value sustainability for different reasons based on their interests. Some firms are simply concerned about sustainability

issues and try to do the right thing, and some firms are forced to have sustainability projects due to a negative public image.

Lastly, the Dow Jones Sustainability Index and its impact on the US stock markets are illustrated. US investors appear to value sustainability, but only temporarily.

## Appendices

### Appendix A: Finance and Sustainable Development

TABLE I  
Finance and sustainable development (in part derived from: Financing the Future, 2005)

Functions (1)	Business (2)	Social and environmental problems (3)	Innovations (4)
Pricing and monitoring: information production	Asset management Stock selection Corporate governance Investment banking Research Trading Commercial banking Credit Leasing Investment banking	Equity or debt prices not reflecting sustainability performance Ownership not being exercised to promote sustainable asset use Sustainability risks not integrated	Measurement of corporate performance and impact on value and risk Shareholder engagement Create market in unpriced assets
Asset transformation: financing	Project finance New issues Private equity Insurance Reinsurance Non-life Investment banking	Access to finance difficulties for innovative projects and for the poor	Assess + integrate these risks in credit risk assessment Include sustainability impact in financing Listing requirements Set up specialized investment funds
Risk management	Derivatives	Lack of experience of risks and therefore of cover for key new technologies Threat to reinsurers and lack of cover because of climate change Contaminated-land brownfield development hindered by unforeseen liabilities and clean-up costs overruns	Specialist underwriting capacity Encourage mitigation and adaptation Transfer weather risk to capital markets through new derivatives
Payment services	Commercial banking Credit card payments Netting Electronic fund transfer Investment banking Clearing Settlement		Cost-cap, liability and other insurance instruments to mitigate risks and brownfield facilitation

## Appendix B: Final Projects Costs Savings in 2013 of Smithfield Foods

FY 2013 Costs and Savings Summary for All Categories Except "Innovative Solution to a Compliance Issue" & "Community Outreach"							
	Cost (\$)	Savings (\$)	Water (gals)	Natural Gas (dth)	Electricity (kWh)	Fuel oil (gals)	Solid Waste (lbs)
Category Totals	\$ 8,358,192	\$ 15,350,125	592,289,610	211,723	11,828,522	720,811	30,370,984
Payback per \$ 1.00 spent → \$ 1.84							

FY 2013 Wastewater Handling and Treatment							
	Cost (\$)	Savings (\$)	Water (gals)	Natural Gas (dth)	Electricity (kWh)	Fuel oil (gals)	Solid Waste (lbs)
Category Totals	\$ 526,885	\$ 537,391	25,966,628	-	105,300	-	-
Payback per \$ 1.00 spent → \$ 1.02							

FY 2013 Environmental Training and/or ISO 14001							
	Cost (\$)	Savings (\$)	Water (gals)	Natural Gas (dth)	Electricity (kWh)	Fuel oil (gals)	Solid Waste (lbs)
Category Totals	\$ 1,500	-	-	-	-	-	-
Payback per \$ 1.00 spent → \$ 0.00							

FY 2013 Resource Conservation – Waste Reduction							
	Cost (\$)	Savings (\$)	Water (gals)	Natural Gas (dth)	Electricity (kWh)	Fuel oil (gals)	Solid Waste (lbs)
Category Totals	\$ 6,821,523	\$ 10,956,017	549,434,094	209,637	9,604,005	700,455	29,210,325
Payback per \$ 1.00 spent → \$ 1.61							

FY 2013 Packaging Reduction							
	Cost (\$)	Savings (\$)	Water (gals)	Natural Gas (dth)	Electricity (kWh)	Fuel oil (gals)	Solid Waste (lbs)
Category Totals	\$ 629,175	\$ 2,886,560	-	-	-	20,356	1,160,659
Payback per \$ 1.00 spent → \$ 4.59							

FY 2013 Best Recycling of a Previous Years Project							
	Cost (\$)	Savings (\$)	Water (gals)	Natural Gas (dth)	Electricity (kWh)	Fuel oil (gals)	Solid Waste (lbs)
Category Totals	\$ 379,109	\$ 970,158	16,888,888	2,086	2,119,217	-	-
Payback per \$ 1.00 spent → \$ 2.56							

FY 2013 Community Outreach							
	Cost (\$)	Savings (\$)	Water (gals)	Natural Gas (dth)	Electricity (kWh)	Fuel oil (gals)	Solid Waste (lbs)
Category Totals	\$ 83,808	3,550	-	-	-	-	-
Payback per \$ 1.00 spent → \$ 0.04							

FY 2013 Innovative Solution to a Compliance Issue							
	Cost (\$)	Savings (\$)	Water (gals)	Natural Gas (dth)	Electricity (kWh)	Fuel oil (gals)	Solid Waste (lbs)
Category Totals	\$ 1,506,476	\$ 976,356	8,313,059	14,635	-	-	3,735,204
Payback per \$ 1.00 spent → \$ 0.65							

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# ACADEMIC VITA

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### EDUCATION

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<b>University Park, PA</b> Class of 2014	<b>The Pennsylvania State University, Schreyer Honors College</b> <i>Smeal College of Business</i> Bachelor of Science in Finance Focus in Economics, Sustainability, and French Dean's List all semesters <i>The Penn State Investment Association</i>
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### PROFESSIONAL EXPERIENCE

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<b>New York, NY</b> July, 2013 – Present	<b>Whitehouse Law, PLLC &amp; Avuá Cachaça</b> <i>Intern</i> <ul style="list-style-type: none"><li>Assisted in the company's legal services for non-US entrepreneurs entering the US market and conducted competitive analyses to determine feasibility</li><li>Prospected potential candidates for funding by using venture capital lists</li><li>Conducted market research for the soft launch of Avuá in a new market</li><li>Hosted interviews to identify key distributors, accounts, and influencers in the target market</li></ul>
<b>Busan, Korea</b> September, 2010	<b>JongSeop Company</b> <ul style="list-style-type: none"><li>Hired initially as a part-time employee and received full-time job offer</li><li>Supported advertising initiatives, marketing and sales initiatives: developed competitive intelligence for online advertisement landscape</li><li>Served as interpreter and translator for English based meetings and documents</li></ul>

### LEADERSHIP/EXTRACURRICULAR ACTIVITIES

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<b>State College, PA</b> Jan, 2013 – Present	<b>PSU Net Impact (Undergraduate Chapter)</b> <i>Co-Founder and Co-VP of Finance Committee</i> Our mission is to help faculty, staff and students learn and apply sustainability principles
<b>Busan, Korea</b> May – July, 2012	<b>L'Alliance Française</b> French Courses taught by a native speaker
<b>Busan, Korea</b> May – July, 2012	<b>燕京中国语学院 (Yeon Kyung Chinese Language Institute)</b> Chinese Courses taught by a native speaker
<b>Erie, PA</b> Oct. 24-28, 2011	<b>Penn State Behrend</b> <ul style="list-style-type: none"><li>Participated in the Annual Cardboard City Fund-raiser: raised and donated funds for the Second Harvest Food Bank of Northwestern Pennsylvania</li><li>Stayed in a cardboard home for 24 hours to raise awareness on hunger and homelessness</li></ul>
<b>Phnom Penh, Cambodia</b> June, 2011	<b>Volunteer Work in Cambodia</b> Taught English and Korean to children

### PERSONAL SKILLS & INTEREST

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<b>Languages</b>	<b>Korean:</b> Native, <b>English:</b> Fluent, <b>Chinese &amp; French:</b> Advanced, and <b>Japanese:</b> Intermediate
<b>Computer</b>	<b>Certifications:</b> DELF (Diplôme d'Etudes en Langue Française) A2: 87/100 FactSet, Bloomberg, and Microsoft Office (Word, Excel, and PowerPoint)
<b>Time Abroad &amp; Traveling</b>	<ul style="list-style-type: none"><li>Lived in <b>France</b> several months, stayed in <b>Japan</b> and in <b>New Zealand</b> for a few weeks</li><li>Traveled the <b>US</b>, the <b>UK</b>, <b>Switzerland</b>, <b>Italy</b>, <b>Vietnam</b>, and <b>Cambodia</b></li></ul>
<b>Interests</b>	Foreign Cultures & Languages, Traveling, Painting & Arts, and Fashion