

# **Corporate social responsibility and transboundary flows of virtual water: Bringing multinational food companies into a political economic discussion of water security**

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## **Abstract**

This dissertation investigates the extent to which multinational food companies use the concept of virtual water in their corporate social responsibility framework to promote water security through the international food trade. It engages in a comparative analysis of three multinational food companies - Nestlé, Bunge, and Cargill – that have different corporate structures and operate at different places in the agricultural commodity value chain. The findings of this study suggest that multinational food companies could act as leaders in multi-stakeholder initiatives to devise methods of managing the agricultural commodity value chain to promote global water security.

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## List of Abbreviations

ABCD	Archer Daniel Midlands, Bunge, Cargill, Louis Dreyfus
CSR	Corporate Social Responsibility
CSV	Creating Shared Value
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
NGO	Non-Governmental Organization
RSPO	Roundtable on Sustainable Palm Oil
RTRS	Roundtable on Responsible Soy
SAI	Sustainable Agriculture Initiative
WBCSD	World Business Council on Sustainable Development
WGWA	Working Group on Water and Agriculture
WWF	World Wildlife Fund

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## Introduction

### Context

This dissertation analyses the extent to which multinational food companies use corporate social responsibility (CSR) to promote global water security. It builds on the work of Suvi Sojamo (2010), who identified the role of transnational agribusiness corporations in global water security through demonstrating the volume of virtual water flows controlled by the “ABCD” businesses.<sup>1</sup> It brings together literature of corporate social responsibility and political and economic water management to conduct a comparative analysis of multinational food companies along the food supply chain (aka value chain). This dissertation provides a thick description of the influence of stakeholder groups on water management CSR practices in the case study companies. It demonstrates that those multinational companies that have a greater degree of interaction with stakeholders also have a developed understanding of how water security affects their value chain and have in place more sophisticated policies for managing water through CSR.

The theme for UN World Water Day 2012 is “Water and Food Security”. In a session at the 2011 World Water Week in Stockholm to discuss the 2012 theme, Alexander Miller of the Food and Agriculture Organization highlighted close relationship between water and food security. He emphasized that all solutions to promote water and food security must pass through agriculture. Agriculture is the largest and fastest growing user of freshwater in the world (Hoekstra and Chapagain, 2008). Agriculture also has the greatest potential to mitigate the effects of climate change on water security, as a great majority of water used can be saved by growing “the right things in the right places” (Grantham, 2011). Virtual water expresses this idea by linking water, food, and trade. It provides an analytical perspective on how economies achieve water security through importing water-intensive crops (Allan, 2003). International trade in agricultural commodities implies long-distances transfers of water embedded in the commodity crops (Hoekstra and Chapagain, 2008), therefore contributing to global water security through a political-economic market mechanism that is highly adaptable to change in demand.

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<sup>1</sup> ADM, Bunge, Cargill and Dreyfus.

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The vast volumes of water that are transported through the agricultural commodity trade are controlled almost entirely by private companies (Allan, 2011). Sojamo (2010) identified the four largest agricultural commodity trading companies, or “ABCD”, as being major actors in the global flows of virtual water. Along with the ABCD companies, major brand-name food companies have the potential to influence market behaviour in the value chain (Allan, 2011). Public sector regulation has been shown to have limited influence on sustainable intensification of agricultural production (Allan, 2011). This has led to a focus on the role of the corporations in the privately held food value chain as leaders in innovative management of water and virtual water to promote global water and food security.

There is a need to better understand how and why multinational enterprises engage in water management practices. This dissertation uses the lens of CSR to explore the extent to which three multinational food companies manage virtual water. This practice is used to focus the scope of the research, as the general role of private companies in food and water security is too broad to be meaningfully explored within the limits of this dissertation. In addition, it allows the study to use CSR theories to interpret the decision making process of companies that are presenting their water management practices in the language of corporate responsibility or sustainability.

This dissertation is exploratory for two reasons. First, the study of CSR practices of multinational enterprises is an emerging field (Rodriguez *et al*, 2006) and therefore an analytical base to compare the companies included in this study must be built in the course of the research. Second, “ABCD” corporations have only recently begun to release information about their water management strategies and have become more open to engaging with academia on the issue of virtual water. A lack of independent information on multinational food companies’ CSR and water policies makes researching them a challenge. However, it is important to investigate how they understand and assume their role in global water and food security. Sojamo (2010) began this effort by highlighting the “ABCD” companies’ non-intentional forms of power in the flows of virtual water through the food value chain. This study continues that line of research by exploring how multinational food companies use their power through CSR and what factors influence their policies.

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## Structure

The structure of this study is as follows: First, it engages in a review of literature on CSR and political economic water management in order to build an analytical framework in which to compare the case studies. Next, the methodology used to research and analyse the case studies is explained and the research question is posed. Then the three case studies of Nestlé, Bunge, and Cargill are presented. The case studies are then comparatively analysed in order to examine the ways in which stakeholders influence food companies CSR policies and to discern the power that these food companies have to enact change in their supply chains. Finally, the dissertation reaches a conclusion that summarizes the lessons learned about the extent to which multinational food companies use CSR to promote water security and avenues for future research will be proposed.

## Literature review: Corporate Social Responsibility and Creating Shared Value

In order to assess the extent to which food companies use the concept of virtual water in their CSR framework, it is important first to understand the development of CSR ideas. This chapter will cover three topics in order to lay the theoretical groundwork for the case studies and case study analysis that will come in the subsequent chapters. First, the theory and evolution of CSR will be explored and mapped. CSR encompasses many issues, including labour justice, human rights, product safety, and environmental sustainability. This section will provide a high-level overview of the field, and attempt to map different concepts in CSR as there is no strong consensus on a definition of CSR (Rodriguez *et al*, 2006). For the purposes of this essay, the focus will remain on environmental sustainability and responsible resource use in supply chains. Next, there will be a brief overview of the concept of virtual water and water footprinting. Finally, the possible role of virtual water in multinational agribusiness CSR will be explained, and a gap in the literature that this thesis fills will be identified.

## From CSR to CSV

It is difficult to pinpoint when the idea of CSR emerged, but the first writings on the concept appeared in the 1930's and 1940's in the United States. Significant references from

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this period include J.M. Clark's (1939) *Social Control of Business*, Chester Barnard's (1938) *The Functions of the Executive*, and Theodore Kreps' (1940) *Measurement of Social Performance of Business*. The modern era of thinking about social responsibility began with Howard R. Bowen's (1953) work *Social Responsibilities of the Businessman*. For the next thirty years, many scholars developed definitions of social responsibility in business, and from this process emerged the concept of corporate social responsibility (CSR). Significant definitions of CSR throughout this period are presented in chronological order in Table 1.

**Table 1. Significant definitions in the development of CSR (source of quotations: Carroll, 1999)**

Year	Author	Definition
1953	Bowen	"...the obligations of businessmen to pursue those policies, to make those decisions, or to follow those lines of actions which are desirable in terms of the objectives and values of our society."
1960	Davis	"...businessmen's decisions and actions taken for reasons at least partially beyond the firm's direct economic or technical interest."
1960	Frederick	"Social responsibility in the final analysis implies a public posture toward society's economic and human resources and a willingness to see that those resources are used for broad social ends and not simply for the narrowly circumscribed interests of private persons and firms."
1962	Freidman	"the social responsibility of business is to increase its profits"
1963	McGuire	"The idea of social responsibilities supposes that the corporation has not only economic and legal obligations but also certain responsibilities to society which extend beyond these obligations."
1967	Davis	"The substance of social responsibility arises from the concern for the ethical consequences of one's acts as they many affect the interests of others"
1971	Johnson	"Social responsibility states that businesses carry out social programs to add profits to their organization."
1972	Manne	"To qualify as a socially responsible corporate action, a business expenditure or activity must be one for which the marginal returns to the corporation are less than the returns available from some alternative expenditure, must be purely voluntary, and must be actual corporate expenditure rather than a conduit for individual largesse."
1975	Backman	"Social responsibility usually refers to the objectives or motives that should be given weight by business in addition to those dealing with economic performance"
1976	Fitch	"CSR is defined as the serious attempt to solve social problems caused wholly or in part by the corporation."
1979	Carroll	"The social responsibility of business encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time."
1984	Drucker	"...the proper 'social responsibility' of business is to tame the dragon, that is to turn a social problem into economic opportunity and economic benefit, into productive capacity, into human competence, into well-paid jobs, and into wealth."

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It is possible to see the development of ideas about CSR throughout the period in which the idea was crystallizing. The concept emerged from the idea that businesses are centres of power and decision-making which touch the lives of people beyond their immediate reach. As such, Bowen began the modern era of literature by enquiring as to what responsibilities businesspeople have to society (Carroll, 1999). As the concept developed, definitions widened their scope of responsibility for the business and began to reach into the realm of a responsibility to stakeholders and society as a whole.

Marrewijk (2003) refers to three approaches to corporate responsibility, which are highlighted in Table 1. First, the shareholder approach sees the shareholder as the focal point of the company, and excludes socially responsible activities from the purpose of the organization (Marrewijk, 2003). This is best reflected in Milton Friedman's 1962 definition of CSR. Second, the stakeholder approach suggests that organizations are accountable to a multiplicity of stakeholders in addition to their own shareholders (Marrewijk, 2003). The stakeholder approach can be seen in Davis (1967) and Backman (1975) as they refer to the firm's objectives beyond economic performance. Third, the societal approach takes a broader view of CSR, and considers companies to be an integral part of society and therefore responsible to society as a whole (Marrewijk, 2003). This approach is widely represented in Table 1, as multiple authors refer to business's responsibility to society. The references range from discussing how business decisions should be made in accordance with the objectives and values of society (Bowen, 1953) to a responsibility to turn social problems into economic opportunities (Drucker, 1984).

There is no single definition of CSR. The lack of a single definition allows authors and businesses to define CSR in their own way, which can give them flexibility to tailor it to their purposes. However, without a solid definition of CSR it becomes difficult to foster an academic debate (Marrewijk, 2003). For the purpose of this research, CSR will be shown as a continuum of concepts.

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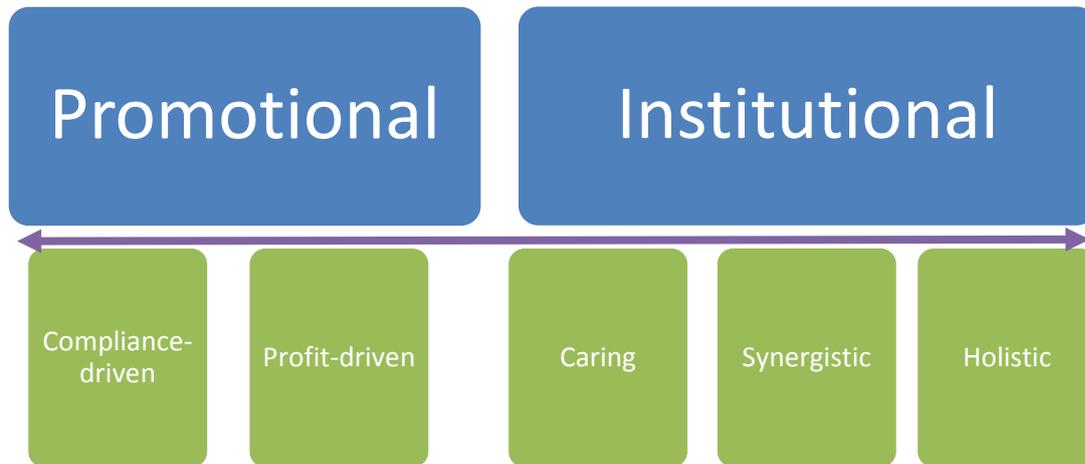


Figure 1. CSR concepts continuum (sources of concepts: Marrewijk, 2003; Pirsch et al, 2007)

Figure 1 illustrates the continuum of CSR concepts that will be used to evaluate CSR policies towards virtual water and water security in the food industry. This continuum uses two endpoints proposed by Pirsch *et al* (2007) of promotional and institutional CSR. Promotional CSR includes programs that lack a broad stakeholder approach, and instead have a shallow programme that meets the minimum requirements and could be used for marketing (Pirsch *et al*, 2007). This is a broad concept that includes two types of CSR proposed by Marrewijk (2003): Compliance-driven and profit-driven CSR. Compliance-driven programmes adhere to the regulations of social responsibility that are set out by the relevant authority, and are driven by the need to meet the firm's obligation to the regulator. Profit-driven CSR includes programmes that are designed solely to increase the profits of the firm through improving their image to stakeholders and customers (Marrewijk, 2003). These types of CSR are most compatible with the shareholder approach or a limited version of the stakeholder approach. On the other end of the spectrum, Institutional CSR programmes attempt to fulfil a company's social obligations to all of its stakeholders through actions across the organization. This type of CSR becomes integrated into the ethos of the business (Pirsch *et al*, 2007). Institutional CSR can be broken down further into a continuum of caring, synergistic, and holistic CSR. Caring CSR goes beyond regulatory compliance and profit considerations to balance social, economic, and ecological concerns. It is motivated by a sense that these issues are important beyond their value to the firm, and is similar to the stakeholder approach. Synergistic CSR is a search for a well-balanced approach to addressing

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social and ecological issues while creating value for the shareholders (Marrewijk, 2003). This represents a deeper integration of CSR into the way the company goes about its decisions and operations. The most institutionalized approach is the holistic approach, in which CSR is fully integrated and embedded into all aspects of the organization. Firms which engage in this type of CSR do so because they see themselves as mutually dependant on society, and CSR as the only way in which to fulfil their obligation to their shareholders and create value for all stakeholders (Marrewijk, 2003). Synergistic and holistic CSR are most similar to a societal approach.

In January 2011, Michael Porter and Mark Kramer published an article in the Harvard Business Review entitled “Creating Shared Value”. They define shared value as “policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities where it operates” (Porter & Kramer, 2011). Shared value takes its roots from what Porter and Kramer describe as the closely intertwined nature of businesses and the communities in which they work.



Figure 2. How shared value differs from CSR (Porter & Kramer, 2011)

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Figure 2 is used by Porter and Kramer to illustrate the differences between CSR and CSV. They view CSV as a new development in the field of CSR which embeds social and environmental concerns into the ethos of how the company does business. CSV recognizes that societal needs can define markets, and looks to economic opportunities in making sustainable improvements to the environment and communities in which businesses operate. It makes an important link between creating value for the firm while simultaneously building communities and improving resources (Porter & Kramer, 2011) while bringing CSR deeper into the core of the firm (Porter, 2011).

While the article frames the idea of CSV effectively and offers concrete steps for businesses to take – such as re-examining energy and resource use – the idea is not new. It is possible to see very similar ideas of linking shareholder value with value for society in other works. Hart and Milstein (2003) wrote about linking enterprise sustainability to the creation of shareholder value. Drucker (1984) also defined CSR as finding economic opportunity in solving social problems. Porter and Kramer have successfully re-defined and re-branded the idea of sustainable value into an idea that is attractive to the academy as well as businesses. The concept of CSV may not be completely original, but the clear and convincing explanation of the application of CSV through reconceiving products and markets, redefining productivity on the value chain, and enabling the development of local communities along with examples of CSV working for existing companies (Porter & Kramer, 2011) demonstrates the kind of impact that it could have on how businesses formulate their CSR plans.

The implementation of CSV has been critiqued through the way in which companies report their social or sustainability efforts. Michael Porter commented at the Nestlé Creating Shared Value forum (19<sup>th</sup> May, 2011) that companies report their financial results and social or environmental impacts using different metrics. He said “...business had been shy about connecting the social indicators to the financial indicators...on the measurement side the key to make this really happen is to start to have leading companies connect the dots and show the economic impact of social improvement...” (Porter, 2011). The issue of metrics used to demonstrate the impact of CSR programmes is important in the context of water and virtual water. It is difficult to envision how food companies create value by contributing to water

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security without an agreed metric. Indeed, this issue could be a barrier to companies formulating a meaningful CSV policy for managing virtual water.

### Why do firms engage in CSR?

As it is crucial to investigate how firms engage in CSR, it is equally important to explore why they do so. The CSR concepts continuum (Figure 1) offers some explanations for the firm's values behind engaging in socially responsible activities. However, it does not delve into the reasons why firms begin social responsibility programmes. The drivers of the sustainability policies of food companies will be explored in the case studies and analysis, therefore some theoretical groundwork must be laid in order to evaluate the drivers in the three cases.

Stakeholder theory presents a compelling argument behind why firms engage in socially responsible activities. This theory suggests that the success and survival of the organization depends on meeting both its economic and non-economic objectives by meeting the needs of the stakeholders in the company (Pirsch *et al*, 2007). Stakeholder groups include shareholders, investors, employees, customers, suppliers, and government entities or other public organizations which govern commerce (Clarkson, 1995). With the rise in importance of civil society, businesses have had to respond to the actions of civil society stakeholders such as NGOs, churches, or other civilian groups (Marrewijk, 2003). Firms are more likely to respond to stakeholder demands if the stakeholder in question is a resource that is valuable to the firm (Pirsch *et al*, 2007). Stakeholders with more power in their relationship to the firm are more likely to influence the company's CSR policy or focus.

The idea that stakeholders have influence over the firms' CSR policy is important to examine in the context of multinational food companies. By their nature, food and agribusiness companies have many stakeholders. Multinational enterprises operate in diverse environments with a multitude of stakeholder groups (Rodriguez *et al*, 2006). The three companies examined in this dissertation will be distinguished by their different positions against their stakeholder groups. Nestlé is a branded, publicly traded company which encounters civil society not only through their shareholders but also by being in the public eye as a brand. Bunge is a non-brand publicly traded commodity trader. As such, they are not as publicly prominent as Nestlé, but encounter stakeholder groups in their supply chains as

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well as their shareholders. Cargill is a non-brand, privately held commodity trader, which limits the number and type of stakeholder that they encounter in their business practice. The analysis of their CSR actions around water will consider the impact of the stakeholder groups for each company in the development of their policies.

A reason cited for engaging in CSR activities within agricultural value chains is the “business case” (Tallontire & Greenhalgh, 2005). The business case can be based on short term risk management, long-term sustainability, or increasing competitive advantage through building multi-stakeholder institutions (Swift & Zadek, 2002). The business case is compatible with stakeholder theory while giving agency to the agribusiness or food company. The actions taken in the name of the business case could be a result of a response to stakeholder engagement or demands, or could be the firm realizing in itself the possibilities of value that CSR policies bring to their operations. The analysis of the case studies will investigate the impact of stakeholders on the CSR and water management policies of the case study companies.

### **The role of virtual water in agribusiness**

The concept of virtual water has so far not been connected with corporate social responsibility or creating shared value in agribusiness. This section will introduce a link between the two concepts. First, there will be a brief explanation of virtual water and water footprinting as well as how they are used to describe the importance of international food trade to global water security. Then, the potential role of virtual water and water footprinting in CSV and CSR will be explained along with the importance of linking these concepts. Finally, a gap in the literature that this dissertation is seeking to fill will be identified.

The term “virtual water” was coined by Dr. J.A. Allan during a seminar at the School of Oriental and African Studies in 1993. It was used to describe the idea that agricultural products contain embedded water from the growth process (Allan, 2003). A water footprint is an indicator of consumptive water use (Hoekstra & Chapagain, 2008). This can include either green water, which is water that is contained in the soil profile, or blue water, which is fresh water that is used for irrigation. Virtual water links water, food, and trade by describing how international trade in agricultural commodities contributes to global food and water security. Water deficit economies import water intensive crops, thereby “saving” the water that would

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have been used in their own context to grow the same crops (Allan, 2003). This highlights the opportunity cost of water in evaluating options for crop production versus an international trade alternative (Wichelns, 2001). Figure 3 illustrates the major flows of virtual water through trade in agricultural commodities along with their associated water “savings”.

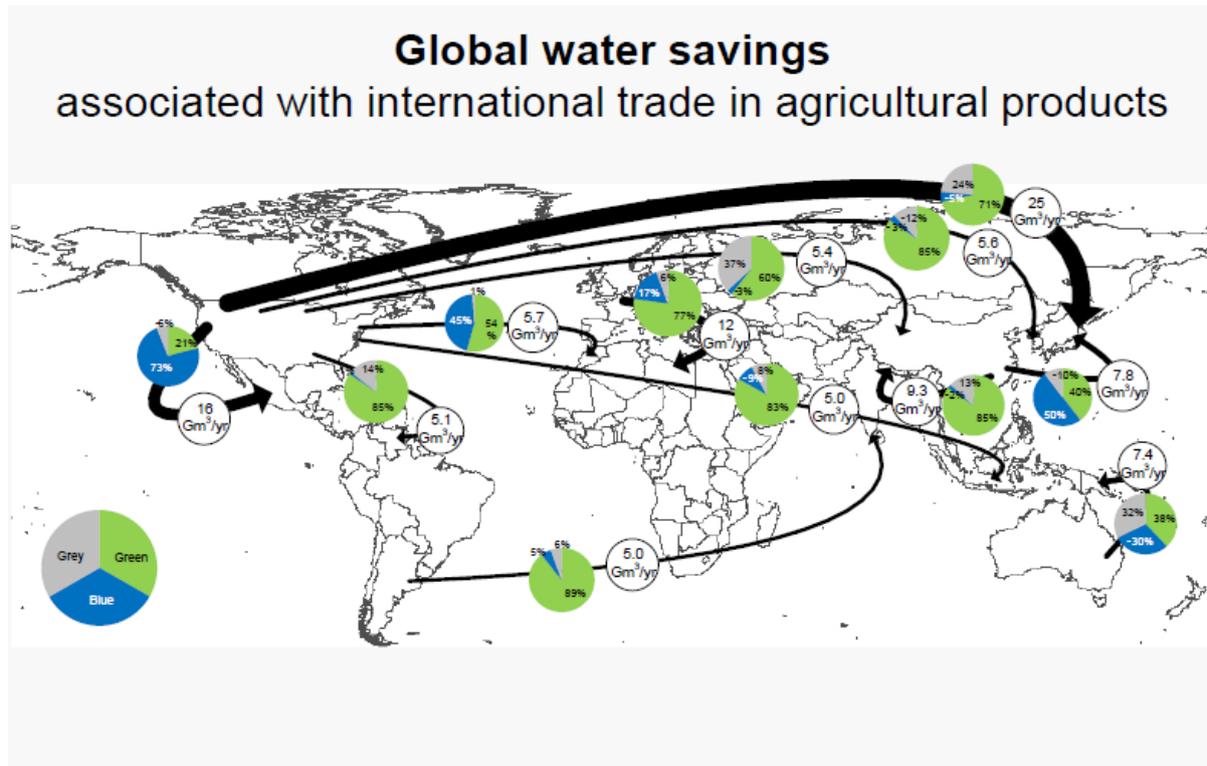


Figure 3. Global Water savings (Mekonnen & Hoekstra, 2011)

While the term “water savings” is used to explain the idea that importing food into a water scarce region will lead to that region using the water that could have been used to grow the imported crops on another endeavour, it is not accepted across the academy. Economists object to “water savings” and “virtual water” as misleading metaphors that could confuse trade analysis by equating food imports with water imports (Merrett, 2003). The debate on the validity of the terms is important to highlight, but beyond the scope of this analysis. “Virtual water” and “water savings” will be used in this analysis as metaphors to describe the sharing of embedded water through international trade in agricultural commodities.

Global commodity traders and food companies play a major role in global water savings by conveying virtual water through the commodity trade (Allan, 2011). Sojamo

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(2010) estimates that the “ABCD” of agricultural commodity traders – ADM, Bunge, Cargill, and Dreyfus – hold a combined share of 23% of the total international virtual water flows.

Brand-name food companies are also major agents in the food supply chain.

Food companies and commodity traders have begun to address the value of water in their supply chains and reduce risk through reducing their water footprints (Allan, 2011). However, as will be highlighted in the case studies, with very few exceptions the actions that are taken are made to reduce the non-consumptive water footprint. This means reducing the amount of water used in their processing plants or other points further along the value chain. Reducing the water footprint in this way does not address the concept of virtual water. As virtual water is economically and politically invisible (Allan, 2003) it is possible that agribusinesses are not aware of their role in enhancing global water security. However, Carl Hausmann, the Managing Director of Global Government and Corporate Affairs at Bunge, indicated that commodity traders recognize the advantage inherent in sourcing commodities from areas that are water secure. Another interviewee from a multinational agribusiness company indicated that agribusinesses realize their role in food security, which is ultimately linked to water security, but it is unclear if they have made the direct connection to water security. The extent to which the companies that were examined for the purpose of this thesis realize their role in the virtual water trade will be explored in the analysis of the case studies.

### **The gap in the literature**

This dissertation will address an identified gap in the literature by exploring how and why multinational food companies consider water in their supply chain. Agricultural water use accounts for around 90% of all “blue” and “green” water use worldwide (Liu & Yang, 2010). Sojamo (2010) demonstrated that the “ABCD” are significant water managers due to their shares of international virtual water ‘flows’. Her study opened the door to a line of research that investigates how these significant water managers exercise their power over global water security. This dissertation takes up that line of research by exploring how CSR is used to understand and regulate the use of water in the agricultural commodity supply chains.

The food and drink sector contribute to 15-30% of all environmental pressures, and yet there have been very few studies on agricultural supply chains (Liedtke *et al*, 2010). Tallontire & Greenhalgh (2005) conducted a study on the drivers of CSR in the value chains

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of fresh vegetables, cut flowers, tea, coffee, and cocoa. However, it is commodity crops such as wheat, maize, soya, and sugar that account for 80% of the virtual water embedded in the food commodity trade (Aldaya *et al*, 2010). This dissertation focuses on the drivers for CSR in agribusiness companies which participate in the value chains of these commodity crops. Liedtke *et al* (2010) highlight the need for sustainable agricultural and business strategies in light of the predicted increase in food consumption and changes in nutrition patterns as the global population increases. Their work makes a contribution to the challenge of sustainability in agribusiness by introducing the “hot spot analysis” to identify risks in the supply chain. Yet, while mentioning the concept of virtual water, it does not delve into the importance of virtual water in global water security. This dissertation highlights the importance of virtual water managed by agribusiness in water security, and builds upon Sojamo (2010) by investigating how multinational food companies exercise their power over the virtual water ‘flows’ through their CSR policies and interactions with stakeholders in the value chain.

This dissertation will fill a second gap in the literature by exploring the impact of stakeholder groups on the formulations of CSR policies in multinational food companies. Rodriguez (2006) identifies several avenues for research that are yet unanswered in the realm of CSR and multinational enterprises. One of these research gaps is the effect of multiple stakeholder groups on CSR activities. This study investigates the impact of multiple stakeholder groups on CSR policies and activities by concentrating on three multinational companies with different types stakeholder groups. By comparing the CSR policies of a branded publicly traded company, a non-brand publicly traded company, and a non-brand private company this dissertation can see the effects of different levels of interactive intensity with stakeholders on the formation and implementation of CSR.

## **Research methods and methodology**

As understanding the role of multinational food companies in promoting water security is a complex issue, an approach of epistemological pluralism (Miller *et al*, 2008) is used to build thick description of the companies included in the study. The transdisciplinary analytical framework calls for multiple methods of gathering information to inform the comparative study of food companies CSR frameworks. The exploratory nature of the study

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led to the compilation of qualitative data through a review of relevant literature as well as elite interviews.

The literature review was conducted using library and internet-based sources. As Sojamo (2010) identified the world's largest agribusiness corporations, this study was able to focus a deep literature search on publications, newspaper articles, presentations, and corporate and NGO reports on Cargill and Bunge. A similar search was conducted for information on Nestlé. Academic and grey literature was reviewed on relevant subjects to provide context and a theoretical framework to comparatively analyse the policies and actions of the companies. The process of the literature review continued in a reflexive fashion throughout the interviews and analysis.

Five semi-structured interviews were conducted on the CSR strategies of the corporations, their water management practices, and factors in their decision making. Semi-structured interviews were chosen as a research method in order to allow the researcher to make the best use of time with the elite interviewees by following up with additional questions during the sessions (Berry, 2003). Interviews were conducted with members of the study group as well as stakeholders in order to cross-validate and compare the responses (Berry, 2003). Table 2 presents the lists of interviewees.

**Table 2. List of interviewees**

<b>Name / Identification</b>	<b>Organisation / Field</b>	<b>Date</b>
Interviewee 1	European Corporate Affairs at a global agribusiness company	7 June, 2011
Carl Hausmann	Managing Director, Global Government and Corporate Affairs Bunge	24 June, 2011
Tom Erickson	Vice President, Government & Industry Affairs Bunge	24 June, 2011
Interviewee 2	Global Corporate Affairs at a global agribusiness company	28 June, 2011
Interviewee 3	Manager of freshwater programme at an international NGO	5 August, 2011

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Interviewees were contacted through mutual acquaintances, as is sometimes the case with elite interviews (Goldstein, 2002), and informed of the purpose of the study and interview style via e-mail. Interviews with the respondents from Bunge and Interviewee 1 were conducted in person and lasted between one and two hours. The other two interviews were conducted on the telephone and lasted between 30 minutes to an hour. The framework for the interviews can be found in Appendix II. It is possible that the setting of the interviews and varying lengths affected the quality of the information; however the effects of these variables were mitigated through balancing information from interviews with literature review. Relevant portions of the interviews were transcribed and analysed along with data gained from the literature. For ethical reasons interviewees were given final approval over the portions of the interviews used in the case studies and analysis. Some information initially supplied in interviews by elite subjects associated with a global agribusiness company was later retracted.

Elite interviews come with both great opportunities for insight at a high level of an organisation or industry, as well as challenges. Interview subjects are not under an obligation to be subjective or truthful, and may exaggerate (Berry, 2002). In the case of multinational enterprises asymmetric information and divorcing the concept of CSR from financial incentives can make it difficult to garner candid information on the drivers of CSR (Rodriguez *et al*, 2006). These problems were mitigated where possible by engaging multiple actors in the food value chain as well as stakeholders and by verifying responses with academic or grey literature.

### Research Question

The methods described will be employed to answer the research question that drives this study through comparative analysis of Nestlé, Bunge, and Cargill. This research question is:

*To what extent do multinational food companies use the concept of virtual water in their corporate social responsibility framework to promote water security through the international food trade?*

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## Case Studies

### Branded company – Nestlé

Nestlé S.A. is one of the world's largest branded food companies. Nestlé is based in Switzerland, and was traded publicly for the first time on the Swiss stock exchange as “Anglo-Swiss Condensed Milk Co” on March 17, 1873 (Nestlé, 2011). It has over 281,000 employees in total, a presence in every country in the world (Brabeck-Letmathe, 2011) and 133,838 shareholders as of 31 December 2010 (Nestlé, 2011). Nestlé's branded products include bottled water such as Pellegrino and Poland Spring, cereals, baby food, frozen foods, coffee, dairy, ice cream, and chocolates such as Smarties and Kit Kats (Nestlé, 2011). Paul Bulcke is the CEO of Nestlé, though it is the Chairman, Peter Brabeck-Latmathe, who has largely been the face of Nestlé's “Creating Shared Value” initiative.

Nestlé has incorporated the idea of CSV into its operations. This suggests that they lie on the Institutional / Holistic side of the CSR continuum (Figure 1). They were on the forefront of the creating shared value concept, as Peter Brabeck worked with Michael Porter to develop the concept of CSV after the idea of CSR was raised by Charles Schwab at the World Economic Forum in Davos in 2006. Brabeck was inspired by Michael Porter's idea of competitive corporate social responsibility, and contracted him with an idea that a company could create value for society as well as its shareholders (Brabeck-Latmathe, 2011). Mark Kramer and Michael Porter took this idea to analyse Nestlé's value chain in Latin America and produce a report for the company. Brabeck took the results of this report and began to create a Shared Value framework for Nestlé, while Porter and Kramer went on to publish their ideas in the Harvard Business Review (Brabeck-Letmathe, 2011).

Nestlé's Creating Shared Value project extends beyond environmental sustainability to development and wellness programs. This paper will focus on its environmental sustainability policy, and more specifically on its water management policies.

The Nestlé Policy on Environmental Sustainability (2010) lays out the high-level principles of the company's environmental sustainability aims and identifies three key focus areas for sustainability. The Policy states that Nestlé applies a product life cycle approach to sustainability, and aims to involve its partners and suppliers in minimizing their environmental impact (Nestlé, 2010). Nestlé's involvement in the Roundtable on Sustainable

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Palm Oil (RSPO) and its pledge to use only sustainably sourced palm oil by 2015 (RSPO, 2011) demonstrates the company's practice of working with all stakeholders in their supply chain.

Water is one of the three key areas in which Nestlé focuses its sustainability efforts, and takes a prominent role in the Creating Shared Value project. In the sustainability policy, two of the aims outlined with respect to water are related to embedded water in their products: "As a founding signatory of the United Nations Global Compact CEO Water Mandate we continue to: -work to reduce the amount of water withdrawn per kilo of product...engage with suppliers to promote water conservation, especially among farmers..." (Nestlé, 2010). Although Nestlé is working with The Forest Trust to ensure sustainable sourcing of palm oil throughout their supply chain (Lacy *et al*, 2010), it is less clear how it is able to work with farmers and other stakeholders to reduce the water footprint of their products.

Nestlé produced a water management report in 2007 which highlights the importance of managing agricultural water in the context of future water security. In an interview conducted with Peter Brabeck in the same report, he emphasizes Nestlé's desire to work with farmers to understand how their water use affects local water availability and quality. He says that Nestlé offers information from their experience and best practices in effluent or waste management, irrigation, and post-harvest technology. It uses channels available through the Sustainable Agriculture Initiative (SAI) to disseminate their learning alongside other institutions (Nestlé, 2007). Nestlé's work with the SAI demonstrates its Institutional/Holistic approach to CSR, as it is working to embed sustainable practices into the portions of the supply chain that are under their control.

The SAI Working Group on Water and Agriculture (WGWA), of which a representative from Nestlé is the vice-Chairman, uses the water footprint concept to discuss how the sector can meet the challenge of local water scarcity caused by climate change and population growth (SAI, 2010). In 2010-2011, the WGWA began a pilot project entitled "Tools and practices for enhancing rainfall and irrigation water-use efficiency in North-West India" along with the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) to develop and implement a tool to aid farmers in irrigation decision-making. The Water Impact Calculator, an excel-based decision tool, is being developed through the project

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to aid farmers in making strategic irrigation scheduling decisions using research data from water-use efficiency trials conducted by the ICRISAT. It is meant to replace calendar based irrigation schedules to maximize water efficiency in arid areas. The WGWA, including the representative from Nestlé, visited the project on May 6, 2011 (ICRISAT, 2011).

Nestlé is directly engaging in improving water security through increased agricultural efficiency on a small scale through the SAI / ICRISAT initiative. The SAI's 30 active members are all branded food companies, along with five affiliate members which are either non-governmental organizations or associations of branded food companies (SAI, 2010). The absence of non-branded grain merchants, who are the brokers between branded food companies and farmers, is interesting and bears examination in the analysis portion of this paper.

### **Non-brand publicly held company- Bunge**

Bunge is an agribusiness and food company that employs approximately 32,000 people in over 30 countries (Bunge, February 2011). It was founded in 1818 in Amsterdam, moved to Antwerp in 1859, Buenos Aires in 1884 and then Sao Paulo (Kneen, 2002). It currently has its headquarters in White Plains, New York. Bunge acts as a trader between farmers and governments or branded food companies. It buys, sells, stores and transports oilseeds and grains worldwide, produces sugar and ethanol from sugarcane, processes oilseeds to make protein meal for animal feed and edible oil products, mills wheat and corn for ingredients used by food companies, and sells fertilizer to farmers in North and South America (Bunge, February 2011). It is the largest soybean processor in North and South America, and the largest exporter of soybeans by volumes (Kneen, 2002). Bunge has been listed on the New York Stock Exchange since 2001. In the 2010 fiscal year, it reported net sales of \$45.7 billion, a \$3.9 billion increase from 2009 (Bunge, February 2011).

Bunge's corporate citizenship initiative is broader than environmental sustainability, including projects in community development and wellness. For the purpose of this dissertation, the focus will remain on their efforts in environmental sustainability and sustainable agriculture as they relate to water security. The managing director of Bunge's Global Government and Corporate Affairs department is Carl Hausmann. He reports directly to Chairman and CEO Alberto Weisser. Mr. Hausmann assumed the role when it was created

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on January 1, 2010, after 30 years of experience in the operational side of the industry, including spending six years as the CEO of Bunge North America. Hausmann also served as CEO of Bunge Europe and Cereol S.A. prior to its acquisition by Bunge in 2002 (Bunge, 2009).

While they do not label their corporate citizenship efforts as creating shared value, Hausmann indicated that Bunge sees a competitive advantage in incorporating sustainability into their business model. Evidence suggests that Bunge is working towards the Institutional / Synergistic portion of the CSR continuum (Figure 1). Hausmann agrees with the idea of CSV, but does not believe that it is a new concept but rather the way in which society in general and the agribusiness industry in particular have aimed to operate for some time. In an interview with the author, Hausmann commented on the idea of CSV by saying:

“...we as an industry have a critical role to play in helping to drive the farm economy so farmers can make money, in helping meet the food security needs of the population around the world...I want to make sure our industry is well positioned to meet the needs of society. If we can meet the needs of society 1% better than some of our competitors we will be 10% more profitable, so that is why I am doing it”

This statement demonstrated Bunge’s Institutional/Synergistic approach to CSR, as it is focused on taking a well-balanced approach to social and ecological problems while creating value for their shareholders. As indicated by Hausmann, the long investment periods in agribusiness require smart decisions that cover a 100 year time scale; and paying attention to sustainable agriculture can help Bunge to make smarter investments. Hausmann stated in a public presentation that being smarter about the sustainability of their investments will allow Bunge to more effectively manage their risk and maximize the return on their investment (Hausmann, 2010b).

Bunge is engaged with stakeholders throughout their supply chain in sustainability efforts. Hausmann indicated that they participate in roundtables with other members of the industry and a variety of stakeholders such as the RSPO and the Roundtable on Responsible Soy (RTRS, 2011). Bunge also participates in a program called “Field to Market”, which brings together a diverse set of organizations from agribusiness to farmers and government

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agencies and provides tools to help growers measure and understand the sustainability of their farm (Hausmann, 2010; Field to Market, 2011).

Bunge's corporate citizenship focus in environmental responsibility includes a section dedicated to water. In this page on its website, Bunge acknowledges that agriculture is a major water user, with 70 percent of all water withdrawals worldwide ("Bunge Citizenship," 2011). In 2010 the company began the first phase of a global assessment of water use in its facilities. The assessment used data and maps provided by the World Business Council on Sustainable Development's (WBCSD) corporate water tool and determined that 17 of its processing or milling plants are located in or are adjacent to areas of water stress. Bunge also determined in this study that it originates crops from some areas of water stress, including parts of Argentina, the western U.S., India, and Australia ("Bunge Citizenship", 2011).

Hausmann acknowledges the usefulness of tools such as the WBCSD to make long-term investment decisions on the deployment of assets, but also realizes the limitations. The tools act as a "window" into the water stress situation, however Hausmann explains there are many other factors that must be considered when making a decision to source grain from a particular area. Other factors include the practices of the farmers; as an example: Hausmann explained that farmers in water stressed parts of Washington State or Oregon "typically let their land go fallow for one year to accumulate the water reserves in the ground and they only grow crop every other year. When they grow it they hope [Bunge] is there to buy it from them".

Bunge has long understood that water is a critical ingredient in the grain growing process, but has recently understood it better in the context of global food security. Tom Erickson, Bunge's Vice President for Government and Industry Affairs, explained that listening to different perspectives on water from a diverse set of stakeholders has helped them to realize a new depth and richness of issues around water. Bunge focuses its efforts in reduction of water use within its own operations, but also acknowledges virtual water through advocating for freer trade as an avenue to ensure water and food security (Hausmann, 2010a).

Bunge has engaged in efforts to save water in its own facilities. An example of water saving that is displayed on their website is the installation of dry shifting technology in a corn milling plant in Crete, Nebraska. This mill had been using water from the Ogallala Aquifer to

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wash the corn, and the shift to a dry cleaning process resulted in the reduction of annual water use by 16 million gallons (“Bunge Citizenship”, 2011).

Unlike Nestlé, Bunge is not outspoken about the reduction of water use by its suppliers or changing the valuation of agricultural water. Hausmann explained that most grain is being grown with rainwater or sustainable sources of water, and the cost of delivering the water is reflected in the price of the commodity. He acknowledges that there are areas in which crops are being grown using non-sustainable sources and the true price of water is not being reflected in the cost. However, Bunge is aware that in many cases governments subsidize the cost of water to benefit their farmers or keep them out of cities, and it is not Bunge’s place to question these decisions.

A critical message that Bunge has disseminated through several of Mr. Hausmann’s speeches is the importance of trade for food security and sustainability. This fits directly into the idea of virtual water trade for water security, and into the business model of grain merchants such as Bunge. It is the reflexive awareness of their role in sustainability that is important to note. Hausmann has spoken on how growing crops where they are best suited to be grown – in areas with sustainable water sources and rich soil – can improve the efficiency and sustainability of feeding society (Hausmann, 2010a; Hausmann, 2010b; Hausmann, 2011).

### **Non-brand privately held company - Cargill**

Cargill began as a family company in 1865. Brothers W.W. and Sam Cargill began by building grain elevators along the railways in Minnesota and Wisconsin, and rapidly expanded their grain elevators as well as seed breeding and livestock operations. In 1884 the Cargills moved their office to Minneapolis, where it remains today. John MacMillan, W.W. Cargill’s son-in-law, took over the company upon his father-in-law’s death. Cargill grew despite financial hardships and legal troubles in the early 1900’s, and expanded from trading, storing, and transporting commodities to seeds, fertilizers, milling, and financial services across the world (Kneen, 2002).

Cargill remains a privately held company with very few shareholders. Cargill earned nearly \$4.2 billion in revenues in 2010 (Steinglass *et al*, 2011), and has 138,000 employees based in 67 countries. The Cargill group remains controlled by about 80 members of the

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Cargill and MacMillan families (Blas & Meyer, 2010). The shareholders largely reinvest profits into the business (Keen, 2002). Cargill holds many smaller firms in its portfolio. It's most recent acquisition is the Netherlands-based animal feed company Provimi (Stienglass *et al*, 2011). Following its successes in the agri-commodity boom there has been a recent push by members of the industry and investors to make Cargill public, but there is no indication from the company that this will come to pass ("Cargill the biggest beneficiary of agri-commodity boom," 2011).

While Cargill is engaging in corporate responsibility activities, with some notable successes such as farmer training and community investment in supply chain and workplace conditions, they have admitted to not being on the same level as a company such as Nestlé (Cooper, 2010). Cargill's CSR activities appear to fall on the Promotional / Profit-driven side of the CSR continuum (Figure 1). In an interview with an online agribusiness industry newspaper, Mark Murphy, who oversees corporate responsibility within Cargill's global corporate affairs department, described the company's approach as decentralised and "evolving" (Cooper, 2010). Murphy came to Cargill in 1996 after 15 years in the NGO sector; the mix of experience with sustainability issues and within the company puts him in a unique position to drive sustainability forward. Cargill has made strides under his leadership, including engaging in the RSPO, the International Cocoa Initiative, and co-founding the UTZ certified cocoa programme (Cargill, 2010). An interviewee from a global agribusiness company indicated that Cargill's approach to responsible and sustainable supply chains seeks to address the complex economic, environmental and social challenges while also seeking to provide mutual benefits of increasing incomes for smallholders and rural communities by helping to improve access to global markets for agricultural commodities.<sup>2</sup>

Water is one of the areas of CSR in which Cargill is evolving. Water in the supply chain is considered to be one of the many issues that must be managed. An interviewee indicated that Cargill has developed a set of water stress maps to help better inform business decisions in regions where they work or are considering capital investments. Cargill partnered with iSciences to create regional water maps for Cargill businesses plotting locations by water availability and by watershed.

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<sup>2</sup> Some original information from interviewees was later retracted and / or modified.

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While Cargill is familiar with the WBCSD's water footprint tool, an interviewee suggested that it is not used systematically across the organization. Other Cargill businesses have used tools tailored to their own needs of specific approach which address similar aspects of water risk. Their investments are largely determined by economic, social and environmental considerations in the marketplace and in the regions where they source their raw materials. This includes the cost of buying the raw materials and for agricultural and food products green water availability is a contributing factor to productivity and cost. In this way, Cargill is considering water in their supply chain without making it an explicit factor.

Cargill's CSR plan has two focal points, in line with the corporate vision of nourishing people. Along with sustainable supply chains, the other key issue is food security and Cargill's role in feeding the world by producing more food with the same inputs, including water (Cargill, 2010).

One of Cargill's corporate goals for its own operations is to reduce freshwater use by 5 percent by 2015 from a 2010 baseline. Cargill has improved water efficiency in its processing plants, such as their Wagga Wagga beef processing facility in Australia, where they have reduced water consumption by 10 percent, or 83 million litres (21,926,280 gallons), annually (Cargill, 2010). Cargill has also implemented measures in US plants to re-use water and encourage farmers to irrigate using grey water. Cargill has also made contributions to The Nature Conservancy to protect ecologically important waters in North America, has supported water conservation education in UK schools, and helped several communities in Ghana gain access to safe water (Cargill, 2010).

There have been actions to improve water security as well, even if that was not the explicit goal of the project. The company has implemented a "Water Saving Irrigation Improvement Plan" in drought stricken areas of China that helps farmers to conserve water while increasing crop yields (Cargill, 2010). Cargill sees the benefit of this project as an improvement in food security (Cargill, 2010), but is also an improvement in water security.

## Analysis

International trade in agricultural commodities involves long, complicated, and sometimes opaque value chains. The management of value chains involves the participation of stakeholders at many points. This essay focuses on the roles and actions of Nestle, Bunge

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and Cargill to provide a penetrating analysis of the dialectical and reflexive relationship between food companies and stakeholders and the way in which this affects water security. The purpose of this section is twofold. The first aim is to investigate the effect of stakeholders on companies' CSR policies. Namely, to explore the way in which companies' different levels of exposure to stakeholder groups affect their approach to CSR in general and water in particular. The second aim is to analyse the way in which companies affect stakeholder groups. In other words, to consider the way in which the companies' position in the value chain affects their ability to enact change across their value chain.

### **The impacts of stakeholders on companies**

The first part of the analysis explores the effect of the company-stakeholder relationship on the companies' CSR policies. It identifies the types of relationships that have the greatest impact on companies' CSR policies. For analytical clarity, this essay classifies stakeholders into primary and secondary categories (Garvare and Johanson (2010).

Nestlé, Bunge, and Cargill each have different levels of exposure to stakeholder groups. Nestlé has the highest level of exposure, as it is a brand-name company that is publicly traded. This means that it is accountable to public scrutiny in addition to shareholder demands. Bunge is accountable to its shareholders, but is able to maintain a low profile relative to Nestlé, as it does not sell products with the Bunge brand. Cargill is privately held by the Cargill and MacMillan families (Blas & Meyer, 2010), and does not have public shareholders. These companies are also influenced by other forces in their supply chain and their industries.

### **Primary Stakeholders**

A "stakeholder" can be distinguished from other actors that by having the means of bringing attention to their needs as well as the ability to take action if those needs are not met (Foley, 2005). Primary stakeholders are actors which have direct control over an organisation's most essential means of support (Garvare & Johansson, 2010). These actors can include shareholders, customers, co-workers, managers, suppliers, or government. This analysis focuses on customers and shareholders.

According to the Malcolm Baldrige National Quality award, a customer is "an actual or potential user of [an organization's] products or services" (Garvare & Johansson, 2010).

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Nestlé, as a brand name food company, sells its goods to the general public through markets or other food vendors. As such, its primary customer base is members of the public who consume its products. Nestlé is subject to the social pressures of consumer activism. Studies by Mohr *et al* (2001) and Murray and Vogel (1997) show that consumers discern their consumption based on the perceived social responsibility of the corporation. They are willing to pay a higher price for products from a firm that it labeled “socially responsible” (Calveras *et al*, 2007). As a firm that markets itself as socially responsible, Nestlé is both responding to and encouraging consumer activism. Consumers feel that Nestlé is creating a shared value in their production process, and are therefore more likely to buy a Nestlé product over a product made by a company that is not as socially responsible. Following the 2005 incident in which Nestlé baby formula was found to be contaminated in some areas of distribution, the creating shared value project has raised the company’s public profile. An interviewee from an international NGO indicated that Nestlé’s CSV plan is an outward expression, and is marketed for consumers. In this way, Nestlé responds to activism by consumers through a widely-publicized CSV policy.

Cargill and Bunge are located at a different stage in the food value chain and therefore face a different type of pressure from customers. As commodity traders, their customers are not the general public.<sup>3</sup> Customers for Cargill and Bunge are located both above and below them in the value chain of agricultural commodities. Farmers or other vendors of raw agricultural products are their customers; as they use the storage and transportation services provided by these companies. Cargill and Bunge then sell processed agricultural commodities to vendors or brand food companies. Hausmann indicated that up to 50% of Bunge’s customers are brand-name food companies. An interviewee indicated that branded companies, beverage companies in particular, are passing the corporate social responsibility pressure that they receive from their customers onto the commodity trading companies. Cargill and Bunge have responded to these pressures by implementing CSR policies within their own processing plants, including making strides in increasing water efficiency of their operations.

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<sup>3</sup> As vendors of agricultural products such as fertilizer, it could be argued that farmers are considered their public. However, this dissertation is concerned with the value chain for food products and will not be considering Bunge and Cargill’s role in selling agricultural products to primary producers.

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However, information from interviews indicates that commodity traders engage in a political dialectic to balance pressure from brands with the interests of farmers. CSR in the supply chain is more complicated when it reaches the door of the farm, which is the essential origin of virtual water. Tom Erickson indicated that, while not many companies are currently asking for the water sustainability of products, if they were to enquire about it at the farm level or suggest that farmers should manage water differently it would create political problems that may affect the ability of the company to do business. In this way commodity trading companies feel that farmers are exercising their influence as primary stakeholders to discourage the development and implementation of CSR for water in the value chain. Commodity traders such as Cargill and Bunge do not want to lose the storage and transportation business from farmers by unilaterally engaging in policy making through CSR. Hausmann indicated that regulating the use of water on farms is the responsibility of the state, and commodity traders do not have the power to question state regulations. However, there are ways in which agricultural commodity traders can work with farmers to develop standards. The next section will explore the possible influence of industry-wide cooperation on managing virtual water in the value chain.

A second type of primary stakeholder that is examined for the purpose of this study is the shareholder. This analysis will show that Nestlé and Bunge have both come under pressure from their shareholders to increase their social responsibility activities.

Shareholder advocacy campaigns have been successful in persuading Nestlé to adopt extended producer responsibility programs in its Nestlé Waters North America subsidiary. As You Sow, a shareholder advocacy group, filed resolutions with the company through its shareholders, and was able to press the company into accepting responsibility for more than 50% of their U.S. product packaging (Kadleck, 2011). An interviewee from an international NGO also indicated that large branded companies such as Nestlé are facing pressure from investors to explore their water security risk in the value chain. Usha Rao-Monari, the Global Head of Water for the International Finance Corporation, stated in a panel discussion following Nestlé's Stockholm Water Industry Award at World Water Week 2011 that "water has become a business risk that you cannot ignore". This statement indicates that investors and shareholders have an interest in how water is managed in the value chain, and could be putting pressure on corporations to investigate how their water is managed.

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Bunge has also encountered shareholder advocacy, specifically on the issue of water management. While Bunge has long considered water when making investments, Hausmann indicated that they have been considering water only from their own viewpoint. They began to look at other ways to view water when the National Jesuit Committee on Investment Responsibility engaged them on water sustainability in 2010. The objective of the engagement was for Bunge to “Improve its water use, set meaningful goals for increasing water efficiency throughout its operations, and provide more systemic disclosure of water risks in its direct operations and supply chain” and join PepsiCo in recognizing the human right to water (Mary Baudouin, qtd in NJCIR, 2010). They decided to engage Bunge due to its potential for leadership in the industry and its commitment to stakeholder engagement in Brazil, as well as its low rankings for environmental performance in *Newsweek* and a 2010 Ceres report (NJCIR, 2010). A year after the NJCIR publicly called on Bunge to expand their disclosure and environmental management practices, Hausmann indicated that Bunge has increased its disclosure of water management and that their strategic thinking has been enriched by the dialogue with the NJCIR.

The Nestlé and Bunge cases both show signs of influence by shareholders on environmental and water management practices and disclosure. It is equally important to note that Cargill, which has no public shareholders, was described by an interviewee from an international NGO as engaging in a more philanthropic type of CSR, rather than embedding it into their practices as deeply as other companies.

### **Secondary Stakeholders**

Secondary stakeholders are described by Garvare and Johansson (2010) as actors that do not provide an essential means of support for an organization - such as the purchasing power of a customer or the capital of a shareholder - but have enough influence to be considered in analyzing the factors in the organizations decision-making process. Groups that act as secondary stakeholders can include non-governmental organizations (NGOs), media, fair-trade bodies, academics or environmental pressure groups. All of the companies included in this study are exposed to secondary stakeholders. This section, while not an exhaustive survey of the organizations interactions with secondary stakeholders, will provide examples of instances of engagement that have an impact on how the organizations consider water in their value chains.

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Nestlé engages with NGOs through membership in organizations of stakeholders, including the Water Footprint Network (Chapagain & Orr, 2010). In 2008, Nestlé collaborated with the World Wildlife Fund (WWF) International to conduct a water footprinting pilot project on their shredded wheat value chain in the UK to contribute to developing the application of water footprint methods for business (Chapagain & Orr, 2010). An interviewee from an international NGO indicated that, which this initial project was successful, Nestlé has no intention of repeating the process on other value chains. While all companies should realize their water risk in the value chain, they are not optimistic about how the numbers of the water footprint will be interpreted. The interviewee spoke about how food and beverage companies, including Nestlé, generally prefer to present information in comparable units while a water footprint is a localized number that cannot be easily compared across geographies. In addition, water footprinting is not being used to tell companies to move their value chains, but to make them aware of how they can be better managed.

While the footprinting exercise has not been repeated, the impact of the interaction with WWF can be seen in Nestlé's articulation of water security issues at the Founders of Business Seminar at the 2011 World Water Week in Stockholm. Peter Brabeck-Letmathe expressed that water has to be understood as a local issue, though global trade makes the effects of local water management a global concern. This statement reflects the ideas behind the water footprint, and therefore the influence of Nestlé's involvement with the WWF and the Water Footprint Network as secondary stakeholders.

Bunge and Cargill are most actively engaged with NGOs through the RSPO and the RTRS, which includes stakeholders along the palm oil and soy value chains to establish standards for sustainable value chains. The RSPO includes 23 NGOs (RSPO, 2011), while the RTRS includes 17 NGOs and other members from civil society (RTRS, 2011).

Bunge and Cargill have also interacted with NGOs over the issue of tools for measuring the impact of water in their supply chain. Bunge recently attended the 2011 Ceres Conference (Ceres, 2011). Ceres published a report concerning corporate reporting on water risk. From the companies included in their surveys Bunge and Archer Daniel Midlands were the two companies with the worst reporting record in the agricultural industry (Barton, 2010). In an interview in June 2011, Hausmann indicated that Bunge had increased its standards for

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reporting on water in their value chain. Perhaps the practice for greater disclosure was a product of pressure from Ceres in addition to the NJCIR, as Bunge has engaged with Ceres further by attending their conference.

There is less information available concerning Cargill's interaction with NGOs over the issue of water management. Cargill is a member of the Global Environmental Management Initiative, which develops tools complimentary to those of the WBCSD for calculating water risk in value chains. Future research on developments in Cargill's management of water in the value chain and disclosure of water risk will shed more light on how interactions with NGO secondary stakeholders have influenced their policies.

A second type of secondary stakeholder that proved to be influential is academics. Of particular interest to this study is the influence of Michael Porter in Nestlé's policies and Professor Tony Allan in Bunge's understanding of virtual water.

Michael Porter was influential in the development of the creating shared value approach to CSR in Nestlé. Peter Brabeck-Letmathe described in an interview how he contacted Porter after reading his article about the competitive enhancement that CSR can bring to a company. Brabeck-Letmathe asked Porter and Mark Kramer to conduct an analysis of Nestlé's Latin American value chain, and out of this assessment grew the idea of creating shared value. These ideas were articulated both in Nestlé's CSV policies and in Porter and Kramer's 2011 article in the Harvard Business Review. In the same interview, Brabeck-Letmathe indicated that Porter aided Nestlé in identifying water as an area which held some of the greatest opportunities for creating shared value (Brabeck-Letmathe, 2011).

Bunge also has an influential relationship with a member of the academy. Their understanding of how water stress affects their business has been enhanced by Carl Hausmann's chance meeting with Professor Tony Allan, the 2008 Stockholm Water Prize recipient for his conceptualization of virtual water. Hausmann discussed in an interview how engaging with stakeholders over water management has improved their knowledge of water. He mentioned the impact that Prof Allan had on their knowledge, and cited Bunge's willingness to engage openly with him and other people in his position as a factor in broadening their perspective on water.

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### **The impacts of companies on their value chains**

As 80% of the virtual water embedded in the food trade is in commodities such as wheat, maize, soya, and sugar (Aldaya *et al*, 2010), it is important to build on the analysis in the previous section to understand how and why companies that deal with these commodities make decisions regarding virtual water management. However, it is also important to ask the next question: do these companies have the power to actively manage virtual water in their value chains? While more research needs to be conducted in order to fully answer this question, this section will present a preliminary analysis of the ability of the selected food companies to manage virtual water in the value chains of commodity crops.

Nestlé and other branded food companies have a limited amount of control over virtual water in value chains that are not under their ownership. That is to say, when buying commodities from traders such as Bunge or Cargill they do not have control over where the commodity is sourced. According to Carl Hausmann, brand name food companies are not asking Bunge about where they buy their grain or water stress in those areas. Water is a local issue made global through the food trade, and if companies do not know where the product was grown then they cannot influence water management in that area. Daniel Bena of PepsiCo highlighted this issue in the Business and the Human Right to Water Seminar at World Water Week 2011 by saying, "...complexity comes in the supply chains, over which we do not always have control".

Brand name food companies could pass on pressures to manage water sustainably to commodity traders, as demonstrated in the previous section. However, interviews conducted with members of the industry suggest that commodity traders are constrained in their influence over farmers and the value chain by the competitive nature of the market for agricultural commodities. An interviewee indicated that the trading companies operate on such narrow margins that each company individually will be hesitant to make the first move on an issue like water as they it will place them in a competitive disadvantage. The pressure that was put on the ABCD companies to provide sustainable soy resulted in the companies collaborating with other stakeholders to form the RSPO. Hausmann indicated that participating in the RSPO and other roundtables not only raises Bunge's reputation, but allows them to contribute their knowledge to the process as well as learn from other stakeholders.

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The roundtables exist to set standards and expand the market for sustainable commodities. This type of stakeholder engagement is only successful if customers are willing to pay for a premium product. Carl Hausmann indicated that, so far, the market share for sustainable palm oil and soy is small. Tom Erickson described another approach in the Field to Market programme, a stakeholder engagement platform in which Bunge and Cargill are participants (Field to Market, 2011). The programme is funded by the participants and exists as a knowledge-exchange platform. He commented that this type of stakeholder dialogue encourages the farmers to think about their own methods and share best practices with each other and members of the value chain. Through this type of engagement best practices around water can be effectively incentivized.

Prof. Tony Allan has engaged with commodity traders on the issue of managing virtual water in the supply chain. He spoke about his experiences during the World Water Day 2012: Food and Water Security session at the 2011 World Water Week. He mentioned that he has encountered the argument that commodity traders must keep the “rules” as they consider their policies. These rules include the way water is valued in the supply chain. He has realized that the food supply chain operates within the rules of the accounting standards, and perhaps the next step in incorporating virtual water into the value chain will be to capture the cost of water inputs and impacts in the price of food through accounting standards. Carl Hausmann argues that water is valued in the supply chain, as green water in the soil profile is included in the cost of the land and blue water is paid for through the cost of pumping it onto fields. However, Prof. Allan’s insights could lead to an investigation into whether or not water is being properly valued in the supply chain, and what stakeholder will have the most influence in changing how it is valued.

## Conclusion

This dissertation sought to fill a gap in the literature by analysing the extent to which multinational food companies use the concept of virtual water in their CSR framework to promote water security through the international food trade. This study produced two conclusions: First, multinational companies use their CSR policies to promote global environmental agendas by engaging with other stakeholders in the value chain. Second, multinational food companies are largely unable or unwilling to engage meaningfully with

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the concept of virtual water in commodity crops as they do not have control over that portion of their value chain.

This study confirmed Garvare and Johansson (2010)'s theory that there is a connection between the degree of stakeholder engagement and depth of sustainability in an organization. Nestlé, which has the most stakeholder exposure, is the most involved of the companies in creating shared value for communities and shareholders through actions to mitigate their water risk. They were the winner of the 2011 Stockholm Industry Water Award, which demonstrates that the Stockholm International Water Institute respects their work in promoting global water security through their business practices. Bunge has the second greatest stakeholder exposure, and have been open to engaging with academics and other stakeholders to inform themselves about how their water management affects other actors. While their interactions have not resulted in any actions as progressive as Nestlé, their position in the value chain gives them the potential to be a leader in promoting water security throughout the value chain. Cargill occupies a similar position to Bunge in the value chain; however their lack of exposure to stakeholder groups on this issue is reflected in their still-evolving understanding of their role in global water security. While they have taken strides to increase their water efficiency in their processing plants, they have not publicly engaged with the idea of virtual water.

The second conclusion that can be drawn from this study is that multinational food companies do not have the ability to manage virtual water in their agricultural commodity value chains alone. This is because they do not control the essential origin of virtual water: the farm. In the realm of commodity crops, the commodity traders and branded food companies do not own the point of production. Their limited ability to unilaterally enact change and manage virtual water was voiced by the interviewees from Bunge as well as the global agribusiness company. While they can shift their value chains to ensure they are drawing from sustainable sources, ultimately they do not have control over how farmers use their water. The analysis revealed that the most effective method for multinational food companies to manage virtual water in their value chains is to engage in multi-stakeholder knowledge sharing platforms such as Field to Market. Through these initiatives the ABCD companies can work together with brands, farmers, and secondary stakeholders to share best

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practices for effective water management and understanding of their role in global water security.

This study brought forward the understanding of the role of multinational food companies in promoting global water supply. However, it also raised more questions that need to be addressed. There are two lines of research that can be taken up from this study. First is the development of financial metrics to generate meaningful measurement of the impact of food companies in water security, and the second is the role of accounting rules in global water security.

An issue with the concept of creating shared value that was raised in this study is the reluctance of companies to display their corporate responsibility reporting in a format that is comparable to their financial reports. This practice obscures any financial value created that could be used to incentivize responsible activities in other stakeholders. A possible avenue for research is to investigate how comparable metrics for CSR activities in water management could push forward the project of global water security.

The institutions that penetrate the global food value chain are institutions that set rules for trade and accounting. These institutions may hold the power to influence how water is managed in the value chain by changing its economic value. The role of global accounting houses in the value of water in agricultural commodity supply chains remains largely unexplored. Future researchers could take up this topic by investigating the extent to which the accounting rules value water in the supply chain, and what impact a change would have on the global food trade and water security.

In conclusion, multinational food companies play a role in global water security, but they cannot reach an effective solution alone. This study found that collaboration between stakeholders and food companies could lead to exchange of knowledge and best practices that will promote global water security. Agricultural commodity value chains are long and opaque; cooperation among diverse stakeholders and a willingness to engage with multiple epistemologies will lead to effective management of value chains to promote global water security.

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## Appendix I: Ethical approval for the study

Elizabeth Larson  
Department of Geography  
26<sup>th</sup> May 2011



Dear Elizabeth,

**REP(GGS)/10/11-15 'Governing transboundary flows of virtual water: Bringing the 'ABCD' of agribusiness into a political economic discussion of water security.'**

I am pleased to inform you that the above application has been reviewed by the GGS Research Ethics Panel that FULL APPROVAL is now granted.

Please ensure that you follow all relevant guidance as laid out in the King's College London *Guidelines on Good Practice in Academic Research* ([http://www.kcl.ac.uk/college/policyzone/attachments/good\\_practice\\_May\\_08\\_FINAL.pdf](http://www.kcl.ac.uk/college/policyzone/attachments/good_practice_May_08_FINAL.pdf)).

For your information ethical approval is granted until the 25th May 2012. If you need approval beyond this point you will need to apply for an extension to approval at least two weeks prior to this explaining why the extension is needed, (please note however that a full re-application will not be necessary unless the protocol has changed). You should also note that if your approval is for one year, you will not be sent a reminder when it is due to lapse.

If you do not start the project within three months of this letter please contact the Research Ethics Office. Should you need to modify the project or request an extension to approval you will need approval for this and should follow the guidance relating to modifying approved applications: <http://www.kcl.ac.uk/research/ethics/applicants/modifications.html>

Any unforeseen ethical problems arising during the course of the project should be reported to the approving committee/panel. In the event of an untoward event or an adverse reaction a full report must be made to the Chairman of the approving committee/review panel within one week of the incident.

Please would you also note that we may, for the purposes of audit, contact you from time to time to ascertain the status of your research.

If you have any query about any aspect of this ethical approval, please contact your panel/committee administrator in the first instance (<http://www.kcl.ac.uk/research/ethics/contacts.html>). We wish you every success with this work.

With best wishes

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Daniel Butcher

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Research Ethics Administrator

## **Appendix II. Guideline interview questions**

1. What risks does water availability pose to your supply chain?
  - a. Are there different risks with water used for irrigation and water used for non-consumptive purposes?
  - b. What actions has your company taken to mitigate those risks?
  - c. What opportunities are there for your company in reducing the risk posed by freshwater?
2. Does your company consider the scarcity of water in areas where you operate?
  - a. How is this reflected in your water use (consumptive and non-consumptive) policies?
  - b. Is water scarcity a factor in deciding where to sell the grain that you grow?
  - c. How does water scarcity impact your relationship with the communities where you operate?
  - d. Are you familiar with the World Business Council on Sustainable Development's water footprint tool? Do you have plans to make use of it?
3. What factors does your company consider when drafting a corporate social responsibility plan?
4. What drivers would cause your company to prioritize the use of water in the supply chain in its CSR plan?

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