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From Risks to Shared Value? Corporate Strategies in Building a Global Water Accounting and Disclosure Regime

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ABSTRACT: The current debate on water accounting and accountability among transnational actors such as corporations and NGOs is likely to contribute to the emergence of a global water governance regime. Corporations within the food and beverage sector (F&B) are especially vulnerable to water risks; therefore, in this article we analyse motivations and strategies of the major F&B corporations participating in the debate and developing different water accounting, disclosure and risk-assessment tools. Neo-institutionalism and neo-Gramscian regime theory provide the basis for our framework to analyse the discursive, material and organisational corporate water strategies. Findings based on an analysis of the chosen F&B corporations' sustainability reports and interviews with key informants suggest that the corporations share similar goals and values with regard to the emerging regime. They seek a standardisation that is practical and supportive in improving their water efficiency and communication with stakeholders. This indicates that some harmonisation has taken place over time and new actors have been pursuing the path of the pioneering companies, but the lead corporations are also differentiating their strategies, thus engaging in hegemonic positioning. However, so far the plethora of NGO-driven accountability initiatives and tools has fragmented the field more than 'war of position' amongst the corporations. Furthermore, several companies claim to have proceeded from internal water-risk management to reducing risks throughout their value chains and watersheds. As a result they are 'creating shared value' with stakeholders, and potentially manifesting an emergent paradigm that goes beyond a private regime framework. Nevertheless, in the absence of verification schemes, questions of sustainability and legitimacy of such actions on the ground prevail and remain a topic for further research.

KEYWORDS: Water-risk accounting and disclosure, food and beverage sector, global environmental governance, private regime, transnational actors

INTRODUCTION

In the 2011 World Economic Forum Global Risks Report, the water-food-energy nexus was among the three risks in focus; water-security risks were perceived highly likely to happen, impacting the world economy by almost US\$500 billion (World Economic Forum, 2011). This is a remarkable shift since the 2010 report estimated water risks for the world economy from US\$10 to 50 billion (World Economic Forum, 2010). This shows that businesses and investors are starting to recognise the potential physical, reputational and regulatory risks related to water (Morrison et al., 2009). In a world with a rapidly growing population and a climate-change induced increase in rainfall variability (Wentz et al., 2007), regional water scarcity makes sustainable water resources management practices a pressing issue. Even though the impacts are local, the effects spread globally through cooperation and trade (Allan, 2003).

Accordingly, since the early 2000s, some major multinational companies (MNCs) have started to assess and reduce water risks throughout their value chains.

Recently MNCs have also started communicating water risks to stakeholders, including investors and consumers. Some lead corporations are proceeding beyond internal risk management to more proactive water-stewardship actions in collaboration with other water users in their operation locations. Through the development, implementation and promotion of water-risk accounting and disclosure tools, methodologies and management principles (hereafter called 'water-risk tools') these companies are contributing to the emergence of a private global water governance regime (hereafter termed 'water regime'). Such a regime is likely to influence the behaviour of many actors who are not actively involved in the current process of determining the relevant water-risk tools, similar to the case of carbon, where a global standard for corporate carbon-risk accounting and disclosure has emerged over the last 10 years as a result of institutional entrepreneurship of certain non-governmental organisations (NGOs) and MNCs (Levy and Egan, 2003; Levy and Scully, 2007; Kolk et al., 2008; Pinkse and Kolk, 2009). Given the vast resources and global presence of MNCs, the emergence of this water regime is likely to have lasting impacts on how MNCs engage with other stakeholders, influencing water resources management solutions even beyond the locations where they have direct operations or suppliers.

No comprehensive research has so far been undertaken on the corporate motivations and strategies to actively contribute to the creation and design of the emerging water governance regime. In this article we will focus on F&B companies because they represent the main sector currently quantifying water risks throughout their value chain, thus pioneering the practical application of water-risk tools. Furthermore, agriculture is responsible for 90% of anthropogenic water consumption (Hoekstra and Mekonnen, 2012). Consequently, the F&B sector, which depends mainly on agricultural products, is more exposed to water risks than other industries. This article will analyse the motivations and strategies of eleven major companies from the F&B sector to develop a more sophisticated water strategy and influence the debate on water-risk tools and, accordingly, their role in the regime formation.

The analysis will concentrate on the discursive and organisational developments in the context of regime formation. Observations of the material sustainability impacts of the governance measures rely mostly on corporate self-reporting and are therefore difficult to evaluate in the absence of standardised verification schemes. Nevertheless, it will be shown that materialised risks on the ground and experiences with their management feed into the motivations and strategies of the corporations and vice versa. The central concepts of the article, 'risks' and 'shared value' not only refer to the corporate motivations and their role in the regime building but also describe a corporate trajectory from internal water-risk management to water stewardship, proactive involvement in water resources management and governance, potentially creating shared value with other stakeholders by managing shared water risks. We will discuss both dimensions, which are intertwined, but due to the aforementioned developing nature of the field, we will focus predominantly on the former.

In the following chapters we will first briefly elaborate an analytical framework and guiding hypotheses of our research, second, present the research methodology, third, analyse our data, and last critically discuss the research findings.

ANALYTICAL FRAMEWORK

Different theoretical frameworks can be applied to analyse the emerging water governance regime and the role of MNCs from the F&B sector in it. For the purpose of this analysis, we will first briefly present neo-institutional isomorphism (notably DiMaggio and Powell, 1983), explaining cooperation and path-dependency among the actors within a certain organisational field. Second, we will discuss the neo-Gramscian theoretical approach, which is most inclusive and widely recognised for analysing non-state actors' influence on strategies in relation to global environmental governance regimes (see e.g. Levy

and Newell, 2002, 2005a, 2005b; Levy and Prakash, 2003). Finally, we will look at the latest conceptual developments with regard to the role of corporations in environmental governance, which aim to go beyond the aforementioned frameworks, specifically, Porter and Kramer's (2011) concept of creating shared value (CSV).

Neo-institutional theory explaining the formation of a governance regime

Neo-institutional theory traditionally analyses how interaction among actors leads to the emergence of structured organisational fields over time (DiMaggio and Powell, 1983; Giddens, 1984; Brown et al., 2009). As a result, distinct patterns of organisational behaviour emerge and become institutionalised.

In the neo-institutional isomorphic model "organisational survival is determined by the extent of alignment with the institutional environment, thereby providing legitimacy" (Kostova et al., 2008). Hence, "organisations have to comply with external institutional pressures" (ibid.). For our research this suggests that companies are following the lead of the 'pioneers' of the water governance regime. The organisations develop distinct patterns of behaviour by accounting and disclosing their water risks because they have to comply with external institutional pressures. This suggests a certain level of path-dependency in the development of accounting procedures and the disclosure of water risks. Consequently, neo-institutional isomorphism provides a useful framework to explain mimetic behaviour among companies in the governance regime. It can thus explain potential path-dependency amongst actors.

Neo-Gramscian framework for analysing corporate motivations and strategies in relation to a governance regime

Even though neo-institutional theory provides an explanation for the formation of governance regimes, it gives governance actors a passive role as merely agents subject to institutional pressures. It fails to properly take into account how discourses, social constructions and power dynamics can influence institutions and legitimacy. According to Levy and Newell (e.g. 2002, 2005a, 2005b), the uneven and fragmented nature of contemporary global governance is the outcome of a process of bargaining, compromise, and alliance formation amongst a range of state and non-state actors. To them, Gramsci's (1971) theory of hegemony and power offers a critical approach to analyse contemporary corporate strategies in the face of environmental challenges.

This neo-Gramscian approach suggests that business has a "dominant yet contingent position" in environmental governance regimes (Levy and Newell, 2002) and points to a "strategic concept of power that highlights the dynamic and somewhat indeterminate path of regime evolution" (ibid.). Accordingly, Gramscian concepts are useful to understand processes of resistance, contestation and accommodation, and to locate corporate political strategy trying to influence transnational regimes. This is consistent with the path-dependency argument distilled from the neo-institutional theory and suggests that actors taking the lead in the formation of a regime are influencing those who follow them.

Gramsci further distinguishes an idea of 'war of position' suggesting how different actors might avoid a direct confrontation against one another in regime formation while still exerting their power. Cooperation among actors does take place in the context of a strategic coalition where actors cooperate to reinforce a specific position, but not as a phenomenon per se. Levy and Newell (2002, 2005a, 2005b) suggest that companies use a set of material, discursive and organisational strategies in a 'war of position' to create or challenge hegemony. This division is very useful to structure our analysis of MNC's water strategies and thereby investigate how, and to what extent, they engage in a war of position to define the water regime.

Despite its applicability and benefits discussed above, a neo-Gramscian theoretical framework has its own set of limitations. Gramsci's ideas fail to go beyond power struggles and incorporate

contemporary theories of corporate social responsibility into explaining corporate behaviour. Recent developments of the latter will be discussed next.

Recent conceptual developments: Creating shared value

Recently Porter and Kramer (2011) argued that under growing criticism towards corporate capitalism, leading MNCs are moving beyond the leitmotif of simple profit maximisation towards 'creating shared value' (CSV). This concept focuses on the connection between societal and economic progress whereby companies reconceive products and markets, redefine productivity throughout their value chain and enable local cluster development to generate greater innovation and growth benefiting themselves and the greater society (ibid.). According to reports, some of the companies pioneering the accounting and disclosure of water risks in the F&B sector are aiming to create shared value throughout the watershed they are operating in to accommodate these risks. Hence, CSV could become an important corporate motivation and strategy to participate in a water governance regime formation. This is consistent with Meyer and Kirby's (2010) argument that the key in becoming a corporate leader is to internalise externalities such as water use, across the entire value chain of the firm. Although CSV is highly relevant to understanding a private actor's motivation and strategy to participate in a governance regime, it has not yet been incorporated in a comprehensive analytical framework. We will therefore use Porter and Kramer's (2011) ideas throughout the analysis to enrich our approach, while generally relying upon the more traditional frameworks of institutional isomorphism and neo-Gramscian regime theory.

Research question and hypotheses

Based on the theoretical conceptualisation in our analytical framework and the recent developments in the field, the following research question emerges: What are the different material, organisational and discursive strategies and relations of a selected number of leading F&B companies regarding the emerging water-risk accounting and disclosure regime?

The following research hypotheses (H) will be investigated: H1) path-dependency hypothesis: companies have a "dominant, yet contingent position" (Levy and Newell, 2002) in defining the water regime; H2) cooperative hypothesis: companies cooperate to define the water regime; H3) war of position hypothesis: companies engage in a neo-Gramscian "war of position" (ibid.) to influence the emerging regime. These hypotheses set the frame for our analysis and its findings.

METHODOLOGY

Some of the corporate water stewardship leaders are among the biggest companies in the sector. For comparability of our analysis we chose 11 leading F&B companies holding the majority market share globally (table 1) from Forbes magazine's list of the world's largest publicly traded F&B companies (Forbes, 2011). This selection includes water stewardship leaders and others who are still at the very beginning of their water accounting and disclosure trajectory. We divided the selected companies into two tiers. Tier 1 includes six companies that we expect to pioneer the corporate water-risk accounting and accountability debate, as they have been actively participating in water initiatives in recent years. Tier 2 includes five F&B companies of similar size in terms of market capitalisation that have been less active in the water debate. However, given the nature of their activities, they are expected to face similar water risks as the Tier 1 companies. Although this separation is only based on the current perception of companies' engagement in the water debate, it will nonetheless allow us to identify and compare trends to test the hypotheses.

Table 1. Companies from the food and beverage sector analysed.

Name	Market value (billion US\$)	Turn-over (billion US\$)	Tier	Number of staff	Water use in direct operations and per product (l/l; l/kg)
Anheuser Busch InBev (ABInBev)	90.6	36.8	2	114,000	41.6 billion l; 4.04l/l (bev)
Archer Daniels Midland (ADM)	23	68.6	2	29,300	n/a
Coca-Cola	148.7	35.1	1	139,600	309 billion l; 2.36l/l (bev)
Diageo	47	14.6	1	23,281	22.6 billion l, 5.2l/l (bev)
Heineken	13	21.6	2	65,730	4.5l/l (bev)
Kellogg	20.1	12.4	2	31,000	12.53 billion l, 5.07l/kg (food)
Kraft Foods	55.4	49.2	2	127,000	n/a
Nestlé	181.1	112	1	281,005	144 billion l; 3.29l/l (bev)
PepsiCo	102.6	57.8	1	294,000	2.2l/l (Bev); 7.3l/kg (food)
SABMiller	52	14.8	1	70,000	72.2 billion l, 4l/l (bev)
Unilever	91.9	59.3	1	163,000	n/a

Note: n/a= data not available; bev = beverage.

For the analysis of the selected corporate motivations and strategies in relation to the emerging water governance regime, our sources of data included corporate sustainability reports (SR) and semi-structured expert and stakeholder interviews. We lacked access to the internal corporate documents, which limits the representativeness of our data. Furthermore, companies vary in their communication culture, thereby limiting the comparability of the SRs among them. Nevertheless, these validity concerns were mitigated to the extent possible by triangulating multiple sources of data and combining different data analysis methods.

Throughout our research, we made use of quantitative and qualitative content analyses (CA) of our data corpus and complemented our findings with CA of our transcribed interviews. The sampling frame to create a language corpus for our CA (McEnery and Wilson, 2001) was the companies' SRs for the last five years as significant changes in corporate water strategies have happened within this time period. We used AntConc software (Anthony, 2004) to conduct a word-frequency search of the word 'water' in the SRs indicating a company's discursive strategy. This is consistent with Hansen (1995) noting that the "frequent occurrence of specific words suggests certain types of 'discourse'". A qualitative CA of our corpus allowed us to distinguish specific material water strategies of companies. To analyse the recent diversification of companies' reported strategies to reduce and mitigate water risks over time we created a five-level model of areas of corporate water activity: 1) operational water efficiency, 2) external water resources context, 3) corporate water accounting, 4) public disclosure, and 5) corporate water stewardship and stakeholder engagement. Recent studies (Morrison and Schulte, 2010; Barton, 2010) identify similar elements to be relevant for a well-developed corporate water strategy. There is

no perfect mix of priorities among these different elements, but diversification is generally considered favourable. We used these elements to identify how a company's material water strategy has evolved over time. Based on these categories we used Atlas TI (Barry, 1998) to codify the earliest and the latest SR of each company. Table 2 (Annex) exemplifies in what context the word 'water' was codified to a specific category. The codebook was continuously consulted and complemented to categorise the SR of different companies in a coherent manner.

To complement our understanding of companies' motivations and strategies, we contacted the 11 MNCs and the main NGOs involved in developing the water-risk tools. Seven informants (table 3 – Annexe) representing actors participating in the water debate were available at the time of the research for an open semi-structured interview. The informants included technical experts, advisors and leaders representing some of the most important actors influencing the emerging water regime. We acknowledge the potential bias in the sample as the interviews were not conducted with all the MNCs and NGOs analysed, but only with those who accepted to participate. Nevertheless, the interview findings allowed us to obtain a comprehensive overview of the overall dynamics in the emerging regime combined with the results from the qualitative CA of the corporate SRs.

For the analysis of the organisational strategies of the companies we consulted the respective organisations and the MNCs.

FINDINGS AND ANALYSIS

The analysis of companies' motivations and strategies to account for, and disclose, water risks is structured according to the neo-Gramscian framework into discursive, material and organisational strategies. The quantitative and qualitative CA of SRs and media outputs, as well as the companies' involvement in initiatives and NGO partnerships give us an initial indication of their strategies. The division of the MNCs into two tiers facilitates comparison and identification of trends. Our analysis is then complemented from the macro perspective with a CA of the semi-structured interviews, representing the official position of some of the actors we are analysing. The second part of the analysis takes the form of the strategic selection of findings based on relevance to the research and interest in the discipline. The findings of this analysis will then be elaborated on in relation to our research hypotheses in the discussion section.

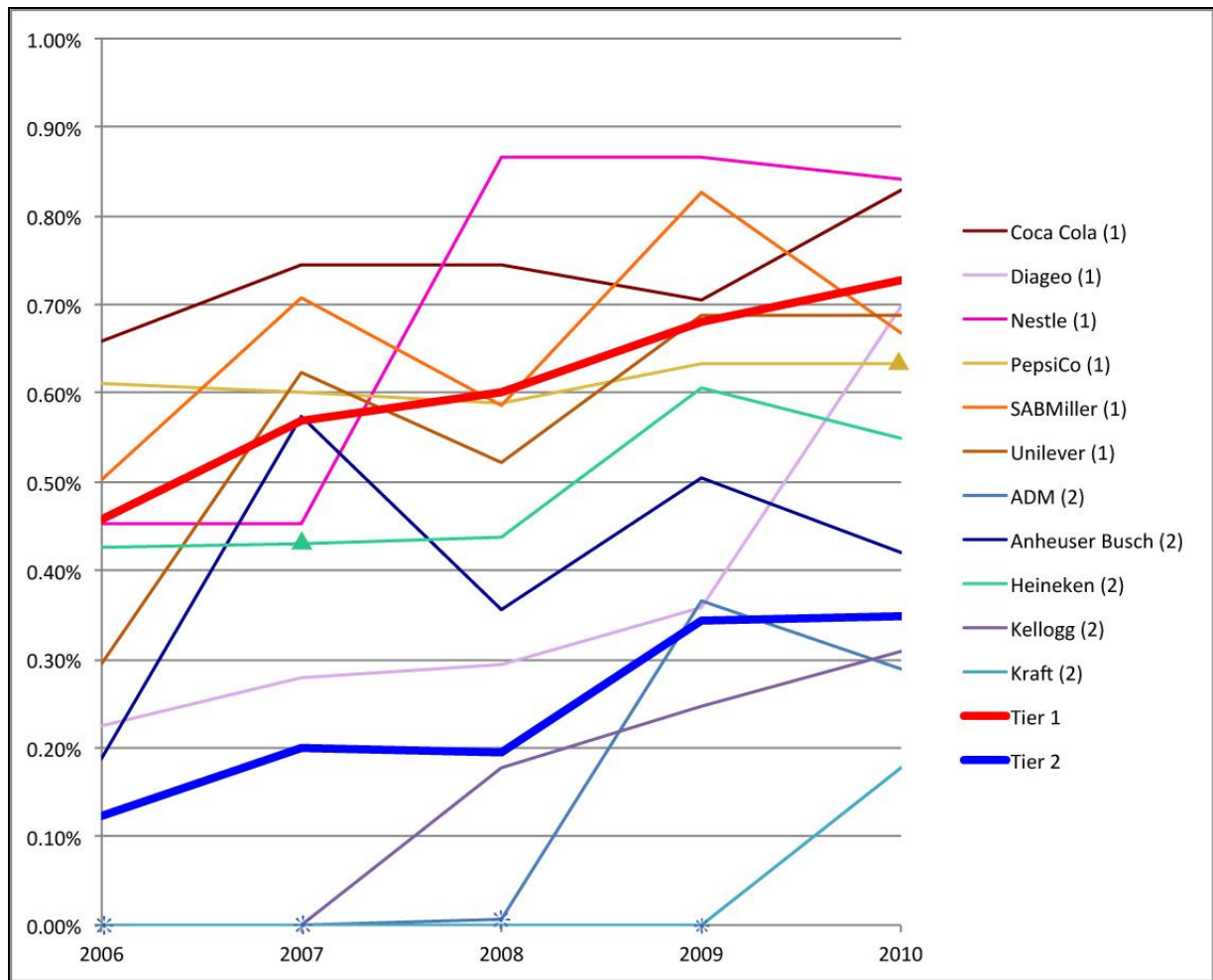
Discursive strategies

Sustainability reports: Findings

We used AntConc software to analyse our corpus and determine the frequency of the word 'water', following Hansen's (1995) suggestion that the frequent use of a word suggests a certain discourse (figure 1). This provides a gross indication of companies' discursive strategy.

Even though these values are purely indicative, we observe a general trend towards an increasing discourse on water in companies' SRs. This is consistent with the analysis of the Empowering Responsible Investment (EIRIS) that water has become more relevant for companies from the F&B sector over the last couple of years (EIRIS, 2011). Informant 5 explains that "feeling the tangible risks from losing access to freshwater and operating in regions where they could be seen as taking the water away from local communities made some companies take water risks more seriously", thereby contributing to water becoming more important on the corporate agendas.

Figure 1. Frequency of 'water' in relation to the total number of words in companies' annual SR.



Legend and limitations:

The thick blue and red lines show the average of Tier 2 and 1, respectively. Triangles: The values have been taken from the subsequent year for Heineken, 2008 and from the preceding year for PepsiCo, 2010.

Stars: No sustainability report was published for these years; the annual report was used instead (2006/2007: Kellogg, 2008: Kraft/ADM, 2009: Kraft).

Several Tier 2 companies only started disclosing their sustainability goals and achievements in recent years. For those companies we have used the annual report for previous years, whereas for companies that produced SRs, but did not make all of them publically available, we have used the values of the previous year to surrogate years without SRs. Furthermore, Nestlé has a policy of disclosing every second year an issue-specific global SR: In 2006 on water, in 2008 on nutrition and in 2010 on rural development. To make findings comparable with other companies we have therefore excluded the latter reports and used findings from subsequent years. Therefore, the following values are only indicative: Heineken 07; Kellogg 06, 07; Nestlé 06, 08, 10; ADM 06-08; PepsiCo 10; Kraft 06-09.

The observed development of an individual company's discursive water strategy over the past five years confirms our division into two tiers. Coca-Cola, SABMiller, Nestlé, PepsiCo and Unilever are consistently among the companies mentioning 'water' proportionally most often in their SRs. Diageo, which we also classified into Tier 1, only joined its peers in 2010; in the preceding years, it was mentioning water issues only half as frequently as Tier 1's average. Heineken was initially classified into Tier 2, but its discursive water strategy over the entire five-year period is closer to the average of Tier 1, indicating that Heineken had a more active discourse about water issues than its peers. Also ABInBev

has a more developed water discourse strategy than the other three Tier 2 companies, which only started disclosing SRs in 2008 (Kellogg, 2008), 2009 (Kraft, 2009) and 2010 (ADM, 2010). However, both tiers and almost all individual companies follow the general trend of mentioning water issues more frequently in their SRs over time, indicating an increasing prominence of water in their discursive strategy.

Material strategies

To get an understanding of how companies developed their material water strategy, we made a qualitative CA of the SRs (table 2, Annex) and distinguished the individual orientation of companies' water strategies over time. Literature on corporate water-risk practice (Barton, 2010; Morrison and Schulte, 2010) allowed us to deduce five material strategies on how a company identifies and addresses water risks throughout its value chain: 1) operational water efficiency, 2) external water-resources context, 3) corporate water accounting, 4) public disclosure, and 5) corporate water stewardship and stakeholder engagement. The more diversified a company's material strategy among these different categories, the more it has thought about the diverse nature of water and tried to identify and reduce the different forms of water risks. In the following we will first present the average material strategies of Tier 1 and Tier 2, and then discuss one company from each group in more detail. It is acknowledged that as the data rely on corporate reporting, the findings also reflect discursive strategies of the companies. However, in the absence of standardised verification schemes, evaluations of the corporations' material actions on the ground remain beyond the scope of this analysis.

Material strategies by tier

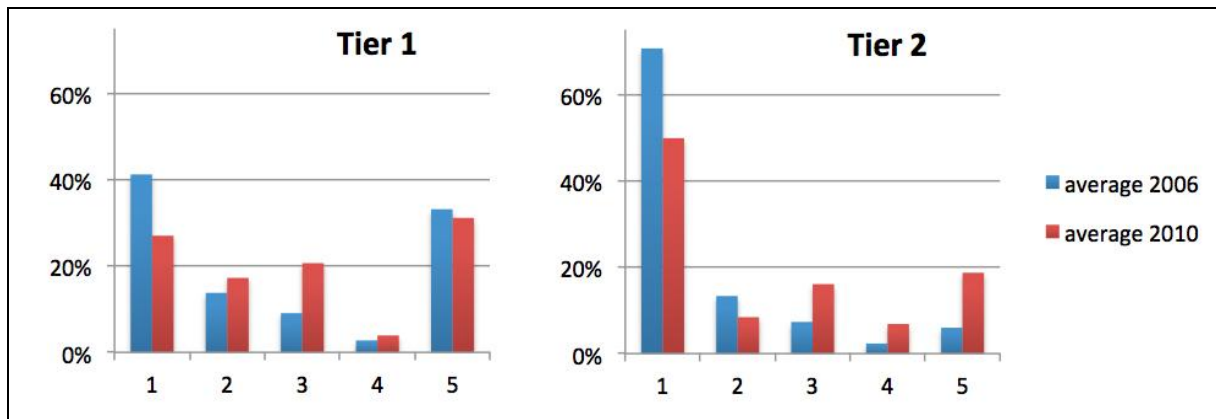
Figure 2 compares the material strategies of the two tiers in 2006 and 2010. We can see that whereas in 2006 the priority of both tiers was operational water efficiency, they both moved towards a more balanced and holistic strategy by 2010. However, we can clearly see that the orientation of Tier 1 was already much more balanced in 2006, especially with regard to water stewardship and stakeholder engagement. Although both tiers moved towards a more balanced material water strategy in 2010, Tier 2 still makes 50% of its references to water in the context of operational efficiency, compared to 27% for Tier 1. For the latter, water stewardship is with 31% of the most prevalent category. This suggests that the material strategy of Tier 1 has moved beyond operational water efficiency towards accommodating the risks throughout the watershed, elaborating with local stakeholders a sustainable water resources management plan. Although Tier 2 companies still prioritise operational water risks, they are catching up with programmes to accommodate watershed risks.

Material strategy of individual companies

We will now examine one company per tier, to illustrate how their material water strategy has changed over time. First, we examine Heineken's material water strategy because it is illustrative of how Tier 2 companies have moved from prioritising operational water efficiency towards a more balanced strategy.

In 2006 (figure 3) Heineken's SR mentioned water 50 times in a way relevant to our coding criteria. In 88% of them, they referred to improving the operational water efficiency. They marginally mentioned the local water context and water accounting. Water-risk disclosure and stewardship were not mentioned at all. In 2010, Heineken's water strategy has noticeably changed: we coded more than double the sentences with 'water'. Operational water efficiency halved its prevalence to 46%, especially in water accounting; public disclosure and stewardship seem to have become more important to the company's water strategy. Even though in 2010 Heineken still prioritises operational water efficiency more than the Tier 1 average, our findings suggest that it has moved towards a more balanced water strategy in trying to address the multiple sources of water risks.

Figure 2. Companies' material water strategy in 2006 and 2010 per tier.

*Limitations:*

All Tier 1 companies produced a 2006 SR for analysis. However, since Nestlé made a special report on water that year, we decided to use their 2007 global SR to improve comparability. For the second Tier group, Heineken and ABInBev had already published SRs in 2006, whereas Kraft started doing so only in 2010. Kellogg started to publish SRs in 2008 and ADM in 2009. For the purpose of this research and to have more meaningful data to compare the two tiers, we have analysed Kraft's 2008 report and included the results in the average of Tier 2 for 2006, together with Heineken and ABInBev. The average of Tier 2 for 2010 includes the findings from all five companies of this group.

Second, we examine Coca-Cola's material strategy, illustrating how some of the Tier 1 companies are pioneering the water-risk debate. In 2006, water stewardship, stakeholder engagement and philanthropic activities received 60% of their attention (figure 4). Operational efficiency and, to a lesser extent, context analysis and corporate water accounting were already part of their early water strategy. This indicates a more balanced approach than that of Heineken. As with Heineken, in 2010 the number of 'water' sentences doubled and corporate water accounting and public disclosure had become more relevant to Coca-Cola. However, unlike Heineken, Coca-Cola decreased the predominance of their water stewardship programme and slightly increased operational water efficiency. Overall, Coca-Cola had moved towards a much more balanced water strategy in 2010 and reduced the prevalence of water stewardship to a level similar to those of other Tier 1 companies. Compared to other Tier 1 companies Coca-Cola emphasised their water stewardship programme in 2006. This can be explained by the fact that they lost their license to operate in the Kerala region of India, because of how they were viewed by the public. Correspondingly, Informant 2 asserted that "in the early stage, reputational risks were one of the most important drivers to develop Coca-Cola's holistic water strategy".

Consequently, they emphasised water stewardship and engagement with local communities to better understand and minimise the risks of losing the social license to operate. Since Coca-Cola relies on a non-export, local consumer only business model, it is a business imperative for them to care about the health, vitality and sustainability of the local community and the resources they share with them (Informant 2). They are "similar to other businesses with water stewardship programmes, such as Nestlé, engaging more with their supply chain and developing special relationships with some of the producers, mitigating their risks" (Informant 1), thereby implementing Porter and Kramer's (2011) idea of CSV throughout the supply chain. The Kerala incident caused significant reputational damage to the company. It has "alerted the company to their material dependence on water and the need to address issues of sustainability – environmental, social and economic – proactively" (Informant 3), by quantifying and disclosing their water risks.

Figure 3. Heineken’s material water strategy development.

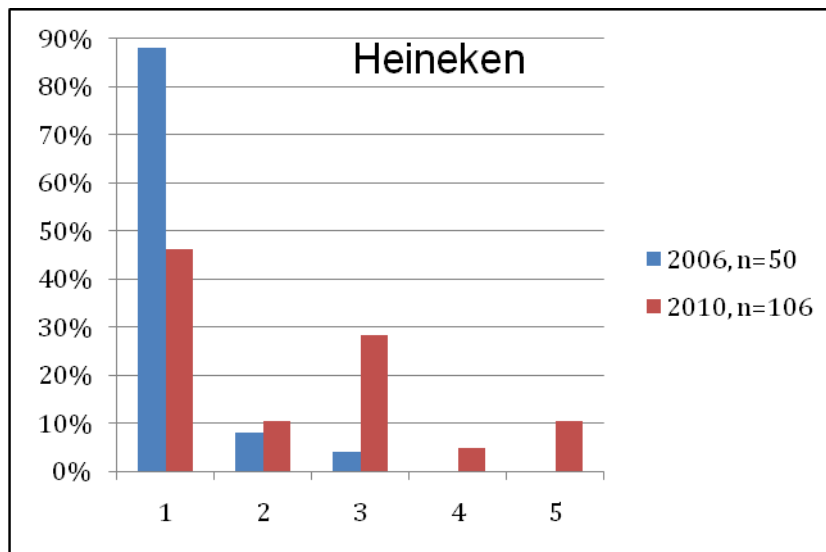
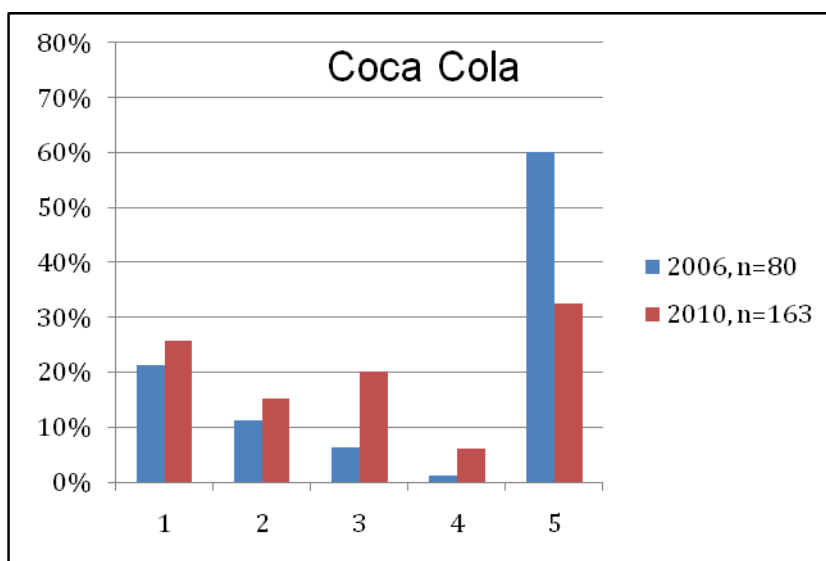


Figure 4. Coca-Cola’s material water strategy development.



Motivations to assess and disclose water risks from a material strategy perspective

Based on the interviews, reputational risks are of special importance to companies that have a global corporate name to protect, whereas companies such as SABMiller or Diageo are known through their local brands, and reputational damage to one of them will not have as much impact on their global corporate brand, as it would have for companies like Coca-Cola or PepsiCo. Furthermore, "particularly beverage companies have to get the water from where they operate, because it is not economically feasible to ship water" (Informant 4). This suggests that reputational drivers are more relevant for companies with a global corporate brand business model, and that beverage companies are exposed differently to physical water scarcity than food companies. However, Informant 3 asserts that "it is not just reputation, but a fundamental part of doing business and understanding its water dependencies and risks".

For Diageo's water strategy, physical risks constitute the most important driver, as they have faced operational disruptions of water supply in several production sites (Informant 6). Beverage companies see physical pressures as the most important driver for change in their water strategy: "if there is no water, there is no business. Even though physical pressure is the most obvious, it also influences reputational and regulatory pressures" (Informant 7). The other major driver for Diageo's water strategy was the realisation that SAB Miller, a direct competitor within the beer business in Africa, had established a leadership position on water within the alcoholic beverage sector. According to Informant 6, Diageo is in many ways an environmental sustainability leader; therefore, lagging behind their direct competitor on water issues was a strong driver for Diageo to catch up. Currently, several actors such as the Carbon Disclosure Project, PricewaterhouseCoopers, the International Finance Corporation, the Deutsche Entwicklungsgesellschaft and Ceres are looking at water risks for investors and it is likely that investor scrutiny will become a more important driver for corporate water-risk accounting and disclosure (Informants 4 and 7).

Consequently, different drivers and motivators have pushed individual companies to diversify their water strategy and look beyond the operational water efficiency in their factories. Whereas some suffered reputational damage because their company was held responsible for local 'water crises', others faced physical scarcity issues that led to operational disruptions. Investor's scrutiny is likely to become more relevant over time. However, since physical, reputational and regulatory risks are interlinked, the strategic adaptation of the companies' water programmes seems to be similar: over the last five years there has been a clear trend to care more about water. Simultaneously, companies take a more diversified material strategy, looking not only at operational efficiency but also at the local context, assessing the water footprint (WF) of a product throughout the supply chain, disclosing water risks and strategies to reduce those risks, as well as engaging with stakeholders to find sustainable water management solutions.

Organisational strategies

Companies' membership of initiatives and organisations

In recent years, many initiatives and organisations have been bringing companies from different sectors and industries together to develop ways to assess and address water risks to their activities. Table 4 lists some of the most relevant water risk tools and initiatives which the leading actors in the field are associated with. Since this is a rapidly developing field, the table is not exhaustive. The membership status of the companies has been obtained from these organisations.

We can see that almost all Tier 1 companies are part of four or more initiatives. Tier 2 companies are part of very few initiatives or organisations and seem to lag behind their peers in their organisational water strategy. Interestingly, Tier 1 companies that are in direct competition, such as PepsiCo and Coca-Cola in the beverage sector, seem to pursue very similar organisational strategies. Also Unilever and Nestlé are part of the same initiatives and organisations, given that BIER (Beverage Industry's Roundtable on the Environment) is not relevant to Unilever because it does not produce beverage products.

Water-risk assessment tools

There are numerous complementary and potentially competing publically available water-risk assessment tools. We acknowledge that many companies have developed their own internal tools (Informant 4), but we will focus on three publically available most widely used tools at the time of the analysis: World Business Council for Sustainable Development (WBCSD) Global Water Tool, Water WF developed by the Water Footprint Network (WFN) and Life Cycle Assessment (for a detailed comparison between the tools see Morrison and Schulte, 2010 and WWF, 2012).

Table 4. Involvement of the companies in water initiatives and partnerships with NGOs.

Initiatives/ Partner organisa- tion	T I E R	1. WFN	2. UN CEO Water	3. WEF	4. WBCS D	5. CDP Water	6. BIER	7. WRI Aqued uct*	8. WWF Water- Risk Filter*	9. AWS ***	10. Ceres Aqua Gage	11. ISO
ABInBev	2	X	X	0	0	X	X	0	n/a	n/a	0	X
ADM	2	0	0	0	0	0	0	0	n/a	n/a	0	X
Coca-Cola	1	X	X	X	X	X	X	X	n/a	n/a	X	X
Diageo	1	0	X	X	0	X	X	0	n/a	n/a	X	X
Heineken	2	X	X	0	0	0	X	0	n/a	n/a	0	X
Kellogg	2	0	0	0	0	X	0	0	n/a	n/a	0	X
Kraft	2	0	0	0	0	0	0	0	n/a	n/a	0	X
Nestlé	1	X	X	X	X	X	X	0	n/a	n/a	0	X
PepsiCo	1	X	X	X	X	X	X	0	n/a	n/a	0	X
SABMiller	1	X	X	X	X	X	0	0	n/a	n/a	0	X
Unilever	1	X	X	X	X	X	0	0	n/a	n/a	0	X

Legend

X Indicates that a company is a member of the initiatives/organisations or uses their tools.

0 Indicates that a company is not a member of the initiatives/organisations.

n/a indicates that the information whether the company uses the respective tool is not publicly available.

* According to the WRI, Coca-Cola is using the tool actively. Some other companies analysed have also stated interest in the Aqueduct risk tool.

** The concept of WWF's water-risk filter is anonymity. However, WWF confirms that several of the analysed companies have used the filter, and the tool has experienced a very high uptake of over 30,000 facilities in the first 3 months.

*** The AWS membership structure is currently under development and they are working with some of the companies listed to develop a water stewardship standard.

Abbreviations

1. WFN = Water Footprint Network; 2. UN CEO Water = United Nations CEO Water Mandate; 3. WEF = World Economic Forum; 4. WBCSD = World Business Council for Sustainable Development; 5. CDP Water = Carbon Disclosure Project Water Disclosure; 6. WRI = World Resources Institute; 7. WWF = World Wildlife Fund; 8. AWS = Alliance for Water Stewardship; 9. Ceres Aquagage; 10. ISO = International Standardisation Organisation.

Although only three companies in the focus of our analysis are official members of the WBCSD, most companies use its freely available Global Water Tool. Nestlé, SABMiller, Kellogg, Diageo and ABInBev, none of which are members of WBCSD, used the tool to communicate water scarcity in their 2011 CDP water disclosure (CDP, 2011). This shows that even though WBCSD has not registered the companies using the tool, almost all F&B companies use it, and some ask their suppliers to use it as well. Informant 7 argues that it is a great communication tool; however, "you should never make major investment decisions based on its findings without complementing it with a more granular analysis". According to Informant 5, this tool has a leading position to assess global water-risk exposure, but it does not answer all the questions and, therefore, it has to be complemented by local risk-assessment tools.

Several companies, including SABMiller, Nestlé, Coca-Cola, PepsiCo and Unilever have used the WFN water footprint methodology to identify how much blue, green and grey water is embedded in their product and thereby identify potential risks. During the WFN partner forum held at World Water Week 2010 in Stockholm there was a general agreement that "the value of water footprint is more in its components than in the total sum" (Informant 7). The WF methodology "allows companies to better understand how their products are linked to different river basins around the world, better understand water scarcity issues and [the methodology] can lead to different choices of water governance within the company and with local stakeholders" (Informant 3). Meanwhile, many companies expressed concerns about the usefulness and practicality of the rigorous WFN methodology. For example, a beverage company assessing the WF of one their products realised that "it is not useful to spend a huge amount of energy to get the entire WF, but rather to focus on the portions of the WF that have the greatest associated local impacts" (Informant 7).

Life Cycle Assessment (LCA) is a system analysis tool to measure the environmental sustainability of products and services throughout the value chain. It is a decision-supporting tool that has become mandatory for example in the EU and Australia. It allows the evaluation of use of environmental resources, process emissions and their impacts (Morrison and Schulte, 2010). Although LCA traditionally did not comprehensively take water into account, current research focuses on integrating it. Unilever conducted two case studies on tea and margarine that piloted the accounting and impact assessment of both WF and LCA and found that despite some differences the methods were ultimately quite similar in the hot spots they identified (Jefferies et al., 2010). Even though compared to WF there are still few companies testing the LCA for water-risk accounting, ISO is currently working within their 14,000 family of environmental management standards on how WF can be used in their wider LCA, with the final outcome likely to include an impact indicator (Informant 3). Given ISO's leadership in harmonising corporate standards, their 14,046 standard could significantly influence the water-risk assessment trends.

Since the analysis for this research was performed, WBCSD has partnered with GEMI on a Local Water Tool complementing the Global Water Tool. WWF has developed a Water-Risk Filter that enables companies and investors to assess and manage water risks, and WRI has launched Aqueduct, a water-risk tool with detailed water-risk indicators using local-level water-stress data. Furthermore, Ceres Aqua Gauge has been published to provide guidance to help companies expand their water management beyond their own operations. The landscape of the publicly available water-risk tools is dynamic and developing rapidly. The companies as the end-users are increasingly influencing these developments, as collaborative initiatives discussed next also show.

Initiatives and roundtables

The leading companies are interacting on a regular basis in several roundtables and initiatives, such as the World Economic Forum Water Initiative, the UN CEO Global Water Mandate and the Alliance for Water Stewardship to discuss business-related water issues. We focused on the BIER roundtable (Beverage Industry Environmental Roundtable) due to the particular focus of our research on MNCs from the F&B sector.

Since leading beverage companies saw the need to develop a WF methodology tailored to the needs of their industry, they initiated a dialogue attempting to establish common water-accounting boundaries, definitions, and calculation methods for the industry. With the exception of SABMiller, all other six beverage companies in our analysis take part in the BIER. Although they are cooperating with organisations like WFN, ISO and WWF, the meetings are exclusive to the companies. Informant 6 describes the working environment as "open minded" and "we are in this together mentality" rather than competitive. In 2011, BIER's partner organisations commented on their draft guidance, which was "more practical to the industry than the WFN methodology" (Informant 7) and have published the final

version in December 2011 (<http://bieroundtable.com/>). According to Informant 3, "this initiative began before the latest WF Assessment manual of the WFN was published and now there needs to be coherence built between the BIER guidelines and the manual". Informant 7 explains this trend towards a harmonised methodology as follows: "[a]s a company you want others to use the same method as you use, because if you were the only one using it, it would be difficult to claim that you use the best methodology". Also, Informant 1 confirms that it is in the company's interest to use a methodology that is broadly accepted as valid by the other stakeholders, thereby confirming a somehow natural trend towards harmonisation.

DISCUSSION

We will now first critically discuss the validity of our hypotheses based on the research findings. Second, we will discuss any other trends detached from our hypotheses, which we could find through our analysis and are relevant to the water-regime formation.

Testing our hypotheses

Path-dependency (H1)

Based on the research results we can validate the hypothesis that companies have a "dominant but yet contingent position" (Levy and Newell, 2002) in the creation of the water regime.

The analysis of companies' discursive strategy through their SRs (figure 1) revealed not only that there is a general trend of individual companies to strengthen and diversify their water discourse, but also that Tier 2 companies are following the path Tier 1 companies have taken. Also companies' material water strategy shows a general trend towards diversification over time (figure 2). Similar to the discursive strategy we can observe that Tier 1 companies have already further progressed in the diversification of their water strategy and that Tier 2 companies are catching up, indicating a certain path-dependency. When it comes to companies' organisational strategies, informants representing the dominant water-risk accounting frameworks confirmed that after initially testing their methodology with one Tier 1 company, more Tier 1 companies, and recently more Tier 2 companies also have started using their tools. Clearly, this indicates not only that there is a certain path-dependency among companies but also that the latter have a dominant position legitimising an NGO's methodology. Ultimately, it is the companies using the tools that make them become the dominant framework.

Cases of Diageo and SABMiller and PepsiCo and Coca-Cola are especially illustrative. A major driver for Diageo to enhance its water-risk strategy was that their direct competitor SABMiller had taken the lead on quantifying and accommodating water risks throughout their value chain. Consequently, Diageo followed their competitor's example and started to make WF for some of their products and participate in initiatives to develop adequate tools to assess and disclose water risks. This suggests mimetic behaviour as predicted by neo-institutional isomorphism and indicates a certain path-dependency, as it was SABMiller that started earlier to think about their water risks, influencing the path of companies that followed. Today, both companies pilot WF assessments of their products and participate together in initiatives. A similar trend can be observed between Coca-Cola and PepsiCo: they have both made WF pilots of their products, developed water stewardship programmes and participate in the same initiatives. Coca-Cola was probably the first company to realise that they had to identify and reduce water risks throughout their value chain after the local population in Kerala, India blamed them for water shortages. However, PepsiCo, which was extracting water from the same aquifer, seemed to have realised that they faced similar risks, as they also started diversifying their material water strategy in India. These two examples suggest that once companies started to think seriously about water-risk accounting, they first followed the path of the leaders in the field, and it is only after they had done more research by themselves that they attempted to contribute significantly to the current debates.

We have seen that individual drivers for companies to start accounting and disclosing their water risks vary. For example, corporations with global brands such as Coca-Cola, Nestlé or PepsiCo, are more vulnerable to reputational pressure, and beverage companies are respectively more exposed to physical scarcity. However, all informants identified physical water scarcity as the key driver, closely intertwined with regulatory and reputational pressure. Once a company has decided to take initiative regarding its respective water risks, possibly triggered by operational disruptions due to physical, reputational or regulatory pressure, it seemed to have generally followed the path of leaders in the field, thereby reconfirming the dominant position.

Cooperation (H2): Are companies cooperating?

Several multi-stakeholder forums have emerged, incentivising companies to share their experiences and work on common goals. According to table 4, Tier 1 companies are members of a variety of initiatives and are partnering with NGOs, indicating that there is constant dialogue amongst the companies. Informants confirmed that there is generally a very cooperative environment in the forums. Informant 4 elaborates that "within the official context, most companies work together in a very collaborative manner", and Informant 6 explains that "[w]e do not try to impose our thinking to others, but rather trying to find solutions together". This indicates that cooperation among companies and among companies and NGOs occurs.

The signs of cooperation are not surprising as several informants indicated that with regard to water-risk tools, companies pursue the same goal: "they want a scientifically accurate standardisation that is practical and supportive in improving their water efficiency and communicate with stakeholders from whatever NGO the ultimate methodology comes from" (Informant 6). Companies are working towards the shared goal to obtain a practical water-risk accounting and disclosure standard. However, several of them are also simultaneously developing new methodologies. Informant 7 states that whereas "on the one hand companies work together in BIER and other forums to define the content of the global water-risk accounting regime, on the other hand each company gives its own touch to it".

Therefore, we cannot reject H2 given that, in general, companies are cooperating, seeking harmonisation and aiming to create shared value with actors they cooperate with. However, at the same time some competitive strategic positioning can be observed.

War of position (H3)

A war of position among companies would suggest that cooperation between them does not occur per se, inclining that companies only selectively cooperate to form strategic coalitions with other companies or NGOs to reinforce their own position and thus influence the content of the emerging water regime. In addition, a war of position may be fuelled by single actors using a variety of tactics influencing a wider sphere of stakeholders to gain a hegemonic position in the regime. Our findings suggest that there is a certain positioning going on in the emerging water governance regime.

When it comes to coalition forming, no informant indicated that there would be exclusive coalitions among companies other than BIER in regrouping the beverage sector. SABMiller is the only leading beverage company which is not a member of the latter, as it has decided to pursue its own methods. It was therefore not excluded from BIER, suggesting that it is not a competitive but a voluntary and inclusive coalition. However, by abstaining from becoming a member, SABMiller has clearly decided to advance its own approach.

Our findings regarding companies' individual discursive, material and organisational strategies indicate that path-dependency can be observed in the companies' water strategy development, but that there are diverging trajectories after certain stages. The companies seem to pursue very similar strategies as the leaders in the field only until they catch up with the latter. The competing lead corporations with visible brands have been most clearly differentiating their discursive strategies from

their competitors. For example, in 2009, PepsiCo acknowledged the human right to water whereas Coca-Cola has abstained from explicitly acknowledging it. This indicates that they are not willing to follow an initiative from their direct competitor, suggesting that some companies use the corporate water strategy as a medium to differentiate themselves from their competitors (Informant 4).

As noted in the previous section, when it comes to development of different tools and standards, companies are, in general, working towards a shared goal. Over the past few years, companies have acquired a certain expertise with specific tools, for example Unilever is very advanced with the LCA, whereas SABMiller just published a WF Report (2011). However, "there is no sign that they are strongly attached to a specific methodology" (Informant 4). Coca-Cola is providing data on global water scarcity for WRI's risk-assessment tool Aqueduct that is potentially in competition with the WBCSD GWT, and Nestlé works closely with ISO on the inclusion of water into their LCA, but neither of them has indicated to be particularly attached to a specific methodology. Informant 2 underlined that "it is healthy to have a couple of tools at a practical level because it is a relatively new science".

According to the informants, the real competition to define the methodological basis of the water regime is not amongst companies but amongst the organisations developing the tools, "since it is in the interest of their livelihood that their tool is successful and they thus try to make it become the dominant framework" (Informant 4). According to Informant 5, "organisations are trying to position themselves because they are similar to companies competing against each other for funds, visibility and legitimacy". We will therefore briefly discuss a war of position among the NGOs developing and advertising their methodologies and tools.

Based on the interviews, amongst the different tool developers the most relevant tension was between the WFN and ISO at the time of the research. Both of these organisations have a legitimate reason to be chosen as the provider of the standardised framework. On the one hand, ISO has a strong history with their LCA series and it is legitimate that they want to strengthen their water component and, on the other, WFN has been working on a WF for many years, developing the most widely accepted methodology. Therefore, they also have a legitimate reason to get into the debate. Furthermore, several informants mentioned potential overlap between the WBCSD Global Water Tool and WRI's Aqueduct. However, Informant 5 dismissed that direct competition among the tools will happen, claiming that they will be complementary.

Our interviews did not confirm that NGOs would be overtly trying to attract companies to their side. However, NGOs actively attend conferences, talk to different initiatives and other NGOs and try to prevent anybody from duplicating what they have already done (Informant 5). This indicates an active discursive strategy combined with their organisational strategy partnering with companies, thereby improving their position.

Consequently, several potentially competing tools exist, and the livelihood of NGOs that developed them depends upon companies using them. This results in an environment in which NGOs potentially engage in a neo-Gramscian war of position to include their tool in the emerging water regime.

Further findings

In addition to the hypotheses tested, we have found some other interesting trends relevant to the consolidation of the water regime.

Harmonisation

There appears to be general agreement amongst companies to seek a harmonisation of methodologies. Companies are aware of their powerful position as regime engineers, saying that they are "happy to have a voice in shaping what comes out" (Informant 7). They are steering towards harmonisation and becoming "regime actors of their own right" (e.g. Okereke et al., 2009). Some companies have joined organisations with leading methodologies such as the WFN "because we wanted to assure that what

comes out of that network and was going to be accepted as a standard was something that was practical and acceptable to us" (Informant 7). The BIER is probably the most important forum in which leading beverage companies in water-risk assessment and disclosure are influencing the emergent harmonisation. Informant 4 asserts that "the actors who are within the debate now influence the development of a global water accounting and disclosure framework, and it is likely that the work that is being done now will be a dominant way of understanding water risks from a corporate perspective for a long time".

Creating Shared Value (CSV): A new paradigm?

The development of companies' discursive and material strategies over time shows how relevant water stewardship and stakeholder engagement have become, highlighting the emerging corporate accountability approach of CSV (Porter and Kramer, 2011). An interesting trend in the development of material strategies of Tier 1 was that in 2010 'water stewardship' became more important than 'operational water efficiency'. This is consistent with Porter and Kramer's (2011) argument that an increasing number of companies are pursuing a new strategy whereby they try to merge the bottom line of their business operations with society's needs. In the case of water, companies aim at reducing shared water risks throughout the watershed and value chains they are operating in, allowing them to 'create value' to all the stakeholders. Thereby CSV would become an important corporate motivation and strategy to participate in a global water regime formation. This is consistent with Meyer and Kirby's (2010) argument that the key in becoming a corporate leader is to internalise externalities such as water use across the entire value chain of the firm. Several companies pursue explicitly or implicitly a CSV strategy, and it seems it is becoming increasingly important.

The emerging water regime, which is currently driven by MNCs and NGOs without a clear democratic mandate or accountability, will influence the way companies deal with water throughout their value chain. Possibly it will not only influence the other companies that follow, but also affect the population living in the watersheds and local governments. Whether the harmonisation currently taking place in the water regime formation is inclusive to the needs of the other stakeholders in an equitable manner remains questionable. In the absence of standardised verification schemes and without comprehensive fieldwork, the efficiency, equity and sustainability of CSV programmes from a water-risk management perspective cannot be evaluated. As Levy and Newell (2002) point out, legitimacy and endurance of any governance approach is at risk without a proper grounding in society. Hence, whether CSV develops into a governance framework that delivers value to all the stakeholders remains to be seen.

CONCLUSION

Water-risk accounting, disclosure and stewardship are increasingly pertinent topics in F&B companies' agendas. Our analysis of 11 leading companies in the sector has revealed that the companies are putting more emphasis on their discursive strategy on water and claim to have diversified their material water strategy over the last five years acknowledging the diverse nature of water risks. A systematic content analysis of CSR reports of the chosen corporations and interviews with key informants suggest that companies tend to follow the leading peers of the sector in their water-strategy building, participating in the water-risk debate and using water-risk tools to account and disclose water risks.

Even though the companies spearheading the water debate try to give their own touch to it, we have found substantial evidence of cooperation among them. The companies seem to pursue a goal of a harmonised and meaningful water-risk accounting and disclosure methodology and cooperate in several initiatives. We found some evidence that especially competing lead companies engage in a 'war of position' to define the content of the emerging water regime, but that corporate initiatives for harmonisation such as BIER are cooperative and inclusive rather than competitive. Since companies are

the end-users of water-risk tools, they have a dominant position in influencing the methodological foundation of the regime. Currently, there are several possibly competing tools being developed suggesting that a 'war of position' among the tool developing NGOs is possible.

We have focused on the motivations and strategies of leading F&B companies taking part in the ongoing water-risk accounting and disclosure regime formation. We acknowledge that the analysis remains limited with regard to access to insights from internal corporate communications, and sustainability and water security impacts of the corporations' governance actions on the ground. These are much needed additional dimensions for understanding the role of corporations in managing water resources. A more detailed analysis is also needed on the position, role and interest of different NGOs in the regime formation.

We have identified a potential emerging paradigm of companies creating shared value throughout their value chain as a new corporate strategy to reduce water risks. Our concern is that the related initiatives are highly dependent on the leading MNCs and lack democratic legitimacy. The tools and approaches being developed may influence other firms, regulatory frameworks and have a remarkable impact on the people, their livelihoods and the supporting ecosystems in and beyond the catchment areas where the corporations operate. Nevertheless, it is absolutely necessary for MNCs with their global presence and massive resources to engage in sustainable water resources governance, and several of them are already doing so in a promising manner. Therefore, further trans-disciplinary research on their role comprehensively engaging different stakeholders is much needed.

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REFERENCES

- ADM (Archer Daniels Midland). 2010. Corporate responsibility update: Decatur, IL, USA: ADM. www.adm.com/en-US/responsibility/2010CR/social_investing/Pages/default.aspx (accessed 14 March 2012)
- Allan, J.A. 2003. Virtual water – The water, food, and trade nexus: Useful concept or misleading metaphor? *Water International* 28(1): 106-112.
- Anthony, L. 2004. AntConc: A learner and classroom friendly, multi-platform corpus analysis toolkit. In Proceedings of IWLeL 2004: An Interactive Workshop on Language e-Learning, pp. 7-13.
- Barry, C.A. 1998. Choosing qualitative data analysis software: Atlas/ti and nudist compared. *Sociological Research Online* 3(3) www.socresonline.org.uk/3/3/4.html (accessed 26 October 2012)
- Barton, B. 2010. *Murky waters? Corporate reporting on water risk – A benchmarking study of 100 companies*. Boston, MA: Ceres. www.waterfootprint.org/Reports/Barton_2010.pdf (accessed 14 March 2012)
- BIER (Beverage Industry Environmental Roundtable). 2012. A practical perspective on water accounting in the beverage sector. <http://bierroundtable.com/bier-releases-a-practical-perspective.html> (accessed 14 March 2012)
- Brown, H.; de Jong, M. and Levy, D. 2009. Building institutions based on information disclosure: Lessons from GRI's sustainability reporting. *Journal of Cleaner Production* 17(6): 571-580.
- CDP (Carbon Disclosure Project). 2011. CDP water disclosure. www.cdproject.net/ (accessed 14 March 2012)
- Diageo. 2007, 2010. Corporate citizen report. London. <http://ccreport2010.diageoreports.com/> (accessed 14 March 2012)

- DiMaggio, P.J. and Powell, W.W. 1983. Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review* 48(2): 147-160.
- EIRIS (Empowering Responsible Investment). 2011. *Water risk report: A drought in your portfolio: Are global companies responding to water scarcity?* London/Paris/Boston. www.eiris.org/files/research%20publications/EIRISWaterRiskReport2011.pdf (accessed 14 March 2012)
- Forbes. 2011. *The world's biggest 2000 public companies*. New York. www.forbes.com/global2000/ (accessed 14 March 2012)
- Giddens, A. 1984. *The constitution of society: Outline of the theory of structuration*. Berkeley: University of California Press.
- Gramsci, A. 1971. *Selections from the prison notebooks*. Edited and translated by Q. Hoare and G. Nowell-Smith. London: Lawrence and Wishart.
- Hansen, A. 1995. Using information technology to analyse newspaper content. In Lee, R.M. (Ed), *Information technology for social scientists*, pp. 147-168. London: UCL Press.
- Heineken. 2008, 2009, 2010. *Sustainability report*. Amsterdam. www.sustainabilityreport.heineken.com/ (accessed 14 March 2012)
- Hoekstra, A.Y. and Mekonnen, M.M. 2012. The water footprint of humanity. *Proceedings of the National Academy of Sciences* 109(9): 3232-3237.
- Jefferies, D.; Muñoz, I.; King, V. and Milà, L.C. 2010. *Water footprint pilots for tea and margarine*. Safety and Environmental Assurance Centre. London/Rotterdam: Unilever. www.unilever.es/Images/sd_UnileverSDReport170310_amended_tcm13-212972_tcm126-219783.pdf (accessed 14 March 2012)
- Kellogg. 2006. *Annual report*. Battle Creek, Michigan. <http://investor.kelloggs.com/annuals.cfm> (accessed 14 March 2012)
- Kellogg. 2008, 2010. *Corporate responsibility report*. Battle Creek, Michigan. <http://investor.kelloggs.com/annuals.cfm> (accessed 14 March 2012)
- Kolk, A.; Levy, D. and Pinkse, J. 2008. Corporate responses in an emerging climate regime: The institutionalization and commensuration of carbon disclosure. *European Accounting Review* 17(4): 719-745.
- Kostova, T.; Roth, K. and Dacin, M.T. 2008. Note: Institutional theory in the study of multinational corporations: A critique and new directions. *The Academy of Management Review (AMR)* 33(4): 994-1006.
- Kraft Foods Inc. 2008, 2009. *Annual reports*. Northfield, Illinois. www.kraftfoodscompany.com/investor/sec-filings-annual-report/annual_reports.aspx (accessed 14 March 2012)
- Levy, D.L. and Newell, P.J. 2002. Business strategy and international environmental governance: Toward a neo-Gramscian synthesis. *Global Environmental Politics* 2(4): 84-101.
- Levy, D.L. and Egan, D. 2003. A neo-Gramscian approach to corporate political strategy: Conflict and accommodation in the climate change negotiations. *Journal of Management Studies* 40(4): 803-829.
- Levy, D.L. and Newell, P.J. (Eds). 2005b. *The business of global environmental governance*. Cambridge, MA: The MIT Press.
- Levy, D.L. and Newell, P.J. 2005a. A neo-Gramscian approach to business in international environmental politics: An interdisciplinary, multi-level framework. In Levy, D.L. and Newell, P.J. (Eds), *The business of global environmental governance*, pp. 47-69. Cambridge, MA: The MIT Press.
- Levy, D.L. and Prakash, A. 2003. Bargains old and new: Multinational corporations in global governance. *Business and Politics* 5(2): 131-150.
- Levy, D. and Scully, M. 2007. The institutional entrepreneur as modern prince: The strategic face of power in contested fields. *Organization Studies* 28(7): 971-991.
- McEnery, T. and Wilson, A. 2001. *Corpus linguistics: An introduction*. Edinburgh: Edinburgh University Press.
- Meyer, C. and Kirby, J. 2010. Leadership in the age of transparency. *Harvard Business Review* 88(4): 38-46.
- Morrison, J. and Schulte, P. 2010. *An analysis of methods and tools for measuring water use and its impacts*. Oakland, CA: Pacific Institute.

- www.pacinst.org/reports/corporate_water_accounting_analysis/corporate_water_accounting_analysis.pdf (accessed 14 March 2012)
- Morrison, J.; Morikawa, M.; Murphy, M. and Schulte, P. 2009. *Water scarcity and climate change: Growing risks for businesses and investors*. Oakland, CA: Pacific Institute.
www.pacinst.org/reports/business_water_climate/full_report.pdf (accessed 14 March 2012)
- Nestlé S.A. 2007, 2009, 2010. *Creating shared value report*. Vevey, Switzerland: Nestlé.
www.nestle.com/CSV/AboutOurReporting/ReportsForDownload/Pages/ReportsForDownload.aspx (accessed 14 March 2012)
- Okereke, C.; Bulkeley, H. and Schroeder, H. 2009. Conceptualizing climate governance beyond the international regime. *Global Environmental Politics* 9(1): 58-78.
- PepsiCo. 2006, 2009. *Corporate citizenship report*. Purchase, NY. www.pepsico.com/Purpose/Sustainability-Reporting.html (accessed 14 March 2012)
- Pinkse, J. and Kolk, A. 2009. *International business and global climate change*. Abingdon, Oxon: Routledge.
- Porter, M. and Kramer, M. 2011. The big idea: Creating shared value. *Harvard Business Review* 89: 1-2.
- SABMiller. 2007, 2008, 2009. *Sustainable development report*. London.
www.sabmiller.com/index.asp?pageid=111&category=susdevelopment (accessed 14 March 2012)
- SABMiller. 2011. Water futures working together for a secure water future.
www.sabmiller.com/files/reports/water_future_report.pdf (accessed 14 March 2012)
- The Coca-Cola Company. 2006, 2008, 2010. Corporate responsibility review. Atlanta, GA.
www.thecoca-colacompany.com/citizenship/ (accessed 14 March 2012)
- Unilever. 2007, 2009. Sustainable living plan. London/Rotterdam. Retrieved from
www.unilever.com/sustainability/ (accessed 14 March 2012)
- Wentz, F.J.; Ricciardulli, L.; Hilburn, K. and Mears, C. 2007. How much more rain will global warming bring? *Science* 317(5835): 233-235.
- World Economic Forum. 2010. Global risk report – An initiative of the Risk Response Network. Geneva.
<http://riskreport.weforum.org/> (accessed 14 March 2012)
- World Economic Forum. 2011. Global risk report – An initiative of the Risk Response Network. Geneva.
<http://riskreport.weforum.org/> (accessed 14 March 2012)
- WWF (World Wildlife Fund). 2012. The water risk filter water tool comparison. March 2012. WWF and DEG KWF Bankengruppe. <http://waterriskfilter.panda.org/Image.axd?block=knowledgebase&id=43> (accessed 14 March 2012)

ANNEX

Table 2. Examples of contexts in which 'water' sentences were classified into the coding categories.

Coding category	Key words coded
1) Operational water efficiency	<p>Key words coded in this category were used in the context of quantification and optimisation of:</p> <p>Water use in the direct operations of a company, such as 'water efficiency' (Coca-Cola, 2006) or 'water use' (Nestlé, 2007).</p> <p>Water discharge quality, including 'waste water' (Nestlé, 2007) and 'water pollution' (Anheuser Busch, 2006).</p> <p>Consumer water usage, including 'enable consumers to use less water' (Unilever, 2010).</p>
2) Analysis of the water resources context	<p>Key words coded assesses either the global water resources context, such as 'water scarcity' (Heineken, 2009) and 'water crisis' (PepsiCo, 2006); the local context, such as 'water stressed area' (Diageo, 2010; or refer to tools used to assess the context, such as the 'WBCSD Global Water Risk Tool', Kellogg, 2010).</p>
3) Corporate water accounting	<p>The most frequent key word coded into this category was 'water footprint' (Unilever, 2007), referring to a specific water-accounting methodology. However, also other key words such as 'water balance' (PepsiCo, 2009) or 'water risk assessment' (Anheuser Busch, 2009) were coded under this category.</p>
4) Public disclosure	<p>On the one hand, we used key words indicating that a company collaborated with an external organisation such as CEO Water Mandate (SABMiller, 2008) or 'CDP water disclosure project' (Kellogg, 2010) to codify this category and, on the other, we coded references to publicly available reports disclosing water performance, such as 'corporate water disclosure' (Coca-Cola, 2010) and 'water reports' (SABMiller, 2007).</p>
5) Water stewardship, stakeholder engagement and philanthropic activities	<p>Key words such as 'water for communities' (PepsiCo, 2006) or 'safe drinking water and sanitation' (Nestlé, 2009) indicated that companies develop community water projects. Among others 'exchange of best practice' (Nestlé, 2010) and 'water, sanitation and hygiene education' (SABMiller, 2008) indicated training programmes. Furthermore, terms like 'watershed management' (Coca-Cola, 2008) or 'roundtable on water stewardship' (Diageo, 2007) indicated stakeholder engagement. Finally, donations to organisations such as 'WaterAid' (Anheuser Busch, 2010) or participation in events such as 'World Water Week' (PepsiCo, 2006) were coded in this category.</p>
6) Other	<p>If a sentence used the word water, but could not be classified in any of the previous five categories, it was attributed to this category. Key words coded in this category include 'bottled water' (Nestlé, 2007), 'use of hot water' (Heineken, 2009) to assess a company's carbon impact, or 'PricewaterhouseCoopers' (SABMiller, 2009), an external auditor.</p>

Table 3. Informants of the semi-structured interviews.

Code	Field	Date
Informant 1	International Environmental NGO	June 2011
Informant 2	Multinational Beverage Company	June 2011
Informant 3	Water Accounting Developing Organisation	July 2011
Informant 4	International Environmental Research Institute	July 2011
Informant 5	Sustainable Business Initiative Organisation	July 2011
Informant 6	Multinational Beverage Company	July 2011
Informant 7	Multinational Food and Beverage Company	August 2011

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