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# Does it matter what you call it? Reflections on how companies voluntarily disclose their adaptation activities[1]

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## Abstract

Adapting to climate change requires the engagement of a wide range of stakeholders, including the private sector. However, little is still known about if and how corporations, particularly those operating in the Global South, are involved in climate adaptation. This paper explores the existing evidence base, provides insights into multinational corporations' adaptation framings in their external communication, and asks what we can learn from corporate adaptation disclosure. Our review suggests that if adaptation is used in corporate disclosure, it is commonly framed along one or more of the following categories: risk reduction, supply chain management, corporate social responsibility, and/or business opportunities. We investigate this in greater detail for global Food and Beverage (F&B) companies that operate in developing countries. By comparing adaptation case studies both in the UNFCCC's Private Sector Initiative (PSI) database and in the companies' own sustainability reporting, we find that F&B companies frame their engagement using risk and supply chain-based language, with a focus on short-term business opportunities, while the need for strategic planning for longer-term action in response to future risks is largely missing from the companies' discourse. We argue that a better understanding of private sector's terminology and disclosure on adaptation is important for establishing collaborative, multi-stakeholder processes of adaptation in developing countries.

**Keywords:** Adaptation, voluntary disclosure, private sector, adaptation policy, climate risks and opportunities, UNFCCC, Private Sector Initiative

## 1. Introduction

Responding to climate change requires both mitigation and adaptation action. The IPCC's Fifth Assessment Report (2014) indicates that, even with successful efforts to significantly mitigate future global greenhouse gas emissions, there will be a need to adapt to the consequences of climate change as we have passed the point at which all the effects of climate change can be prevented.

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As a relatively new and multifaceted domain for policy, adaptation has been attributed diverse definitions in the literature, reflecting variations in context, region, stakeholders among other factors (Nitkin et al., 2009; Bassett & Fogelman, 2013). The IPCC (2007: 976), defines adaptation as 'an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits opportunities', referring to both preventive and reactive adaptive action (Schneider, 2014). While this definition encapsulates important aspects of adaptation for science and practice, it is important to additionally take into account the process through which adaptation acquires meaning among different adaptation policy stakeholders. The local nature, complexity and uncertainty of climate impacts require the involvement of many actors, with their own experiences, knowledge and challenges (Vink et al., 2013). Understanding what adaptation means and how it is categorised by different stakeholders is thus crucial for adaptation policy and governance (Dupuis & Knoepfel, 2011; Dewulf, 2013).

The private sector has a potential role to play especially in developing countries where corporate engagement is projected to accelerate vulnerability reduction if and when private sector projects and investments are scaled-up (Hart, 2013; Surminski, 2013). Private sector engagement is seen as a complement to national and international adaptation policy because private companies often possess sector-specific expertise and technologies, means to drive finance to development faster than the public sector, and direct access to local communities (Adger et al., 2005; Nitkin et al., 2009; Agrawal et al., 2012; UNFCCC, 2014c). Accordingly, research on adaptation has recently been focusing on identifying drivers that could motivate companies to engage in adaptation, conducting sectorial analyses of risk in order to evaluate different business sectors' adaptation challenges, examining regional trends in adaptation, and identifying possible ways in which businesses could act on, and build a business case for adaptation (Forstater et al., 2009; WRI, CSR Asia & Sida, 2009; PWC, 2010; Agrawala et al., 2011; UN Global Compact et al., 2011; CDP, 2012b; KPMG, 2012; Averchenkova et al., 2015). These studies provide important insights into private sector engagement and help increase awareness on what private sector action on adaptation may look like depending on the sector, size, capacities of firms, and companies' vulnerability to climate impacts (Sussman & Freed, 2008; Hart, 2013). However, limited empirical evidence on corporate adaptation has constituted a challenge for tracking adaptive action that is already occurring within the private sector (Ford et al., 2013; Surminski, 2013), particularly in developing countries. Furthermore, the existing studies of private sector adaptation have mainly been conceptualising adaptation without considering if and how the private sector discloses information about adaptation activities in the absence of formal reporting requirements (Linnenluecke et al., 2015).

This can be considered an important gap in the literature. A better understanding of the private sectors' external communication on adaptation is insightful not just for corporations interested in understanding how adaptation is considered by their peers. It also provides guidance for policy makers aiming for greater private sector engagement in the delivery of adaptation (Horstmann, 2008; Cohen & Viscusi, 2012). When properly designed, voluntary environmental information disclosure can act as an effective policy tool complementing command and control and market based policy instruments (Cohen & Viscusi, 2012; Smith et al., 2008).

The overall purpose of this article is to provide further insights into multinational corporations' voluntary adaptation disclosure. This is important for the adaptation discourse as well as for policy makers and companies because those self-reported case studies and disclosures form the main evidence base for our understanding of if and how corporations consider adaptation action.

The UNFCCC's Nairobi Work Programme recognized the need for better information about private sector adaptation in developing countries and led to the launch of the UNFCCC's Private Sector Initiative in 2011. It aims to inform governments about the action undertaken by the private sector, and to increase awareness among corporates on adaptation responses conducted by their peers (KPMG, 2012; Surminski & Eldridge, 2013). Membership of the PSI is voluntarily – and those companies who join can upload their individual adaptation case studies to the overall database, which is publically accessible.

In our analysis we explore how companies from one sector - the Food and Beverage (F&B) industry - showcase their adaptation action under the PSI as well as in their own company reporting. The F&B sector has been identified as highly exposed to climate change due to their supply chain and reliance on natural products (Sussman & Freed, 2008; Wong & Schuchard, 2009; Evans, 2012; UN Global Compact & UNEP, 2012), which explains why this sector has the highest number of member companies in the PSI. We focus on adaptation action conducted in developing countries because the F&B sector multinationals have often extended their supply chain to climate sensitive regions and thus are projected to be highly exposed to climate impacts such as increasing extreme weather patterns, droughts, and declining agricultural yields (Wong & Schuchard, 2009; Evans, 2012; Kreft & Eckstein, 2014).

We start our analysis by reflecting on existing literature and recent empirical evidence on how corporations conceptualise adaptation in their voluntary disclosure. We then consider to what extent those findings bear meaning at a sectoral level by investigating the adaptation reporting of those F&B companies that have joined the PSI.

## 2. Corporate engagement in adaptation

The literature on climate governance attributes a significant role to private corporations, including managing their own exposure to risk, leveraging finance to developing countries and providing access to goods and services to help build resilience in vulnerable communities (Agrawala et al., 2011).

Corporations' adaptation efforts are dependent on the motives and drivers for adaptation. Agrawala et al. (2011) link corporations' motives to their operational and strategic interests. To remain competitive, many companies will have to adapt their operations in developing countries to the changing conditions and prepare for the risks of climate change, whether they are direct in the form of extreme heat and water scarcity, for example, or indirect risks increasing vulnerability in supply chain and disruptions in infrastructure (Pauw & Pegels, 2013: 260). Moreover, strategic business opportunities may motivate companies to develop adaptation solutions given that variability in conditions is likely to generate new markets for innovative technologies and create new business opportunities by extending existing markets (Agrawala et al., 2011). As there is increasing evidence of both the risks and opportunities of climate impacts, it has been suggested that generating benefits for adaptation will increasingly motivate corporations to adapt to climate change (PWC, 2010; CSR Asia, 2011; Biagini & Miller, 2013).

Yet, risks and uncertainty regarding climate impacts can also inhibit effective private sector engagement. If companies have limited awareness of the cost of inaction or an organisational structure that is heavily path dependent or lacking sufficient resources and expertise, then adaptation may be seen as being in conflict with 'business as usual'. This would then render adaptation less relevant for corporations' overall strategies (PWC, 2010; CSR Asia, 2011), and raise concerns about pervasive incentives that promote maladaptation and short-term engagement (Forstater et al., 2009; Vink et al., 2013). While some debates within the corporate engagement in adaptation consider the conflict between adaptation and business-as-usual

irrelevant claiming that for many companies, anticipating and responding to risks is already an integral part of their risk management approaches (Berkhout et al., 2006; Weinhofer & Busch, 2013), recent studies highlight that addressing adaptation will pose an additional challenge for corporations (Averchenkova et al., 2015). Due to non-linear, complex and not easily quantified climate impacts, adaptation is likely to go beyond the normal business and policy-decision cycles, and require additional economic and regulatory capacity. In this sense, if only considered through current approach to business-as-usual, MNC's adaptation efforts may remain limited.

**2.1. Corporate adaptation disclosure**

Voluntary adaptation disclosure is 'not yet high on the corporate agenda' (Linnenluecke et al., 2015: 2; OECD, 2015), and specific adaptation disclosure schemes for the private sector are only emerging (Cohen & Viscusi, 2012). This is in contrast to climate mitigation efforts where voluntary information disclosure is widespread and can be done through well-established reporting frameworks such as the CDP and the Greenhouse Gas Reporting Programme (GHGRP).

The CDP has recently started to include a section on climate risks and impacts in its surveys and has published reports on climate adaptation in the private sector, as well as specific impact-focused surveys on supply chain and water (Acclimatise, 2009; CDP, 2012a; CDP, 2012b, Accenture, 2013; CDP, 2014). The Carbon Disclosure Standards Board, an international consortium of private and civil society actors, now considers adaptation alongside mitigation when promoting the inclusion of climate information into mainstream company reporting. Moreover, third parties have started to encourage specific sectors to disclose information. For example investors and interest groups are pressing the accounting sector to increase their disclosure on climate impacts and risks (Cotter & Najah 2012), while the Environment Agency's (2013) Climate Ready service provides guidelines for the F&B sector on how to better disclose supply chain related climate risks in their disclosure. The International Integrated Reporting Council, a global network of regulators, investors, companies, standard setters and NGOs, provides a framework to not only account for adaptation outcomes internally but consider the possible societal impacts of adaptation (Averchenkova et al., 2015). Nonetheless, despite these steps, figures on current climate risk reporting reveal rather low rates of adaptation disclosure (Young et al., 2009; Amado et al., 2011; Linnenluecke et al., 2015). This indicates that whilst reporting frameworks may gauge action that emerges as part of company strategies, most activity risks being left out of the overall disclosure as adaptation mainly occurs local contexts (Averchenkova et al., 2015).

Literature suggests that, to a significant extent, this is due to uncertainty surrounding the salience of adaptation terminology (NRTEE, 2012; Biagini & Miller, 2013). On the one hand, corporations may not label their actions as adaptation but rather as part of existing risk management, health and safety or operational resilience practices (McGray et al., 2007; Agrawala et al., 2011; Dinshaw, 2011; Pauw and Pegels, 2013). This is visible in the Climate Wise survey of global insurers, which revealed that a wide range of efforts related to disaster risk management activities were conducted without explicitly referring to adaptation activities (Surminski, 2010). On the other hand, corporations may simply not disclose information on adaptation in the first place given that adaptation may be considered too complex a term to generate reputational benefits, or too close to their strategic practices rendering the information sensitive (CDP, 2012b).

In a similar vein, empirical evidence highlights that there is considerable divergence about the meaning of adaptation among the private sector. For example, the Natural Resources Canada's 2009 survey found that adaptation action was largely confused with mitigation among the corporations (NRTEE, 2012). Importantly, studies have found that incoherence also exists within different forms of company reporting: the Carbon Tracker Initiative finds discrepancy in the perception of climate risks between fossil fuel companies' annual reporting and their voluntary disclosure (Carbon Tracker Initiative, 2014). In sum, the existing evidence base suggests that corporate adaptation disclosure processes are currently all but straightforward.

In this light, increasing the awareness of adaptation disclosure appears important. Given that the disclosure information reaches multiple audiences, such as governments, investors, advocacy groups and civil society, the data derived from corporate reporting can be used to inform policy-making processes and consumer decisions, improve risk and investment analysis as well as to companies' own benefit (OECD, 2015: 7). Concretely, it could help improve the effectiveness of disclosure as a policy instrument, which is dependent on the suitable design and compatibility with its context and stakeholder interests. At the same time, it is imperative to be aware of the limitations of voluntary corporate disclosure (Averchenkova et al., 2015). Corporate self-reporting may generate verification and selection bias. Moreover, as the schemes for disclosure have often not been designed for assessing adaptation to begin with, there might be issues with instrument validity and reliability, as has been the case with the CDP, for example (Averchenkova et al., 2015).

### 2.2. Framing adaptive behaviour

The emerging literature on private sector adaptation action suggests that corporate adaptation is commonly reported along one or more of the following four categories (Agrawala et al., 2011; Dinshaw, 2011; UN Global Compact & UNEP, 2012; Biagini & Miller, 2013; Hart, 2013; UNFCCC, 2014a): adaptation as 1) risk reduction, 2) supply chain management, 3) corporate social responsibility and/or 4) business opportunities. These categories are further explained below and will act as the analytical criteria to assess companies' adaptation discourse in our analysis.

#### 2.2.1. Adaptation as risk reduction

MNCs operating in countries most vulnerable to climate change may be exposed to physical risks due to extreme weather events; production risks due to possible natural resource constraints, operational interruptions, and lack of adequate technology and finance; market risks due to loss of product quality and quantity and lack of market information; and regulatory risks due to government policies or liability issues (WRI, CSR Asia & Sida, 2009; PWC, 2010).

Action on adaptation can, thus, include the provision of sector-specific expertise in monitoring and assessing climate impacts, managing risks on physical assets and operations, protecting raw material inputs, designing disaster risk management strategies and reducing financial and regulatory risks (UN Global Compact & UNEP, 2012). Overall, risk reduction is taken to entail activities relating to increasing risk awareness, conducting risk assessments, and managing risk (Agrawala et al., 2011; Weinhofer & Busch, 2013).

While the risk reduction discourse can be favourable for adaptation as it links action to climate change, there are also some possible limitations in this type of framing. For example, viewing adaptation as 'risks' or

'costs' may highlight uncertainty that is related to adaptation, and, as a result, framing adaptation using risk-based language may result in reducing incentives to adapt (Agrawala et al., 2011: 44).

### 2.2.2 Adaptation as supply chain management

MNCs' operations may be highly exposed to climate impacts if their suppliers do not have the capacity to adapt (Accenture, 2013; Crawford & Seidel, 2013). Building adaptive capacity of the supply chain will, therefore, be important, especially for MNCs sourcing from climate sensitive regions. Adaptation action can take the form of improving the suppliers' responsiveness to climate impacts, upgrading infrastructure and equipment, educating suppliers to use climate-sensitive resources more effectively (e.g. water), considering workforce stability and stimulating innovation (Wong & Schuchard, 2009).

It is important to note, however, that addressing the vulnerability of a supply chain could also lead to maladaptive practices (UN Global Compact et al., 2011). With threats of declining yields for example, MNCs may choose to extend plantations to marginal lands and put more pressure on farmers. On the other hand, corporations can simply move their supply to another location to avoid climate risks (Hart, 2013). If adaptation to climate change means putting more pressure on the vulnerable, or indeed abandoning them completely, corporate decisions may decrease community resilience, which then would render framing adaptation as supply chain management problematic.

### 2.2.3. Adaptation as Corporate Social Responsibility (CSR)

Operating in a CSR context means is that corporations adopt practices that go beyond their legal requirements in order to improve the workplace, be responsible for the impacts of their activities, and generate economic, environmental and social benefits to the society in which they operate (Vogel, 2006). This can also be driven by reputational concerns of a company. Dinshaw (2011) suggests that because the majority of MNCs have already incorporated CSR into their operations, corporate responsibility could be easily extended to adaptation efforts. Framing adaptation as CSR could include action to add economic, social or environmental value to the society; and supporting local initiatives and development projects (WRI, CSR Asia & Sida, 2009).

Yet, in cases where corporate responsibility is mainly philanthropic, framing adaptation as CSR may have weak connections to business case. As a result, the benefits from adaptation may seem less tangible for corporations. A further challenge arises in the developing country context, sufficient capacity and conditions to implement corporations' CSR mandates may not exist. This might lead to a decoupling of the corporate MNC rhetoric from action and development outcomes on the ground (Newell, 2005). Moreover, there might be discrepancies between local development goals and MNC concerns if the CSR discourse reflects predominantly 'northern' priorities (Idemudia, 2011). It is also important to be aware of the possibility of 'greenwashing': MNCs may disclose misleading information about their action in order to gain reputational benefits (Delmas & Burbano, 2011). It is therefore important to consider the extent to which MNCs communicate to be taking local initiatives and objectives into account, and whether they have partnered with local or international NGOs (Dinshaw, 2011).

### 2.2.4. Business opportunities

The fourth category relates to adaptation as a business opportunity, arising through operational changes or new strategic possibilities. While this is often highlighted as a more effective motivation for corporations (Biagini & Miller, 2013), recent studies indicate that, generally, corporations tend to be more aware of the risks than of the benefits of adaptation (Acclimatise, 2009; CDP, 2012b). Moreover, there are risks of

perverse incentives that promote maladaptation and short-term engagement, which may limit corporations' ability to address the acute and long-term impacts of climate change (Forstater et al., 2009; Linnenluecke et al., 2013). Biagini and Miller (2013) argue, therefore, that for the private sector engagement to be the most salient, a paradigm shift in viewing the value of adaptation from short-term to long-term benefits may be needed.

Those four categories indicate the different terminologies and framing of adaptation, however it is important to note that the boundaries are fluid and often overlapping. In our analysis we assessed the language used by the companies in the reports and the PSI cases and grouped them into the following categories: Under the heading 'risk reduction' we considered references made to assessing, monitoring and reporting climate impacts, risk management of physical assets and operations, disaster risk reduction, protecting raw material input and reducing financial and regulatory risks. In the 'supply chain' category we included references to building adaptive capacity of suppliers, improving resource management, developing sustainable growing methods, upgrading infrastructure and equipment, considering workforce stability, and stimulating technological innovation. For the 'CSR' category we counted examples of communicating a global responsibility to address climate change, adding social as well as economic and/or environmental value to society, improving locals' access to natural resources and/or services as well as technologies, and action beyond legal obligations. We acknowledge that it is often difficult to differentiate between these groups and overlap is unavoidable. In cases of clear overlap, the same project can be included in more than one category.

As a general guideline references to direct risks to operations were grouped as 'risk reduction', and indirect risks to operations feature under 'supply chain'. Moreover, if a company communicates to have attempted to bring benefits to the entire community, the case is categorised as CSR even if it also included building capacity among the suppliers.

## 3. Methodology and Data

The PSI hosts a database from 19 different business sectors, with the F&B sector having the highest number of case studies (17) on the PSI database (Wong & Schuchard, 2009; UNFCCC, 2014a). For our investigation we focus on those 12 projects that have been undertaken in developing countries. Cafédirect had submitted the same case study content twice (FB2), therefore the total of case studies analysed was 11, as listed in Table A.

| Company | Case study title on PSI | Country | Code |
|---|---|---|---|
| Bunge (2013) | Conservation of forests and mangroves with economic diversification as a mean to adapt to climate change | Colombia | FB1 |
| Cafédirect plc (2012) | Climate change adaptation strategy for Kayonza Growers Tea Factory | Uganda | FB2 |
| Cafédirect plc and GIZ (2010) | Adaptation for smallholders to climate | Peru | FB3 |

| | | | |
|---|---|---|---|
| | change (AdapCC) | | |
| FEMSA Foundation (2012) | The Latin American Water Funds Partnership (LAWFP) | Mexico, Brazil, Ecuador, Colombia, Venezuela, Panama, Costa Rica, Dominican Republic, Guatemala, Honduras, Peru, Bolivia, and Chile | FB4 |
| Green Mountain Coffee Roaster (GMCR), International Centre for Tropical Agriculture, Catholic Relief Services (n.d.) | Coffee Under Pressure: Climate change and adaptation in Mesoamerica (CUP) | El Salvador, Mexico, Guatemala, Nicaragua | FB5 |
| Nestlé (n.d.) | Providing farmer training and assistance | Côte d'Ivoire | FB6 |
| PepsiCo India (2013) | Replenishing water | India | FB7 |
| PepsiCo South America, Caribbean and Central America Foods (2007) | Adapting to climate change for potato production in the Andes | South American, Caribbean and Central American countries | FB8 |
| SEKEM Holdings Group (n.d.) | Integrating adaptation into core business practices | Egypt | FB9 |
| Starbucks Coffee Company and Conservation International (n.d.) | Ensuring supply of high-quality coffee | Mexico | FB10 |
| The Coca Cola Company (TCCC) and the World Wildlife Fund (WWF) (2007) | Building reputations, securing resources: Teaming up for water conservation | Vietnam and Thailand | FB11 |

Table A. Data from the PSI.

The PSI-database offers insight into type of adaptation activity and categorisation in terms of business motivation. For each case study, companies are asked to choose amongst 13 different forms of adaptation action as listed in Table B. An assessment of the F&B case studies (Table B) shows that in 22% of all cases, adaptation action is referred to as 'climate-resilient development and planning', followed by 'capacity building' (13%) and 'risk/vulnerability mapping' (11%).

| Adaptation action | All mentions (n=54) | |
|---|---|---|
| | No. | % |
| Climate-resilient development planning | 12 | 22 % |
| Capacity building | 7 | 13 % |
| Risk/vulnerability mapping | 6 | 11 % |
| Communications and awareness raising | 5 | 9 % |
| Training | 5 | 9 % |
| Monitoring and evaluation | 4 | 7 % |
| Pilot adaptation programmes/projects | 4 | 7 % |
| Education | 3 | 6 % |
| Financial support | 3 | 6 % |
| Disaster risk reduction | 2 | 4 % |
| Knowledge management | 2 | 4 % |
| Early warning systems | 1 | 2 % |
| Humanitarian assistance | 0 | 0 % |

Table B. Categories of adaptation action.

These categories are provided by PSI, which influences how a company discloses adaptation activities, and it remains unclear how companies interpret and apply them. Particularly the 'climate resilient development planning' and the 'capacity building' types seems to feature highly due to the fact that they are rather all-encompassing labels, that lack the specific detail of other types such as 'financial support'. Therefore the PSI-typology is only seen as an illustration – what is of more interest is the question how companies describe the aim and motivation of their adaptation activities in the PSI and in their own business reports.

## 4. Findings

The next part analyses how these different adaptive actions reflect the framework categorisation. Although there is overlap, the overall findings indicate that the most predominant framings are risk reduction and supply chain management, as illustrated in Table C.

| **Category** | **Company** | **No.** |
|---|---|---|
| Risk reduction | FB4, FB5, FB10, FB11 | 4 |
| Supply chain management | FB1, FB2, FB3, FB6, FB7, FB8 | 6 |
| CSR & Supply chain management | FB2, FB7, FB11 | 3 |
| CSR & Risk reduction | FB5 | 1 |
| Business opportunities as an independent framing | FB9 | 1 |
| Business opportunities referred to through other framings | FB1, FB4, FB6, FB7, FB8, FB10, FB11 | 7 |

**Table C. List of findings.**

The most recurrent framings of adaptation reflect the characteristics of the F&B sector. Risk reduction is highly relevant in the context of production and operational risks, such as water scarcity and high climate-

sensitivity of coffee sourcing areas, which are highlighted in the literature as making the F&B sector specifically vulnerable to climate change (Sussman & Freed, 2008). Emphasis on supply chain management framings, in turn, may be seen as being, at least partly, determined by the characteristic that the F&B supply often comes from agricultural practices producing food and livestock, and the supply chain is diverse and globalised, including poor agricultural smallholders in rural areas. Moreover, the majority of the companies analysed are currently integrating local development objectives into their supply chain and risk based framings. In this light, adaptation as CSR is exhibited as a complementary means in the first two framings. Two thirds of the companies indicate business benefits in the PSI through risk, supply or CSR-based framings. Yet, only one company discloses adaptation specifically as a business strategy.

### 4.1.1. Adaptation as risk reduction

Four companies present their adaptation case study in the context of 'risk reduction' within their business operations (FB4, FB5, FB9, FB10). They use terms such as 'assessing future suitability of coffee sourcing areas to production' and 'modelling climate scenarios', as well as 'identifying alternative crops to reduce climate impacts on coffee quality and quantity'.

Climate change is communicated to pose production risks because floods, droughts and water contamination negatively affect the companies' natural resource base and operations. In the FEMSA Foundation case study, adaptation is talked about in terms of reducing operational and financial production risks as well as regulatory risks. As a response to risks from extreme weather events and water contamination, FEMSA Foundation has engaged in watershed management by co-developing financial mechanisms ('Water funds') for water conservation to support natural resource management and decrease risks related to dependency on water resources (FB4).

In addition, risk reduction emerges as increasing awareness about susceptibility to climate impacts. The GMCR, CIAT and CRS and Starbucks Coffee Company and Conservation International emphasise their role in helping farmers understand their vulnerability to climate change (FB5, FB10). The activities include education and training campaigns, assessing future suitability of coffee sourcing areas to production and modelling climate scenarios, assisted restoration of ecosystems, as well as identifying alternative crops to reduce climate impacts on coffee quality and quantity (FB5). SEKEM Holdings Group talks similarly about reducing the company's vulnerability to climate risks by promoting organic production methods and water management; yet it not only talks about the operations but also aims to incorporate these also into the entire enterprise management (FB9).

Overall, the majority of companies that frame adaptation as risk reduction are beverage companies that partner with coffee producers in Central and South America, which may suggest that the type of product and sourcing areas affect the way in which MNCs frame adaptation. Coffee production is likely to decrease significantly even with small temperature increases (IPCC, 2014; Laderach et al., 2011), and countries in these regions are projected to suffer highly from climate change (Kreft & Eckstein, 2014). Moreover, the Chiles de Nicaragua report states that their adaptation strategy was established after the company had experienced the impact of extreme weather events on their production, which implies that concrete experience about climate impacts may influence the framing of adaptation

### 4.1.2. Adaptation as supply chain management

Six case studies are based on supply chain management concerns (FB1, FB2, FB3, FB6, FB7, FB8). The cases mostly relate to building resilience of farmers by enhancing adaptive capacity of the suppliers, improving planting strategies and providing technical support for resource management. Examples are PepsiCo South America and Caribbean and Central America Foods, who have invested in building resilience among potato producers in the Andes (FB8); PepsiCo India with the development of more efficient seeding machinery and water efficiency improvements (FB7); Nestlé through their 'Cocoa Plan' project that offers training for better farming practices (FB6); Cafédirect and GIZ by reforesting grasslands (FB3) and Cafédirect plc by addressing management of pest and diseases (FB2).

Interestingly, it emerges that adaptation in terms of supply chain management is frequently established as sustainable agriculture practices. The discourse in the aforementioned cases contains both improving environmental and social sustainability of the agricultural practices. Bunge (FB1) and PepsiCo South America (FB8) provide a good example of this kind of framing: Bunge aims to generate economic diversification by conserving forests through sustainable agricultural practices, with an aim to improve local communities' living standards and increase farmer incomes. PepsiCo South America, in turn, aims to make sustainable agriculture feasible by providing technical support for crop diversification and a more conscious use of natural resources to maintain biodiversity on the one hand; and develop better working conditions for the supplier farmers on the other hand.

Obviously there is a clear overlap between risk reduction and supply chain management, for example with crop diversification. However, in those six cases mentioned above the companies specifically state the aim of improving the resilience and increase livelihoods of the suppliers.

### 4.1.3. Adaptation as CSR

Several companies present their case studies by using typical CSR terminology –such as sustainable communities, family planning, environmental stewardship programmes and vocational training. The nature of the terminology becomes less linked to the companies' core operations, containing more engagement in voluntary and even philanthropic terms.

In the cases analysed, CSR action overlapped with the first two framings (supply chain management with FB2, FB7, FB11; and risk reduction with FB5), which suggests that CSR may not be as relevant for adaptation as an independent motivation, but rather serves as a complementary means when engaging in adaptive action.

In the Cafédirect plc's case 'Kayonza Growers Tea Factory' adaptation can be considered CSR in addition to supply chain management given that social, economic and environmental improvements are projected to the Kayonza community by addressing food scarcity through better farming methods, implementing family planning programmes to reduce the pressure of high population on natural resources, and conserving swamps and wetlands. The company concretised CSR through establishing a competition for best projects to tackle climate change and the locally developed Kayonza project was one of the winners and received funding to implement the project (FB2). Femsa Foundation (FB4), in turn, engages to invest returns from their 'Water funds' into projects that generate social and economic value to the Latin American region. In

sum, it appears that adaptation as CSR emerges through funding regional projects or establishing funds that can incentivise sustainable economic development opportunities.

Importantly, in the majority of cases where adaptation is described as part of the CSR strategy of a company, the respective MNC has partnered with an NGO. TCCC and the WWF have implemented projects on water stewardship to conserve biodiversity of river basins and promote sustainable development in the communities. Through the partnership, TCCC employs a discourse on wider corporate responsibility, also evident from the following statement: 'Coca-Cola recognized that it cannot have a healthy and growing business unless the communities it serves are sustainable themselves' (FB11). Moreover, TCCC&WWF and PepsiCo India &Water.org (FB7) have also included CSR to their adaptation action by providing microcredit loans for locals to improve access to safe water, help business start-ups or, promote vocational training.

#### 4.1.4. Business opportunities

Eight out of twelve companies reflect on business opportunities in their description of adaptation activities. Adaptation is communicated to foster business benefits using language that describes protecting environmental capital and raw material inputs (FB4, FB6, FB7, FB10, FB11), creating opportunities for new technologies (FB7), enhancing product portfolio (FB8, FB9), building a business case from incorporating farmers applying best practices into the company's value chain and from getting better product prices by connecting farmers applying best practices to international markets (FB1, FB10), improving company's reputation (FB11), adaptation as long-term business strategy (FB9).

Adaptation benefits appear to be most commonly understood in terms of guaranteeing the supply of raw materials and enhancing product quality, quantity and price (FB4, FB6, FB7, FB10, FB11). Seizing opportunities in this way may suggest that the majority of companies seek short-term benefits from adaptation, rather than considering long-term benefits from, for instance, financial savings from better resilience in the future, or supporting the resilience or economic vitality of a community in which they operate.

Nonetheless, SEKEM Holdings Group appears an exception as they describe their engagement in adaptation as part of a long-term sustainability strategy and enterprise management (FB9). Adaptation is said to be integrated into both business unit and decision-making levels. Long-term benefits are identified as creating opportunities to develop new strategies for products and services, better responding to changing market and consumer needs, becoming more efficient partners in building resilient communities and increasing institutional climate change resilience.

### 4.2 Adaptation framing in company reports

To further our understanding of how companies reflect on their adaptation activities we examined whether case studies showcased in PSI are also disclosed in companies' reports or websites. For all companies we have identified some level of disclosure outside the PSI, but to various degrees and level of detail. The way in which adaptation action is framed in PSI appears to be replicated in the company discourse, the main themes being sustainable agriculture and water management (supply chain), creating climate change impact models and increasing awareness of risks (risk reduction), and/or supporting community support projects and building resilience (CSR). Most strikingly the longitudinal report analysis shows that companies are, to some extent, differentiating between current and future climate risks in their framings, but not

under the PSI disclosure visible in the PSI. We will discuss this further below. The main tendencies are summarised as follows:

| Current risk | Example from case studies: |
|---|---|
| **Risks to communities and farmers:** | Reduced livelihoods & risk of disease; Food security; Environmental and forest degradation; Water scarcity affecting public health and agricultural practices; Environmental and labour risks. |
| **Production risks:** | Water scarcity impacts operations and farming; Lack of climate change preparedness impacting agriculture; Immediate risk to coffee farmers. |
| Future risk | Example from case studies: |
| **Risks to communities and farmers:** | Difficult economic conditions for farmers; Health of the communities in which the company operates; Availability of land to food production and a higher risk of food security. Long term risk: water management in urban settings. |
| **Production risks:** | Effects on harvest patterns which risks changing production cycle; Water shortage; Increased costs for processing and transport of products (costs of AC); Long-term risk to coffee production; Current coffee sourcing regions become unsuitable for coffee farming; Impair production capabilities; Disrupt our supply chain or impact demand for our products. |
| **Financial risk:** | Financial and ecological collapse; Limited availability or increase the cost of key agricultural commodities; Extreme weather events impacting production processes can have financial ramifications for the company and its associate producers. |
| **Regulatory risks:** | Low risk of stricter regulation in the future as currently adopting practices of environmentally friendly production. |

Table D. Current and future risks based on longitudinal report analysis on years 2009-2014.

When looking at the usage of the term adaptation in the companies' sustainability reports, the research reveal that 27% of the MNCs attribute the word adaptation to their adaptive activities in all their documents between 2009-2014 (FB2, FB3, FB5). 18% of the companies do not link their action to adaptation, although they showcase the same action in PSI (FB1, FB9) and 55% mention adaptation at least once in their documents (FB4, FB6, FB7, FB8, FB10, FB10). The term climate change is used consistently by all companies. In the majority of cases where the term adaptation is used, companies also indicate a separate section for their climate change strategies in their reports.

### 4.3 Expert interviews

In order to further consider the role of voluntary disclosure in adaptation policy, we verified and discussed our findings with experts from the UNFCCC as well as companies. Three main indicators for successful adaptation projects can be drawn from the interviews: transparent dialogue, stakeholder consultation/engagement and government support. It can be inferred from the interviews that voluntary corporate disclosure of adaptation could influence these processes through demonstrating to private sector actors that are indecisive on their approach to climate change that adaptation can be profitable, and facilitating the processes to inform governments about adaptation. Regarding disclosure through PSI, the expert interviewees mentioned benefits in terms of catalysing more R&D in private sector and adaptation to reduce uncertainties related to adaptation and climate impacts.

The interview data give mixed results regarding the usefulness of different adaptation disclosure. While some emphasise the need to stop talking about adaptation and variability that occurs within '10-500 years' and rather focus directly on risk-based language, others find having adaptation as a common nominator crucial in order to link companies' action on resilience to climate impacts and convince them about making long-term investments on adaptation. The expert interviews seem to indicate that CSR as an adaptation framing only offers weak connections to business case. Moreover, what is commonly indicated is that the better the scalability of private sector adaptation projects, the more influence corporate framings could have in adaptation policy. For instance, the interviewees suggest that MNCs projects may reach local initiatives better than governments if they partner with and support local and indigenous SMCs, and when replicated these projects could be important in policy implementation.

The interviews also indicate that there is a need to remain critical about the legitimacy and transparency of corporate framing. Two interviewees emphasised that if adaptation is framed as profitable action, then this information is perhaps not easily disclosed due to competitive advantage issues, which may risk decoupling discourse from actual action undertaken. 'Greenwashing' is identified as the biggest single threat that might undermine the effect of framing. Yet, it is highlighted that there rarely is a single stand among the private sector when it comes to climate change, and so there will be both pioneers and sceptics regarding adaptation framing.

## 5. Discussion

Our review of literature and existing evidence shows that adaptation is considered by the private sector as either risk reduction activities, supply chain management, CSR and business opportunities. To a large degree, the findings from the report analysis of F&B companies reflect these suggestions. We find that F&B MNCs disclose their adaptation action mainly as risk reduction and supply chain management. When it comes to disclosing business value from adaptive action, we find that when risk reduction, such as crop diversification, is linked to opportunities, then engaging to climate change appears to represent a positive investment for companies rather than a necessary action to reduce future production costs. Overall, two thirds of the companies indicate business benefits in the PSI. Yet, only one company discloses adaptation specifically as a business strategy. This suggests that a paradigm shift where business opportunities are considered the most concrete framing for adaptation may still be difficult to achieve in reality.

Importantly, we find that apart from business opportunities, the PSI reports do not capture information on how corporations perceive future climate scenarios. Yet, the longitudinal analysis of reports indicates that companies are starting to differentiate their adaptation action between current and future impacts. The main current risks relate to community and production risks, whereas future risks have also to do with regulatory and financial risks. This divergence between the PSI and annual reporting could be seen as a critical aspect given that analysing the current-future interface helps reveal where 'business as usual' and disaster risk management approaches differ from forward looking planning. Including this kind of information in the voluntary disclosure would give better indicators and baselines for regulators about corporations' adaptive capacity and vulnerability (OECD, 2015). This would, in turn, enable policy-makers introduce regulatory mechanisms that facilitate corporate adaptation and resilience in the medium and long-term (Cohen & Viscusi, 2012).

An improved analysis of the current and future risks could also enhance the design of enabling frameworks that help companies prepare their reported adaptation information. For companies the usual decision timeframe is very short, in many cases not beyond a year, while medium to longer term aspects only feature in overall corporate strategy assessments. As a result, short-term planning and long-term consequences are likely to collide, which poses a key challenge for adaptation disclosure. Meeting these challenges requires both adequate risk assessment and decision-making within aligned time-frames. Existing frameworks such as the CDP could, to a relevant extent, address this by better incorporating medium and long-term considerations about risks and opportunities. In addition to giving benchmarks for regulators and disclosure organisations, corporations could themselves benefit from disclosing their perceptions on current and future risks. A more transparent disclosure of future climate impacts could thus help improve their accountability and relationships with stakeholders. For example, providing more detailed information for investors on climate risks could help in guaranteeing companies' future investment and access to capital. Hence, our findings suggests that in addition to viewing corporations' adaptation action through the lens of different business functions as suggested by our literature review, it would appear necessary to also more distinctly differentiate between acute and long-term action on adaptation in the disclosure for adaptation.

Interestingly, the current-future interface is also prevalent in the interview findings. On the one hand it was emphasised that there would be a need to focus directly on risk-based language in order to catalyse short-term engagement. On the other hand, the interviews reveal that having adaptation as a common nominator would be crucial in order to link companies' action on resilience to climate impacts and convince them about making long-term investments on adaptation. What is commonly highlighted in the interviews is that disclosing adaptive action with the common term 'adaptation' helps in simplifying the difficult and multi-facetted concept in the policy processes. This appears as a key issue for the challenges of corporate adaptation: Risk-based framings may indeed efficiently help make adaptation as a part of companies' existing practices and business-as-usual. But as adaptation relates, to a large degree, to future processes, then labelling action as adaptation could be an efficient way to make corporations view adaptation with a long-term approach and compensate for the indicators of adaptation that are often less tangible and immediate as mitigation. Hence, the interview data supports our findings of the importance of disclosing information both on current and future risks.

The analysis of the terminology used in the company reports shows parallels to the company's PSI case study. Yet, the findings indicate mixed results in terms of labelling these actions as adaptation: only three of 11 companies refer to climate adaptation continuously in their corporate reports between 2009 and 2014. The other companies use the term adaptation in occasionally. In these cases, adaptation is referred to in one year's report, but not used again in the following years. This is somewhat surprising as the companies examined in this study are widely considered, and present themselves as, pioneers in climate adaptation thanks to their engagement in the PSI.

This raises questions about for the motifs of those companies who showcase their activities in the PSI. This particular question was explored in several interviews with those involved in the PSI process. This revealed that when establishing the PSI, the UNFCCC identified and contacted companies to become members of PSI. Further on in the process, the UNFCCC team responsible for PSI helped these companies fill the required forms on adaptation for the database. This highlights a certain influence and drive by those managing the database, offering companies a framework to present their action, rather than leave the

categorisation to the companies themselves. The interviews also revealed that the UNFCCC team helped companies identify adaptation for the first time within their own practice.
We noticed that once a company had joined the PSI, the membership was frequently highlighted in the following annual report, described as an example of external engagement with global stakeholders, typical for the CSR agenda.

## 6. Conclusion

Addressing climate impacts in developing countries requires a comprehensive private sector engagement in adaptation. Our current understanding of corporate adaptation is almost exclusively based on self-reported case studies, for example through the UNFCCC's Private Sector Initiative database. While useful in the absence of other more objective data, this points to certain limits when analysing and interpreting these cases.

Our study provides insights on how companies disclose adaptation action both as part of a pre-designed initiative such PSI and under their general reporting publications. Firstly, we considered the importance of terminology used in the adaptation voluntary disclosure. Among the F&B companies, supply chain management and a risk reduction-based terminology are the most predominant framings. Business opportunities are referenced by two thirds of the companies; however, identifying long-term business opportunities appears still in its infancy for the majority of the corporations.

Secondly, this study also investigates any differences between the disclosure of adaptation in the PSI and the companies' independent reporting. We find that there is a significant overlap between reporting under PSI and through own company reports. Yet, importantly, the longitudinal study of company reports highlights that companies are differentiating between current and future climate risks in their independent framings,while the PSI is lacking a specific section on the current-future interface. We argue that this differentiation is crucial in maturing the voluntary corporate disclosure on adaptation. Including information on different risk scenarios would not only give better baselines for regulators and enable them introduce regulatory mechanisms to facilitate corporate adaptation. An improved analysis of the current and future risks would also help companies with their own planning.

Overall, our findings offer a more tangible concept of corporate adaptation, but also point towards the possibility of 'green washing' and re-labelling activities in order to fit with the PSI categories. Adaptation is a complex and multi-dimensional concept, spanning different perceptions and in some cases conflicting social, environmental and economic needs at different spatial and temporal scales. Identifying what corporate adaptation means and more importantly, tracking progress and evaluation impacts of action remains a key challenge.

Finally, this research has identified areas that merit further study. A comparison of the adaptation reporting of PSI-members and non-members could provide more insights of the role of the PSI in the framing processes. In addition it appears crucial to further examine the role of different perceptions of risk in corporate adaptation framings. For this, the findings of this study provide a starting point.

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