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Climate change strategies of multinational enterprises in China

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Abstract

The purpose of this research is to identify the decision process Chinese subsidiaries of multinational enterprises follow to develop and deploy a climate change strategy. These foreign subsidiaries have to be responsive to local institutional and economic demands as well as to the directives from their headquarters. Our findings suggests that considering and developing climate change strategies is a multi-stage process that alternates between managerial cognition and capabilities and is most effective when locally embedded. The foreign subsidiary develops its own understanding of climate change and an adequate response rather than follows headquarter directives. This allows the subsidiary to be at the adaptation forefront and, potentially, influence the global network of the multinational enterprise. The process can be stopped when cognition, capabilities or both are not developed or realised.

Keywords

Multinational enterprises

Climate change

Strategy

Decision-making

China

Climate change strategies of multinational enterprises in China

1. Introduction

Organisational adaptation to a changing external environment has been explained with reference to managerial cognition or to organisational capabilities. These opposing rationales

are also evident in the discourse on multinational enterprises' (MNEs) strategic response to climate change. Climate change adaptation by MNEs has been argued to be the result of possessing the adequate capabilities (Berkhout, 2012; Biagini and Miller, 2013; Averchenkova et al., 2015) or of an emergent managerial understanding of how climate change affects the business (Kaplan and Henderson, 2005; Laamanen and Wallin, 2009). An integrative perspective has thus been suggested by Eggers and Kaplan (2013) which considers the two schools of thought jointly and interactively when considering organisational adaptation. We are building on their approach and investigate what the decision-process an MNE's subsidiary follows to develop and deploy a climate change strategy. The

MNEs fine-slice and separate functions to place these in the location most productive for the MNE (Buckley, 2009). This can enable them to develop differentiated climate change strategies that suit the local conditions and variations in the institutional environment for climate change adaptation (Dyllick and Hockerts, 2002). The fine-slicing also enables the MNE, in theory, to utilise its global cognition of climate change and its global and local capabilities to develop adequate responses (Kolk and Pinkse, 2005, 2008). Despite the likelihood for local variations, previous research has focused on the headquarter level and considered the global operations of the MNE as uniform (Eiadat et al., 2008). Very little research has actually been undertaken to investigate how decision-makers of overseas subsidiaries are responding to climate change and whether these decisions are driven by managerial cognition of climate change or the subsidiaries capabilities to adapt to a changing institutional and economic landscape (Linnenluecke et al., 2013; Linnenluecke et al., 2015).

Our objective is to address the omission of subsidiaries by combining the cognitive and capabilities perspectives to reveal how overseas subsidiaries of European MNEs make decisions on climate change strategies when operating in a less-developed institutional

environment. These subsidiaries are operating, prima facie, in an environment that exerts less pressure for developing climate change strategies than their headquarters' environment. The Chinese institutional environment leaves it open the firm to develop its climate change strategy more intrinsically and in line with its dominant cognitive or capability strengths.

Through interviews with mainly European subsidiaries in China we have developed a decision-making pathway model that identifies when cognitive- and capabilities-related determinants influence the climate change strategy. Our findings contribute, first, to the literature on corporate climate change adaptation by showing the drivers, and barriers, in the global climate change strategy decision-making at a more granular level which is the foreign subsidiary. This allows us to understand not only how MNEs approach climate change but also to understand how adaptation works differently across the global network MNEs maintain. Our work allows contributes, second, to the discourse on whether cognition or capabilities drive business decisions and strategy. Our climate change pathway suggests that these two sides interact and work in tandem rather than stand alone.

The next section introduces a literature review which sets the focus for our work. This is followed by a methodology section and a presentation and discussion of our findings. The work concludes with a discussion of the implication and suggestions for further research.

2. Literature Review

Climate change strategies by MNEs and their overseas subsidiaries are a response to changing external circumstances which includes regulatory changes in the home and host markets (Hiatt, et al., 2015; Dirckninck-Holmfeld, 2015), novel technological and competitive pressures (Wennersten et al., 2015), and changes to nature brought about by climate change (Asseng et al., 2015; Lesk et al., 2016). Climate change can cause "significant, sudden, disruptive change in the broader ecological or social systems of which

organizations and economic systems are a part" off (Winn et al., 2011, 166). Compared to typical environmental changes, climate change is a phenomenon with much greater scale and scope on a longer time-scale and this creates greater uncertainties. Relatively few managers have yet experienced and managed extreme weather conditions that have been caused by climate change suggesting an overall unawareness to its physical impacts (Berkhout et al., 2006). A business-as-usual response by MNEs is unlikely to be sufficient and adaptation is required (Linnenluecke and Griffiths, 2010; Linnenluecke, Griffiths and Winn 2012). Corporate climate change adaptation involves the forecasting of and reaction to regulatory and natural environmental changes, and can include strategic proactive behaviour in influencing policies that benefits the MNE's particular climate change position (Lyon and Maxwell, 2004).

This section will assess and relate the literature on organisational adaptation to the development of climate change strategies at the subsidiary level. Research on organizational adaptation from a strategic choice perspective seeks to explain adaptation as a process whereby decision-makers assess the changing organizational environment and then formulate strategic responses (Child, 1972; Miles and Snow, 1978). Empirical evidence has shown that shifts in the regulatory environment (Meyer, 1982; Smith and Grimm, 1987) and technologies (Pugh, 1981) motivate strategic changes. Such changes, it has been argued, depend on the managerial cognition or organizational capabilities. Following Eggers and Kaplan (2013) we will consider here both perspectives and integrate them into a climate change strategy pathway.

2.1 Development of climate change strategies through managerial cognition

Chakravarthy (1982) emphasised the role of managerial attention to predict the occurrence and nature of firms' responses to environmental shifts. "Informational inputs that

are ambiguous, uncertain, and equivocal" (Weick 1969: 40) emerge naturally in almost every environmental change and need to be recognised by the key decision-makers and shared within the organisation (Billings et al., 1980; Thomas and McDaniel, 1990). This suggests that managerial cognition and sensemaking are important first steps in developing actions towards a changing environment (Kiesler and Sproull, 1982; Huff et al., 2000). Organisations with similar assets might respond differently to the same environmental shift when their top managers' cognition of the situation differs (Osborne et al., 2001; Hoffmann et al., 2009), as cognitive limits prevent top managers from developing a complete understanding of their environments (Bogner and Barr, 2000). Cognitive limits, biases and misperception at the individual (senior management) level determine whether environmental changes attract organizational attention. Factors that influence a firms' climate change strategy development process, include the managers' awareness of climate change (Levy and Kolk, 2002; Hoffmann et al., 2009) and the disposition of decision-makers towards accepting that it exists (Linnenluecke et al., 2013; Linnenluecke et al., 2015). Key decision-makers, and change agents at lower levels of a company, also play a key role in influencing a company's climate change adaptation (Linnenluecke et al., 2013; Linnenluecke et al., 2013, 2015).

From the cognitive perspective, the subsidiaries decision to develop and deploy a climate change strategy is hence reliant on how the senior managers in that subsidiaries view climate change. An absence of awareness of climate changes or a rejection of climate change can make the manager complacent (Barr, 1998). On the other, managers who consider climate change a real threat to their firm, industry, or humankind can be driven to engage with the matter regardless of the capabilities their subsidiary currently possesses. The firm has in this case to work towards in current capabilities and develop future ones that better fit the vision of the manager.

2.2. Development of climate change strategies through organizational capabilities

Existing organizational capabilities inform the firm's response to shifting environmental conditions and allow the firm to realign its operations and strategy (Barney, 1991; Teece et al., 1997). Firms gain a competitive advantage by leveraging capabilities to configure assets in a unique way (Leiblein, 2011) and by adapting earlier than others to external changes. Business adaptation to climate change is influenced by the context in which firms are embedded. Although extreme weather events and their physical impact play a role in the location of operations and in raising awareness of climate risks (CDP, 2012), Berkhout et al. (2006) and Galbreath (2014) maintain that firms are more influenced by the economic and institutional impact of climate change than their manager's cognition.

Studies have found that a clear and transparent regulatory environment plays a critical role in encouraging climate change adaptation (CDP, 2012; Wilby and Vaughan, 2011). Governments also have a role to play in encouraging climate change adaptation, by providing credible, accessible scientific information, co-financing research and development of new products and services, and by forming public-private partnerships to reduce risk (Agrawala et al., 2011; Crawford and Seidel, 2013).

Climate change adaptation is also driven by economic pressures (Hoffman, 2005). As companies seek to respond to changing purchasing behaviour of consumers their attention to climate change increases (Bonini et al, 2008). In response companies develop new products and services, access new markets and seize new business opportunities that arise from climate change (Agrawala et al., 2011). Economics pressure also derives from upstream activities when the sourcing of input materials becomes more costly (Gregory et al., 2005).

2.3 MNE subsidiary*'s* climate change strategy

The MNE's subsidiaries are embedded in multiple socio-economic systems. They are confronted with multiple dimensions of power and claims of legitimacy from internal and external stakeholders (Kostova, Roth and Dacin, 2008; Kostova and Zaheer, 1999). In developing countries with less stringent environmental standards compared to their home country (Jensen, 1996), the incentive for the subsidiary to engage in developing and deploying a climate change strategy is considered to be low. However, the institutional voids may also benefit the subsidiary if it recognizes the opportunities this offers and moves early to shape emerging rules and frameworks to their favour (Kolk and Mulder, 2011). MNEs use better management practices and advanced technologies than incumbent firms and this can result in a cleaner environment in host countries (Zarsky, 1999). This is particularly true when their home country is at the cutting edge of adapting to climate change. MNEs from these home countries could help host countries to adapt to climate change through the practices of their local subsidiaries (Pinkse and Kolk, 2012).

3. Methodology

This research takes an explorative, abductive approach to explore why, when and how MNEs develop climate change strategies. We investigate the managerial decision-making process of European MNEs in China with regards to their climate change strategy.

3.1. Research context

China has been one of the world's main recipient of foreign direct investment (FDI) over the last decade (UNCTAD, 2015) and is the world's largest emitter of greenhouse gases (IEA, 2014). MNEs have contributed to the latter through their FDI (Liu et al., 2015). Climate change, largely ignored by the Chinese government in the past, has become a national priority with a proliferation of regulations and policies. The brief summary below

explains why China is a good testbed to investigate why, when, and how the Chinese subsidiaries of MNEs develop climate change strategies.

The administrative level and status of the Chinese state administrative department of environmental protection has gradually improved from a dependent organisation to an independent ministry and in this process its functions have been strengthened (Cao et al., 2009 and see Fig. 1). Through the administrative upgrading, the now Ministry of Environment Protection participates directly in policy making with the State Council.

Environmental protection has also gained prominence in China's Five-Year Plans (FYP). As China's most important government document, the FYPs reflect general guidelines for economic and social policies, set economic development initiatives, and growth targets (Shiu and Lam, 2004). The contents and major targets in the FYPs have changed significantly over time. Since the 6th FYP (1980-85), content relating to environmental protection have risen in length and in positioning. The percentages to total text length dedicated to the environment rose from 1.46% in the 6th FYP to 8.71% in the 12th FYP (2011-15). The positioning of sections on environmental protection, moved from the end of the document (97.88% of the FYP document is finished when the environment is addressed) to the middle (43.84%) in the 12th FYP.

Climate change was first mentioned in the 10th FYP (2001-05) with an emphasis on policies to slow down the progress of climate change (State Council, 2001). Policies related to greenhouse gas emission debuted in the 11th Five-Year Plan (2006-10) with general statement on controlling climate change, without specifying the actual targets (State Council, 2006). The 12th FYP contains China's first compulsory targets for carbon emissions per unit of gross domestic product (State Council, 2011). China signed the Paris Agreement at UN Headquarters in New York on 22 April 2016 and used its hosting of the G20 Summit in 2016 to engender a bandwagon effect among the participating countries. To fulfil its commitments

of the Paris Commitment, China will have to cut carbon emissions per unit of GDP by 18 percent by 2020 from 2015 levels, increase non-fossil fuel sources in primary energy consumption to about 15 percent, and peak its carbon emissions by 2030. These targets are also reflected in China's 13th Five-Year Plan (2016-2020) (State Council, 2016).

According to Schreurs (2008), the European Union is the normative and institutional leader in Climate Change. We thus observe how an MNE that invests in a less-developed but changing institutional environment develops its climate change strategy.

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3.2. Data collection

We identified Chinese subsidiaries of European MNEs through company lists that are publicly available from European business associations (e.g., China-Britain Business Council, European Chambers of Commerce, and German Chamber of Commerce). We gained access to subsidiaries of MNEs from France, German, Italy, Sweden, United Kingdom, and the USA after approaching the companies via email. Initially contacts were used for snowballing.

Interviews were conducted in English with participants from European MNEs (main informants), European government agencies, Chinese enterprises, NGOs and industrial associations; the latter for data triangulation purposes (Flick, 1992). Within each organisation, in-depth interviews were conducted with senior managers who represented relevant functional areas including sales, strategy, and corporate social responsibility. The in-depth interviews evolved around an opening statement by one of the interviewers and a set of open-ended questions (see appendix). The open-ended questions remained the same

regardless of interviewer to ensure that all interviewee were asked the same baseline questions. Depending on the interviewee's response each interview then developed its own characteristic.

Each interview was attended by two researchers for observer triangulation (Stake, 1995) and to monitor and correct each other's interaction with the interviewee (Bechhofer et al., 1984). The usage of multiple interviewers is a strongly advised approach to elicit meaningful responses from the interviewee and to detect inconsistencies and digressions better during the interview and respond to it (Kincaid & Bright, 1957; Huber & Power, 1985; Mann et al., 2013). Verbatim interview transcripts were produced by a professional third-party service to establish the phenomena in a credible way (Griggs, 1987; Riege, 2003). The data analysis by a third researcher included within-case analysis, cross-case pattern matching (Miles and Huberman, 1994), and cross-checking of results (Yin, 1994) to increase the internal validity.

3.3.2. Data Overview

In-depth semi-structure interviews were conducted with the purpose of theory generation (Creswell et al., 2003). The number of interviews sufficient for generating theoretical insights and to ensure the validity has been suggested to be from 10-15 interviews or otherwise theoretical saturation (Creswell et al., 2003). We conducted 38 interviews with an average length of 80 minutes from 2010 to 2015. Of these our core informants were 22 senior managers from 20 MNEs who are involved in developing and setting the strategy for their China operations (that is, managing director, general manager, chief representative, and similar positions). 16 interviews were conducted with informants from organisations like governmental agencies, NGOs, local firms, and industry associations to triangulate the data sources and increase validity of this study (Marschan-Piekkari and Welch, 2004). The

company-based interviews were conducted at subsidiaries in manufacturing (11), services (6), retailing (2), and mining (1).

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3.4. Data analysis

The interview transcripts were coded thematically using Nvivo in order to answer the research questions. Our initial coding scheme was based on previous literature as discussed in the literature review. Verbal explanations of constructs provided by each interviewee were analysed. Abstraction (from empirical to conceptual) and generalization (seeking invariances common in the data) were undertaken at this stage. The coding schemes were discussed by the research team through an iterative process, and this iterative process continued until theoretical saturation was reached (Shah & Corley, 2006). Through various iterations and revisions four categories were developed and defined (Figure 2).

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FIGURE 2 ABOUT HERE

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3.5. Ethical consideration

Participants were offered anonymity in the invitation letter and before the interview, both for themselves and their organizations. Blanket anonymity was required to make sure

that samples could not be identified. We are therefore using acronyms for each informant in the discussion section and provided above as much information about the informants as we can without identifying them.

3.6. Limitation of methodology

In our research we have focussed on the rationalisation of climate change of senior managers within the foreign subsidiary. We decided on this focus as we are interested in understanding when, why, and how foreign subsidiaries engage in developing and setting climate change strategies. But the local decisions are not independent from HQs and informants from HQ could have further enriched and complemented the narrative. Longitudinal qualitative data would have supported our understanding as to when and how the information develop a cognition of climate change which would have enriched this research. It is, however, difficult to pinpoint when and where such a study should have started as climate change is discussed since the mid-to-late 1980s (Moser, 2010).

4. Results and Discussion

The interviews with Chinese subsidiary of MNEs and other organisations reveal a spectrum of climate change adaptation strategies that follow a pathway we conceptualise as visualisation, internalisation, vision formulation and strategy development and deployment. Unlike previous studies that have suggested that decision-making is driven by cognition or capabilities (), our pathway model suggests that managerial cognition and MNE/subsidiary capabilities are intertwined and mutually dependent. The four stages introduced here and substantiated through our interviews are summarised in Figure 3. It depicts the relationship between the stages and indicates when cognition or capability is the main force behind the development of a climate change strategy.

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4.1. Visualisation

The first stage in our model is visualisation. Managers understand and capture the essence of climate change and that it will, in time, have an impact on their industry and company. This requires them to translate the often broad and vague information about what climate change is (if it exists and is anthropogenic), into manageable and tangible information. In doing so, the managers recognize that there is a situation they need to consider and evaluate (Kiesler and Sproull, 1982; Weick et al., 2005). Information is a basic input in this process and influences an individual's interpretation and perception of a specific situation (Huber 1991; Linnenluecke et al., 2015). The impacts from climate change are surrounded by uncertainty on their magnitude, timing and location, which makes them difficult to comprehend (Peterson, 2006). The visualisation of climate change is further constrained by the response of the institutional environment in which the overseas subsidiary operates.

Informants acknowledged that they believed in the existence of climate change and its potentially sever effects on their industry; not necessarily though on their company. The Chinese government has published policies and regulations on environmental protection and tightened their enforcement. In principal, these external signals from the government should prompt the subsidiaries to take actions – if it were not for uncertainties around how they perceive the objectives and effectiveness of the institutional environment (Chakravarthy, 1982; Barr, 1998). The interviewed businesses either do not recognise any institutional

change, recognise the efforts the Chinese government has made but dismiss them as ineffective and not relevant for them, or respond to the evolving institutional environment strategically.

The first group of businesses does not consider the institutional environment in China to have changed significantly enough to justify any change in strategy. They describe a situation of no institutional development in their sector (E01) or unclear policies and standards (P01) with a lack of an enforcement process for whatever policies are in place. Governmental policies have made it difficult to switch to an alternative strategy and remaining with the status quo is therefore preferred. According to these informants Chinese businesses struggle with the institutional system as well.

Other subsidiaries have noticed changes in environment but their organization has not responded to them. These range from shifts in government priorities (A01, T01), to performance measurement (L01), government financial initiatives (A01, B02, E01), higher requirements of energy consumption (H01, S01), and to a changing "cognition pillar" of institutional environment (B02, T01). Economic tools, like imposition of taxes on energy consumption, tax credits or tax rebates for investment in energy-efficiency, and bank lending criteria based on environmental protection, play increasingly important roles in China. The importance of sustainable development to the central government is particularly stark (A01, T01). Having noticed the changing environment, senior managers have considered the organizational capabilities of their subsidiary. They think that they operate above any standards set by the Chinese government and therefore do not have to adapt their strategy.

The description of the three groups highlights the importance of recognising relevant information and processing it. The availability of information under relatively uncertain and continuously changing institutional environment influences the visualisation of the managers. Governments have a key role to play in encouraging MNEs to deal with climate change by

providing credible, readily accessible scientific information, models and tools, and co-finance R&D of new technologies. Through collaboration with local government the foreign subsidiary can also make better sense of the changing institutional environment. C01 noted that they could gather information and insights about future trends through the corporation with government institutions and universities, which helps them be the "first-mover" in "low carbon" products and services. Non-governmental institutions like chambers of commerce and industrial associations play a similar role and can help MNEs to monitor institutional information and influence the laws making process through lobbying.

The interviews also reveal that it is not the visualisation of climate change but the visualisation of the government's response to climate change that is initially directing the subsidiary's response. While the companies acknowledged climate change and understand that it will affect their industries they are not reacting unless the institutional set up has been clarified (Wilby and Vaughan, 2011). This observation lends weight to the importance of managerial cognition in the initial stage of the process in the sense that they wait to real what is expected of them. Waiting for the government to establish a sound and enforceable institutional set up first then, however, shifts the subsidiary's strategy development away from a cognition-driven one to one focused on capabilities; capabilities which can be employed to compile with the government's expectations. In this respect, the visualisation stage is lending partial support to proponents that consider either cognition or capabilities driving firm decisions (e.g., Berkhout, 2012; Laamanen and Wallin, 2009; Levy and Kolk, 2002).

4.2. Internalisation

Visualisation is followed by internalisation. Internalisation refers to relating the perceived relevant information about climate change and how it effects the company to how

it affects the subsidiary's capabilities, strategy, and core competitiveness. Internalising climate change into the subsidiary's context is an important step in deciding whether or not the subsidiary should engage in climate change strategy development (cognition) and could do given under the given resource constraints (capabilities). Both aspects will also have to be considered with respect to the headquarters position and strategy.

Billings et al. (1980) have shown that once a discrepancy between the existing state and the common one is sensed, the seriousness of the problem is weighted and judged. This includes evaluating the probability of economic loss and time pressure. In organisations where executives hold the belief that their organisation is relatively immune from crisis, there are fewer procedures in place to instigate the evaluation process and internalisation fails (Pearson and Clair, 1998). Sensing changes in the Chinese institutional environment and recognising climate change does therefore not equal with internalising the issue and acting accordingly. For R01 a reason for not acting to climate change is that they do not know how to profit from being low-carbon. For G01, the institutional system has not established a price mechanism of carbon emissions and there is a lack of institutions enabling, facilitating, or stimulating adaptation to climate change (institutional voids) (Haje, 2003). This is a barrier to climate change adaptation because there are no shared or clear rules, principles, values, and norms about adaptation. These regulatory challenges result from governmental policy tools and the interactions between multiple levels of government. Some firms argued that institutional voids have made it difficult to choose among alternative strategies (e.g. D01), which includes following better specified international institutions and regulations as opposed to national and local regulations. While others (e.g. G01) pointed out that existing Chinese institution do not link well with market mechanism and therefore do not provide any incentive to act. Accordingly, for a subsidiary to not internalise climate change into its strategy does not increase its operational cost.

The perceived importance of strategical adaptation to climate change is not driven by "absolute" risks, but mediated by perceptions of risks or opportunities available to the company (Pablo et al., 1996). Changing the business strategy into a greener one is an opportunity for companies to differentiate their products and services and create a competitive advantage by being more sustainable than competitors. Some companies see climate change adaptation as a way to counter growing competition and new market conditions that have arisen from new technology, scarce resources, increased focus on corporate responsibility, and changes in customer demands. The improvements and adaptions of their products or services are driven by capturing business opportunities (B01, L02).

The difference in internalisation climate change derives from the decision-maker's personal experience (E01), whether they attach importance to green issue (B03, L01), and his/her sensitivity of opportunity/risk (D01). For example, E01 has had insights in environmental issue on a global scale, which lead to the internalisation of climate change adaptation into his management. The more decision-makers pay attention to green issue, the more likely it is that their organization will take notice and respond to it (B03, L01). Likewise, if the headquarters have been at the cutting edge of climate change adaptation, their experience will support their subsidiary to internalise the changing environment in the host country as they have the ability to exploit their competencies. For B02, H01 and D01, the headquarters' previous experience has had a positive impact for them to construct opportunities in China. This helped them in establishing a good reputation in the Chinese market (B01) and supported the subsidiary's contribution to the global reputation of the MNE.

Sectoral differences affect internalisation. For energy-intensive industries, like coal, oil, automobile, electric generation, cement, aluminium, steel, chemicals and paper, their proactive low-carbon strategy is driven by cost-reduction motivations. E01 stated that energy

savings is a major driver for them since their very significant energy consumption. Similarly, for C01 reducing emission is a bi-product in their effort to be more fuel efficient. In these cases climate change adaptation is based on internal motivations like cost-reduction and gaining a competitive advantage. In contrast, G01, a high-tech manufacturing, their use relatively little energy and therefore have little internal pressure to adapt towards a more low-carbon system.

Our interviews suggest that cognitive and capabilities elements interact when it comes to the internalisation of climate change to the subsidiary's context. The manager's personality and experience as well as the subsidiary's capabilities equally determine if the company is internalising climate change. This observation is providing support for Eggers and Kaplan (2013) who have argued previously that cognition and capabilities should be seen jointly.

4.3. Vision

Having internalised and contextualised the effects of climate change for the subsidiary, the next step is to set out a vision for the subsidiary. The vision is a mental image of what the future for the subsidiary will be like under a strategy that attempts to adapt to and mitigate climate change through the exploitation and exploration of core competences. Corporate leaders must formulate a vision with long-term objectives in responses to environmental changes (El-Namaki, 1992).

Among those that have a clear vision, B01 and T01 desire to be industrial leaders and role models in China. This has determined their strategies, plans, and resources allocation in responses to climate change. Furthermore, the vision of E01's organization showed a detailed direction of fulfilling the future through providing most sustainable product or services.

However, not many informants have a clear environmental vision for their Chinese subsidiary. For example, C01 pointed out that the long-term goal set by government is

looking too far ahead for them to take actions - even though they have internalised the signals from China's changing institutional environment. D01's organisation has been undertaken some adaptation towards climate change but in a relatively fragmented fashion and without a clear target or guideline for further operation.

Once the headquarters sets a practical target for carbon emission reduction, this may spread to overseas subsidiaries. The experience of the headquarters is a reference point for the subsidiary's vision establishment. For organizations pursuing global integration, foreign subsidiaries are expected to be highly integrated to support internal interdependencies, common processes, and internal coordination (Grøgaar, 2012). The level of headquarter control determines whether the overseas subsidiary follows headquarters' strategic adaptation to climate change or develops its own approach. Subsidiaries with high-level headquarters control have the same vision as their headquarters (E01).

The formulation of a vision on the back of internalising climate change and its importance is mainly driven by the capabilities of the organisation. Depending on what recourses the subsidiary currently possesses and which it could source and acquire in the future, a vision is articulated. Important at this stage is the influence from headquarters in giving directionality. Headquarters has not played a significant role in the pathway model but gains prominence at this stage and supports the capabilities views.

4.4. Strategic adaptation

The final stage in our decision pathway model is strategic adaptation. After the subsidiary has developed a vision, a climate change strategy is developed and deployed locally. The subsidiary develops a strategy that follows the cognition of the local management and the subsidiaries capabilities. In this case the subsidiary is mainly making its

own decisions and as a consequence may lead the headquarters in climate change strategy development.

International business theory argues that, foreign MNEs are technologically and managerially superior to domestic firms (Buckley et al., 2002). With their wealth of technical knowledge and resources, MNEs are seen to have an advantage over local firms in developing climate change strategy. In addition, their experience of operating in an institutionally first-mover country, MNEs can export their experience and innovations to any host country (Pinkse and Kolk, 2012). We should therefore expect the climate change strategies of MNEs' subsidiaries to be clearer articulated.

We find that some subsidiaries take strategic initiative in response to the institutional developments in China in order to sustain or gain a competitive advantage. These adaptation are pursued through developing low-carbon product/service to meet local demand, low-carbon supply chain management, and reducing energy consumption in production or operation process. As part of this process the subsidiary applies its innovation skills, knowledge and capabilities into greener products or service, which sustain a competitive advantage in the host country.

B01, for example, is aware that although the Chinese government has published a new Building Energy Code, local firms do not know how to use it. Holding more advanced capabilities than its local competitors, this subsidiary has secured its place in the Chinese market by offering green building designs that comply with the new standard.

Green production can result in lower carbon emission intensity and more efficient use of energy and resources. In manufacturing, energy consumption and GHG emission are mainly coming from the producing process and therefore greening the production plays an important role in the climate change strategy of manufacturing MNEs. For non-manufacturing MNEs, their day-to-day operations are the main source for carbon emissions.

These subsidiaries have therefore extended their efforts to reduce carbon emissions along their supply chain in host country. The low carbon management along the supply chain is a specific implementation of climate change strategy and regarded as the basis for establishing a low carbon competitive advantage. The "direct farm programme" by retailer F01 extends the adaptation process to the front of their supply chain procurement procedures.

> "In China we do have this direct farm programme just to purchase groceries from vegetables directly from farmers in the nearest farms are run a major super centre. In that we reduce the bulk part of the supply chain so in that way it is very environmentally protective this way and this helps reduce the carbon during the supply chain." (F01)

Interactions along the supply chain with domestic firms, the state, and local communities are an important part of the subsidiary's responses to climate change. Co-research and –development with domestic research institutions and firms enables these to learn from the subsidiary. For example, MNEs have developed climate change related key performance indicators when they select and negotiate with domestic suppliers; very similar to them setting standards for product cost and quality. Since many subcontractors have little knowledge in this area, guidance from MNEs is necessary to help them to adapt their organisation and reduce their emissions. By extension, overseas subsidiaries of MNEs help the Chinese government to establish climate change-related standards, by using their advanced technologies and overseas experience (Kolk and Mulder, 2011).

But obstacles remain within the subsidiary to effectively address climate change and embed it in such a way that it directly contributes to the firm's competitiveness. The organizational structure has a direct effect on strategic adaptation towards climate change. Some corporations place climate change adaptation in the human resource (HR) department

where it becomes a health and safety issue not a strategic one. Recognising this as not ideal, D01 pointed out that they have changed the organizational structure so that the CSR strategy resides within strategy and innovation. This has delivered them a turning point as to how climate change is taken into consideration within the subsidiary.

Some Chinese subsidiaries are yet to take any adaptation towards climate change, despite recognizing that their HQs has taken actions. This can be attributed to multiple factors like resource and capabilities limitations at the subsidiary or weak institutional enforcement in China. R01 explained that they are generally following the strategy of the headquarters but in terms of sustainability the Chinese subsidiary lags:

> "As an international organisation we must follow the headquarters but because the culture, the people, the knowledge, the lifestyle is different in China than UK so we can consistently feedback what we need specifically in China to make our business grow profitable……I mean we are on the way behind where the UK is in terms of sustainability in China." (R01)

This stage is predominantly driven by capabilities considerations. Capabilities that reside within the subsidiary, or the MNE, suggest to what kind of climate change strategy is developed. Cognition plays a role here only with respect to locating the responsibility for climate change within the right department. This realisation can, in the long-run, influence the strategizing because the department is creating the relevant resources to engage cognitively with climate change. Across the four stage we find that the cognitive or capabilities perspective takes centre stage but that it is always supported by the other one. The duality of cognition and capabilities shapes why, when and how firms develop a climate change strategy.

The above discussion suggests that there is a four-stage decision-making process subsidiaries follow to develop their climate change strategy. But there are alternative solutions to this outcome which we would like to present here. So far we have discussed only the positive solution, that is the solution which suggested that there is a positive link between the stages. But at every stage the subsidiary may decline to move to the next stage because the management does not believe in climate or cannot see how it could become relevant for their business, for instance. In these instances we also derive at a climate change strategy albeit a different one compared to the one discussed above (see Figure 4).

In the first case the cognition is not directed towards the local context but towards the headquarters. What the managers perceive as relevant and important clues towards the headquarters climate change strategy is being picked-up and followed without any clear directive from their headquarters. In the second scenario the subsidiary follows strategic directives from the headquarters and adapts these locally. In these cases, the managers engage with climate change purely reactively and if and when headquarters has developed a strategy that is not location-bound but can be exported to overseas locations. As a consequence, if the headquarters does not develop a strategy the subsidiary will not have one either. This provides a more nuanced perspective about the engagement of MNEs in climate change and suggests that across their global network of subsidiaries some may actively follow a climate change strategy while other do not. This nuanced view is an advancement over previous studies which have only considered the company's response at the headquarters level.

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FIGURE 4 ABOUT HERE

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5. Conclusion

The objective of this research has been to develop an understanding of how overseas subsidiaries engage in climate change strategies by employing an approach that recognises simultaneously managerial cognition and organisational capabilities. Using interview data collected in China, we have developed a decision-making model that brings these two dimensions together and contributes to the research on climate change strategies by zooming in on the MNE subsidiary. This contrasts with other research that considers the MNE as a static monolith that operates the same across different countries.

Cognitive biases at the managerial level determine whether climate change attracts organizational attention and action as the biases filter the information received. After recognizing a changing environment, external signals have to be of transformed into the subsidiary which requires considering the organizational capabilities and constructing corresponding crisis, risk, or opportunity. Corporate leaders must formulate a vision and the specification of long-term objectives in response to the climate change. Strategy selection or choice follows the developing of vision statement in the strategy formulation process (Preble, 1997). Once the vision has been clearly and concisely articulated, the corporate strategy is written as a road map to accomplish the vision. Following previous work on climate change typologies (Weinhofer & Busch, 2013), these strategies span the reactive-proactive spectrum. In contrast to the previous typology studies, we explicate here how the firm arrives at its strategic reaction.

Our work has practical implications and opens avenues for future research. MNEs that seek to engage in and address climate change are advised to empower their subsidiaries to discover local solutions. The subsidiary-based solutions take into consideration that climate change is location-specific and so are institutional responses to it. The subsidiary's response will be built on a local understanding of how climate change affects the subsidiary and what

solutions are locally acceptable. Some but not all of these strategies will be internationally scalable. In terms of future research, our pathway model has been developed on the back of interviews with MNEs from highly developed institutional contexts that operate in a less developed one. Reversing the constellation and investigating how subsidiaries from low institutional context operate in a high institutional context and extending it to low-low and high-high institutional context will be bring further clarity as to when and how cognition and capabilities impact the decision-making process on climate change strategies. Subsidiary responses to climate change and the institutional environment should be considered longitudinally to take into consideration how supra-national agreements like Kyoto and Paris shape the understanding of climate change within the MNE and the host country.

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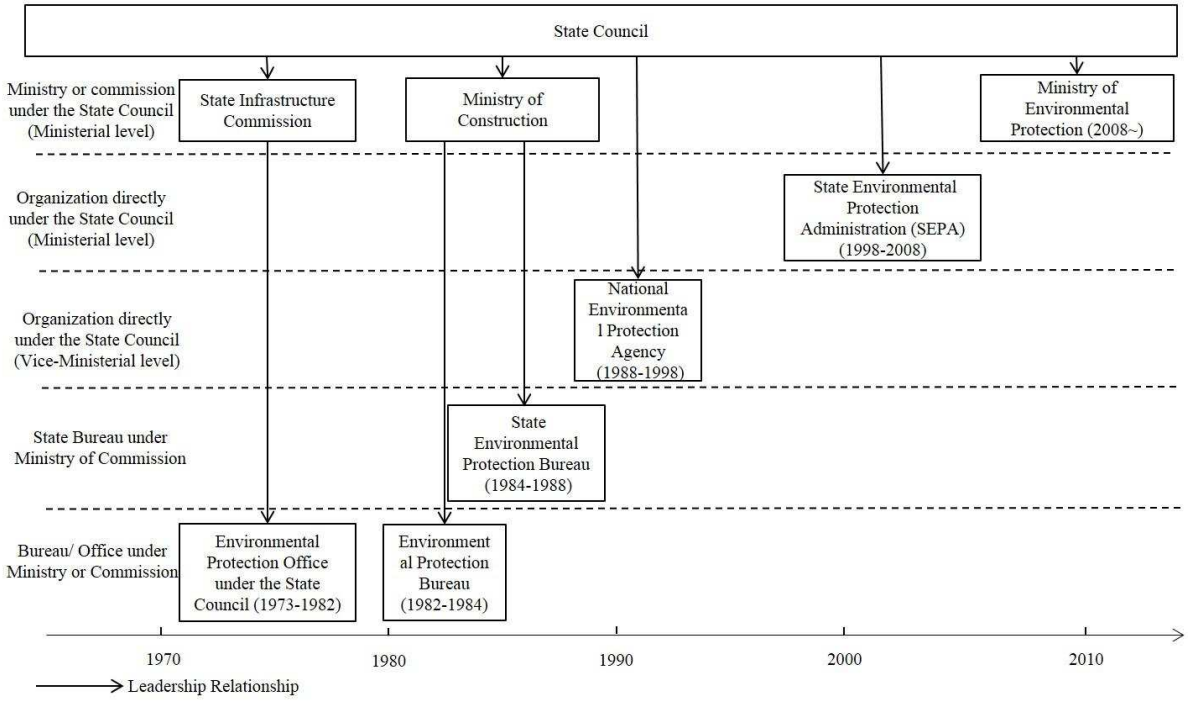
Fig. 1. Evolution of China's administrative system on environmental protection



Source: Authors

Fig. 2. Coding process for the decision-making pathway and determinants

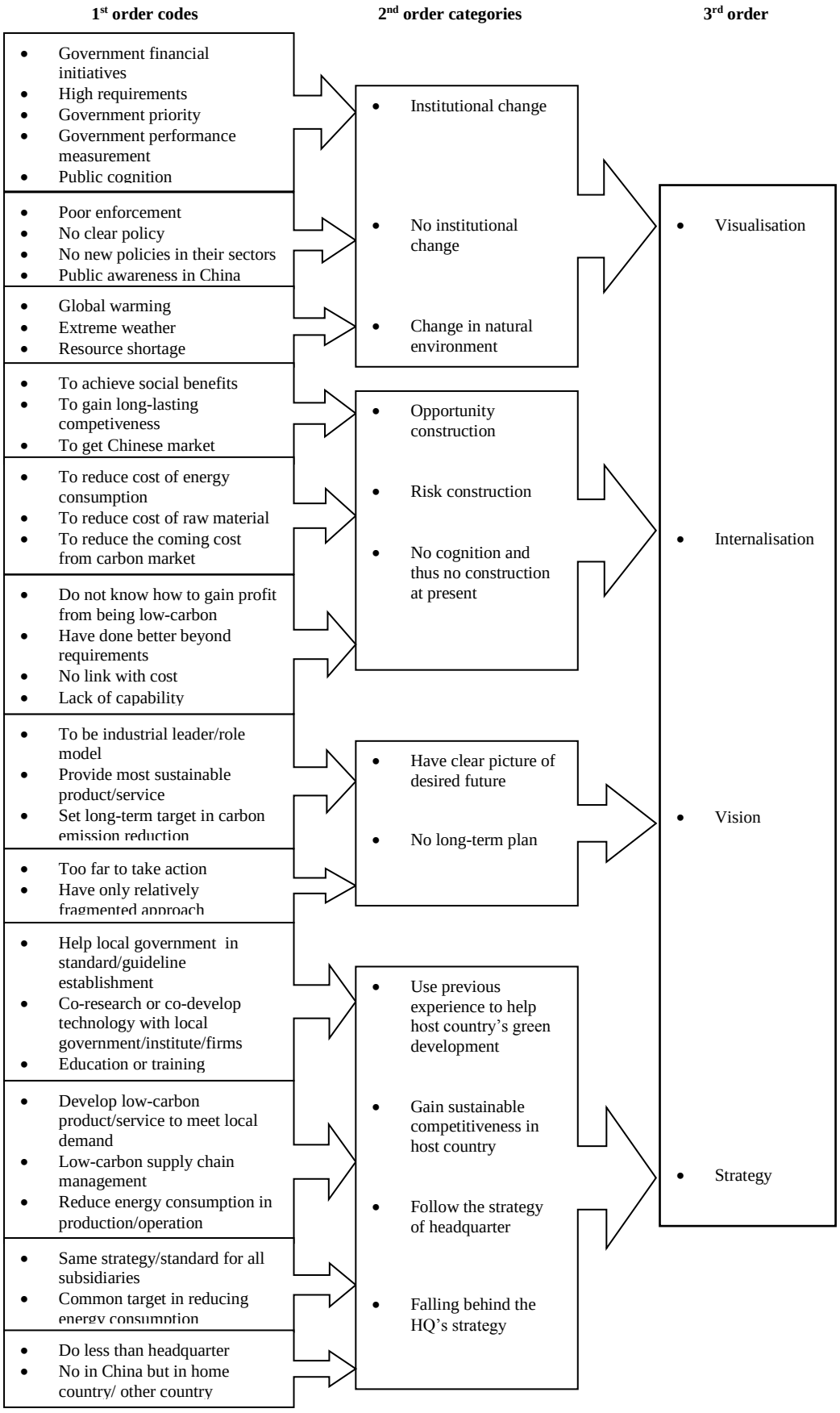
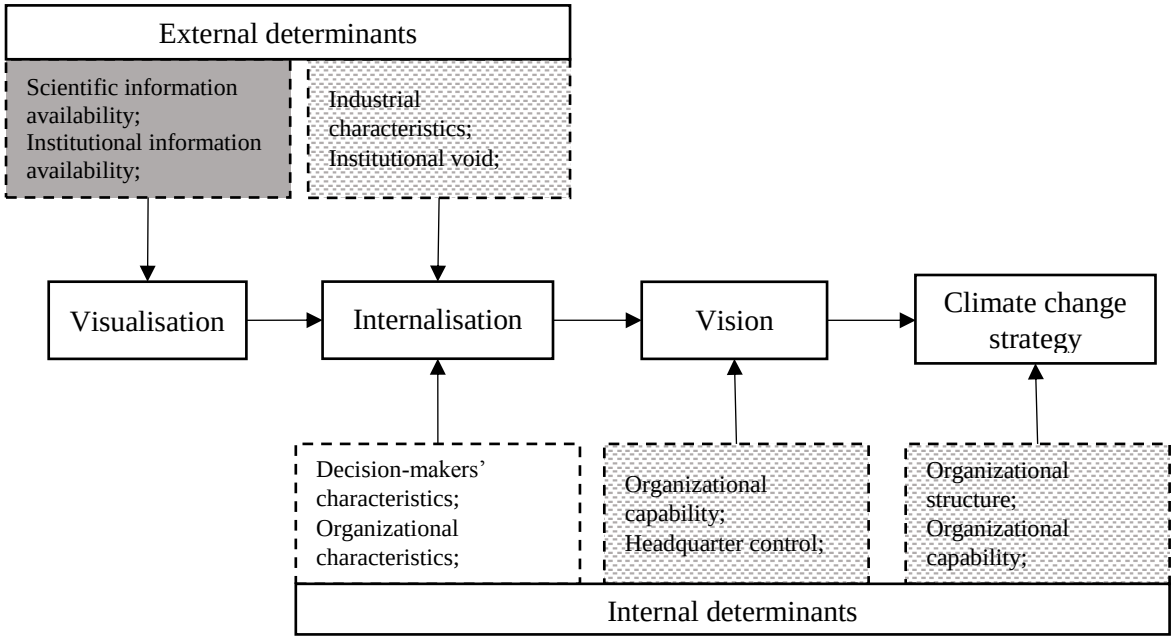


Fig. 3. Decision-making pathway and determinants for climate change strategies



Notes: Solid grey indicates that cognitive reasoning dominates this stage. Light grey pattern indicates that organisational capabilities dominate this stage.

Source: Authors.

Fig. 4. Decision-making pathway by company

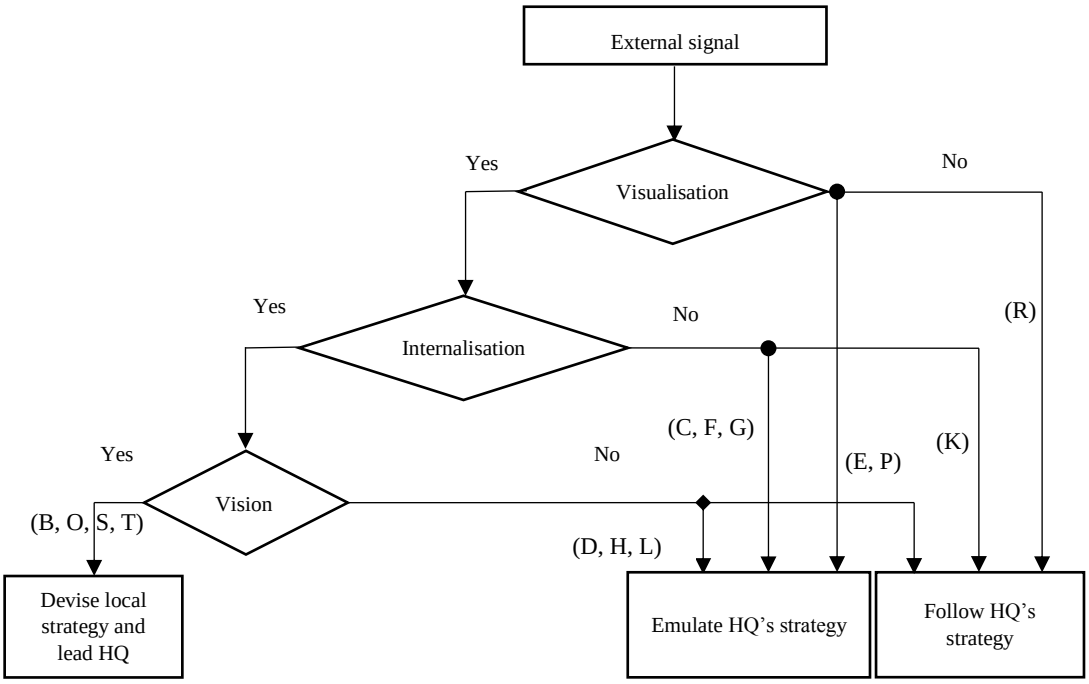


Table 1. Interviewee information

Home Countries	Manufacturing	Retail	Mining	Consulting	Advertising	Service	Total Amount
United Kingdom	5	1	1	3		1	11
German	3						3
France	1					1	2
United State		1			1		2
Switzerland	1						1
Italy	1						1

Appendix. Open-ended questions

Q.	Summary of key themes	Intended purpose
1-4	Interviewee introductory questions: organization, job title, areas of responsibility, time in position;	For general information (to ensure sufficient expertise/knowledge levels) and to warm up the interview;
5-7	Background information on company/organization;	Contextual information;
8-11	Strategic adjustments to climate change: plan or target in reducing GHG emission, self-description of organization's climate change adaptation, comparison with headquarters on climate change adaptation, departments involved with climate change adaptation;	Information on current adaptations in such changing institutional environment caused by climate change in China;
12-13	The triggers/barriers in the company/organization to develop climate change adaptation;	Information on the key determinants for the process of developing climate change adaptation;
14-15	Understanding of the institutional development on climate change in China, and its role of developing climate change adaptation;	Information on managers' cognition of climate-related institutional development in China, and the link between institutional environment and adaptation;
16-18	Related capabilities and resources: skills, experience, talent, help from headquarters, etc.	Information on organizational capability to develop climate-related response;
19-20	Process of signal management: signal source of local institutional changes, how to link signal with company/organization.	Added after initial data analysis, to get information through the signal processing process, and its role in making decisions.