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Developments in corporate responses to climate change in the past decade

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Introduction

On 11 June 2005, the Financial Times published an interesting cartoon that nicely captures some of the issues that have played a role in the debate on climate change all along. The comic, published well before Hurricane Katrina shook the United States, shows President George W. Bush standing on a lectern amidst a rising tide. The notes in front of him say 'climate change research', and show many crossed words; also 'possible' and 'not'. On the background we see melting ice caps and smoking oil refineries. The cartoon clearly illustrates the different perceptions and

views about the problem of climate change, with those who emphasise the bad situation due to global warming, that include more floodings and melting ice caps, and the impact of industrial activity in this process. We also see a representative of those who are not so convinced about the evidence and plead for more research. Opinions about the best policy responses to climate change has diverged likewise, from those who support the Kyoto Protocol, or even think it does not go far enough, to those who see this as undesirable and stress the negative economic consequences, at the macro and/or micro level.

Almost around the same time, in the second half of 2005, British Petroleum started an advertising campaign in the Financial Times. One of the adverts, entitled "It's time to turn up the heat on climate change", read "In 1997 we became the first major energy company to publicly acknowledge the need to take steps against climate change. Since 2001, the reduction in emissions from our energy efficiency projects has now reached over 4 million tons. Over the next 4 years, we plan to implement new projects to reduce emissions by another 4 million tons." This was part of the Beyond Petroleum campaign, initially launched by the company in July 2000, together with this new sunflower logo. Interestingly enough, at the time this new BP logo and the 'Beyond Petroleum' campaign was ridiculed within the oil industry and by NGOs. It inspired the NGO Corporate Watch to think about more appropriate phrases for the company's re-branding: '*British Petroleum: Beyond Pompous, Beyond Protest, Beyond Pretension, Beyond Preposterous, Beyond Platitudes, Beyond Posturing, Beyond Presumptuous, Beyond Propaganda Beyond Belief...*' (Kolk and Levy 2001). Internally, inside BP, the slogan led to confusion and dissatisfaction because it threatened to hamper the company's core activities and business units' daily operations. At the 2001 annual meeting, management retracted the original message by emphasising that it was not meant to show the company's intention to retreat from oil. As its CEO John Browne pointed out 'Beyond Petroleum just means that we are giving up the old mindset, the old thinking that oil companies had to be dirty, secretive and arrogant'. But at this meeting he also departed from previous positive expectations about the size of future markets for renewables, and said that renewables could not even begin to substitute for oil on present conditions (Kolk and Levy 2001). So you can imagine that I was a bit surprised to see this campaign logo and slogan coming back at full speed a few years later.

Together, these two items from the Financial Times sketch the full range of interesting aspects related to climate change. It is a very fascinating topic, and one in which dilemmas of environmental policy and of corporate responses come to the fore most prominently. It is also an area where you can clearly see the importance of interactions between a variety of stakeholders, and how the development of an issue, from emergence to maturity, is accompanied by different corporate responses. So for those of us interested in what business does, which economic factors play a role in the environment, this is an ideal topic to study. I have been intrigued by this whole complex of actors, responses and interactions since the middle of the 1990s, when policy making seemed to become more serious, and companies started to pay increasingly more attention to what was going on. In this contribution, I will give an overview of the research I have done in this

period of almost a decade, which has focused on multinationals (MNCs). In this way, I also give some insight into developments over the years, and mention some promising areas for further research. Part of the earlier research that I will refer to has been done together with David Levy, and in more recent years in cooperation with Jonatan Pinkse.

Climate change is one of the environmental issues that has increasingly attracted business attention in the course of the 1990s. Multinationals have developed different strategies over the years, initially more political, non-market in nature, but currently also market-oriented. Since 1995, multinationals' political positions have gradually changed from opposition to climate measures to a more proactive approach or a 'wait-and-see' attitude, and many have started to take steps to be prepared to deal with regulation, or to go beyond that, considering risks and opportunities. A range of aspects has played a role in companies' response to climate change, at the country and sector levels, but also firm-specific and issue-specific characteristics.

Policy developments

Obviously, policy-making processes and outcomes, both nationally and internationally, have been very important, and have attracted much attention over the years. One of the things that I always discussed with students in the 1990s was what shaped countries' positions in the climate negotiations (a range of economic, geographical and political factors, see Kolk 2000 for an overview), and also how these were subject to change. An overview of policy developments since the early 1990s demonstrates how much has taken place (table 1). An important milestone in the process, which set many things in motion, has been the 1997 adoption of the Kyoto Protocol.

Table 1. Overview of policy developments on climate change

Year	Policy/event	Elaboration
1992	Framework Convention on Climate Change	Adopted at the United Nations Conference on Environment and Development (Rio de Janeiro); expression of intent by industrialised countries to stabilise emissions at 1990 levels by the year 2000; no mandatory emission curbs.
1992 & 1995	EU carbon tax proposal	The European Commission proposed in 1992 a carbon tax that would raise prices of fossil and nuclear energy by 50%. The proposal was conditional on the introduction of a similar tax by the US and Japan. In 1995 a carbon tax was proposed without this condition. Both proposals failed because several EU countries refused to accept the tax.
1997	Kyoto Protocol (COP 3)	Agreement on reduction targets for greenhouse gases compared to 1990 levels, to be reached in 2008-2012. Differentiated targets per country/region, e.g. Australia +8%; Canada -6%; Japan -6%; Russia 0%; US -7%; EU -8%. EU overall target translated into specific ones for member countries, e.g. Germany -21%, France 0%, Italy -6.5%, Spain +15%, UK -12.5%.

1998	COP 4 in Buenos Aires	First Conference of Parties after Kyoto. Confirmation of the Kyoto agreement and adoption of a 'Plan of Action' to implement the Protocol.
1999	COP 5 in Bonn	A 'process meeting' which showed different views. Discussion points were targets for developing countries (China and India refused to accept targets) and the EU-US disagreement on restrictions on the use of the Flexible Mechanisms. Agreement to conclude final negotiations on global greenhouse gas emissions by November 2000.
2000	EU renewable energy proposal	Proposal of the European Commission to set 'indicative' national targets for renewable energy production with the aim to double energy consumption from renewables to 12% by 2010.
2000	COP 6 in The Hague	Failure to achieve agreement between the US and EU. Main issues concerned rules for emission trading and the Clean Development Mechanism. The issue on which the negotiations ultimately failed was the use of forests and farmlands as carbon sinks, which was favoured by the US, but contested by the EU.
2001	IPCC 3 rd Assessment Report	Third report by the Intergovernmental Panel on Climate Change (IPCC), released in January. It contained expectations that the consequences of climate change will be greater than expressed in earlier assessments.
2001	US rejection of Kyoto Protocol	In March 2001 the Bush administration declared that it would not implement the Kyoto Protocol and intended to withdraw the US signature.
2001	Launch of US alternative 'science-based' climate plan	Some 'softening' of the US stance in June, shown in the proposal of an alternative 'science-based' response to climate change. Main elements were increased research expenditure for energy efficiency improvements and voluntary measures for industry.
2001	Bonn Agreement on Kyoto implementation	Agreement by the EU, Japan, Canada, Australia, Russia, and a number of developing countries on the rules for the reduction of GHG emissions as laid down in the Kyoto Protocol. Concessions of the EU included allowing emission trading, and the limited use of forests and agricultural land as carbon sinks, which enabled Japan to meet its targets.
2001	EU emission trading scheme proposal	Proposal by the European Commission to set up an emission trading scheme to come into effect in 2005 onwards.
2001	COP 7 in Marrakech	2001 Bonn Agreement turned into a legal text. Further concessions won by Russia and Japan on the use of carbon sinks and the ability to sell surplus emission credits.
2002	EU Kyoto ratification	EU agreement to ratify the Kyoto Protocol by the end of May 2002.
2002	Launch of UK emission trading scheme	The UK government opened a national emission trading scheme in April. Under the scheme, companies received a limited amount of emission allowances that served as a 'cap' on their carbon emissions, which they are allowed to trade.
2002	COP 8 in New Delhi	The eighth Conference of Parties put the position and vulnerability of developing countries central. India criticized calls for emission targets for developing countries and stressed the growing tension between the developed and developing world on climate change.
2003	McCain-Lieberman plan	Senators McCain and Lieberman propose a bipartisan plan to introduce industry-wide caps on GHG emissions and to set up an emission trading scheme. The bill failed to pass US Congress by 12 votes, which was commonly viewed as a positive sign.
2003	Opposition of US states to federal government climate policy	Twelve US states file a lawsuit against the Environmental Protection Agency for denying responsibility for GHG emissions (reflecting their opposition to the US federal policy). US Northeast states also develop (regional and perhaps later EU-linked) 'cap-and-trade' plans.
2003	Chicago Climate Ex-	Start of this voluntary trading scheme (which is legally binding though

	change (CCX)	on member organisations to meet reduction targets of 6% by 2010 compared to average 1998-2001 greenhouse gas emissions).
2003	Regional Greenhouse Gas Initiative (RGGI)	Initiative in the US by Northeast and Mid-Atlantic states to discuss a regional cap-and-trade programme that will initially cover CO ₂ emissions from power plants but can be extended later.
2004	COP 10 in Buenos Aires	Disagreement about future of Kyoto Protocol after 2012 (to come up with new negotiation rules/targets by 2008); weak compromise found for a 2005 seminar to exchange information.
2005	Start of EU ETS	On 1 January 2005, the EU emission trading scheme started.
2005	Kyoto Protocol entered into force	On 16 February 2005, the Kyoto Protocol entered into force with the official ratification by Russia. In 2004, President Putin had announced that Russia intended to ratify (as a 'quid pro quo' for EU's acceptance of Russian WTO admission).
2005	New South Wales Greenhouse Plan	Australian state plan to reduce greenhouse gas emissions to 2000 levels by 2025, and realise 60% reductions by 2050.
2005	Kyoto Protocol Achievement Plan	Adopted by Japanese government; implies dissemination of technology, emissions reporting and voluntary use of Kyoto Mechanisms.
2006	Asia-Pacific Partnership on Clean Development and Climate	Brings together Australia, China, India, Japan, South Korea and US in what has been labelled as an 'alternative to Kyoto' attempt that focuses on voluntary, non-binding steps relying on clean technology.
2006	California Global Warming Solutions Act	Mandates a cap of California's greenhouse gas emissions at 1990 levels by 2020.
2007	California Climate Exchange (CaCX)	Launched by the Chicago Climate Exchange to developing trading instruments related to the California Global Warming Solutions Act.
2007	Western Regional Climate Action Initiative	Initiative by Western states in the US and two Canadian provinces to realise a regional, economy-wide reduction target of 15% percent below 2005 levels by 2020, using market based systems such as a cap-and-trade programme. Builds on two earlier initiatives: the West Coast Governors' Global Warming Initiative (2003) and the Southwest Climate Change Initiative (2006).
2007	US mayors' climate protection agreement	Signed by 600 mayors in all 50 US states and Puerto Rico. Involves a commitment to cut greenhouse gas emissions by 7% in 2010 compared to 1990 (which is the US Kyoto target). Initiative was started in 2005 by the mayor of Seattle.
2007	Canadian Regulatory Framework for Air Emissions	Successor to earlier plan launched by the previous government in 2005. The 2007 plan aims to realise a 20% reduction of greenhouse gas emissions by 2030 compared to 2006.
2007	Australia Climate Exchange (ACX)	Launched Australia's first emission trading platform.
2007	Australia and New Zealand intended joint emissions trading	Announcement by Australia and New Zealand to join forces in the development of carbon-trading systems that would be compatible. Follows on earlier statement by Australia that it intends to move towards a domestic, nation-wide emissions trading system per 2012.
2007	Sydney APEC declaration on climate change	Adopted by 21 Pacific Rim countries (including Australia, US, Canada, Russia, China, Japan); includes an aspirational goal of a reduction in energy intensity of at least 25% by 2030 compared to 2005, and support for a post-2012 international climate agreement.

Source: Adapted/updated from Kolk and Hoffmann, 2007; Kolk and Pinke, 2005b

Political responses

At the sector level, many changes have also taken place. Particularly in the period leading to the Kyoto Protocol, controversies between opponents and proponents of climate policy intensified. Before individual companies starting to take positions, a main channel for expressing views was sector-wise, by trade and industry associations, or broader national or international coalitions. Sector characteristics have been important to climate issues, especially in the stage in which negotiations take place to determine the severity and specific contents of policies (Kolk 2000).

Objections to drastic or quick measures used to be raised by energy-intensive sectors such as coal, oil, steel, aluminium, chemicals, automobiles, and paper and pulp. Particularly many US MNCs joined lobby organisations, which included the Global Climate Coalition and the Coalition for Vehicle Choice. More offensive voices could be found in those sectors where this position appeared to offer new market chances or where the risks of climate change predominated. These included solar and wind energy, gas, environmental technology, telecommunications, nuclear energy, insurance and banks. Their views were represented by organisations such as the Business Council for Sustainable Energy, the Pew Center on Global Climate Change and E7 (Kolk 2001).

After the adoption of the Kyoto Protocol, the opponents lost momentum, and an increasing number of MNCs left defensive organisations, sometimes even joining offensive associations. Remarkable in particular were MNCs that first broke away from more traditional sector behaviour, such as BP, Shell, General Motors and Toyota. By mid-1999, I compiled a list of those Fortune 500 companies that had explicitly expressed their views in favour of climate measures (around 50 companies had done that), usually underlined by the fact that they joined one of the more offensive organisations such as the ones mentioned above. At that time, an interesting change was already taking place.

It was also then that we started to analyse in more detail why and how companies change, resulting in a more detailed study that came up with the following sets of factors (see table 2). And you see here that a range of aspects has played a role in companies' responses to climate change, at the country and sector levels, but there are also firm-specific and issue-specific characteristics.

Table 2. Important explanatory factors for corporate positions on climate change

Factors	Components
Home-country factors	Societal concerns about environment/climate change Societal views on corporate responsibilities Regulatory culture (litigational or consensus-oriented) Ability of companies to influence regulation National environmental policies National industrial promotion strategies

Firm-specific factors	Economic situation and market positioning History of involvement with (technological) alternatives Degree of (de)centralisation Degree of internationalization of top management Availability and type of internal climate expertise Nature of strategic planning process Corporate culture
Industry-specific factors	Nature and extent of threat posed by climate change Availability and cost of alternatives Degree of globalization of supply chain Political power of the industry Technological and competitive situation
Issue-specific factors	Impact of issue on various sectors, countries Institutional infrastructure for addressing issue Degree to which issue and regulation are global Complexity and uncertainty associated with issue

Source: Kolk and Levy 2004, p 178

What struck us at the time were obviously the divergent responses between multinationals in the US compared to Europe, something which you can still see to some extent if you compare, for example, Exxon Mobil and BP. We thus did an in-depth study of the oil industry to investigate this further (Levy and Kolk 2002). We posited that there were forces that would lead to convergence of oil multinationals' positions across the Atlantic, regardless of their nationality, particularly their location in global industries and the participation in the 'global issue arena' of climate change. At the same time, their different home-country institutional contexts as well as individual company characteristics were pressures for divergence, for different views. Applied to the oil and automobile industries, it turned out that divergent pressures initially dominated, but that convergence increased as the issue matured. Managerial perceptions and institutional frames were important in shaping multinationals' responses.

For companies, the issue of climate change continues to be characterised by diversity in policy developments and uncertainty as to the (potential) impact on markets, technologies and organisations. At the policy level, there has been fragmentation about approaches on how to implement Kyoto (if at all). The most notable regulatory development has been the introduction of the EU emission trading scheme per January 2005. This is the only compulsory trading system, in addition to a number of voluntary ones (including the Chicago Climate Exchange). To influence these and other initiatives to their favour, multinationals have continued to engage in political strategies, although the specific types have changed as a result of the different context (Kolk and Pinkse 2007). It is also interesting to observe that the climate change issue has developed further, and experienced a 'secondary trigger', beyond the 'maturity' we found in our earlier work (Kolk and Levy 2004; Levy and Kolk 2002). Multinationals are also actively helping to shape the institutions that are emerging to govern climate change, that is the market mechanisms, particularly emission trading, that were created with the Kyoto Protocol, but have not been fully implemented and accepted yet (Pinkse and Kolk 2007).

Market responses

Perhaps even more exciting than the political strategies have been corporate market responses. There is a whole range of activities that multinationals are undertaking, ranging from simply making inventories of and measuring emissions (which is most common), to process improvements, improving products or engaging in market mechanisms, especially emission trading. This is basically a distinction between innovation or compensation, which they can do alone or in cooperation with others within or outside the supply chain (table 3).

Table 3. Strategic options for climate change

Organization		Main aim
Internal (company)	Innovation	Compensation
	Process improvement (1)	Internal transfer of emission reductions (2)
Vertical (supply chain)	Product development (3)	Supply-chain measures (4)
	Horizontal (beyond the supply chain) (5)	New product/market combinations Acquisition of emission credits (6)

Source: Kolk and Pinkse 2005a, p. 8

Companies of course pursued different options simultaneously. Our analysis of multinationals showed that there were basically six groups with different characteristics (Kolk and Pinkse 2005a): cautious planners (31%, score low on all dimensions); emergent compensators (36%, internal focus, particularly box 2); comprehensive compensators (14%, which combine targets, control and production process improvements, boxes 1, 2, 4 & 6); vertical explorers (10%, supply-chain oriented, boxes 3 & 4); horizontal explorers (5%, markets beyond current scope, box 5); and emission traders (4%, boxes 2 and 6).

The sort of profile that companies have is to some extent shaped by the sector in which they operate. Automobile and oil multinationals focus, for example, mostly on developing technological capabilities (Kolk and Pinkse 2008). In the oil industry this encompasses a range of technologies, with some targeting a range of energy sources, while others explore particularly hydrogen or renewables or stick to natural gas for the time being. In the automobile industry, Toyota was a first mover with hybrid vehicles, but most other companies now are also starting to move in this direction, although they all view it as a transition technology, and not a very profitable (even loss-making) niche market. For banks and insurance companies, organisational capabilities are more important, for example, by offering weather derivatives or facilitating/funding carbon trading or clean development/offset projects. Some oil companies are also taking steps to play a role in emission markets. General Electric, which has started a large 'Ecomagination' campaign in 2005, develops new expertise but also relies on existing ones.

Research agenda

In terms of a future research agenda, there are many areas that deserve further attention in this very turbulent and dynamic field. This involves not only following and tracing trends in corporate responses, both market and political, but also the way in which corporate realities help to shape policy development and the instruments that emerge to influence companies' behaviours. We will also assess what determines which strategies/approaches companies follow: to what extent does country of origin and location, including stakeholder pressure and regulatory situations there, sector/competitive pressures, geographical spread, degree of internationalisation, diversification and integration, product portfolio, perceptions of risks/opportunities, and other firm-specific characteristics play a role? It can again be investigated to what extent divergence or convergence is taking place, and what the performance implications of different corporate and policy approaches are.

Another important research stream is to examine how and to what extent companies implement climate approaches internally (across borders, between different subsidiaries and business units), what sorts of problems managers face in this process and whether or not climate approaches are related to 'mainstream' corporate activities. It will be interesting to see whether and how learning and knowledge transfer is taking place within companies, and in the case of multinationals from which location actual innovations (technological or organisational) originate. We also envisage studies into the actual operations and corporate drivers of engagement in carbon offset projects, particularly in developing countries, and the implications of policy contexts and governance characteristics for the extent and effectiveness of these market mechanisms.

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