

TÄLLBERG FOUNDATION

CLIMATE CHANGE
AND CORPORATE
STRATEGY

REPORT TO MISTRA AND THE
GENERATION FOUNDATION

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REPORT TO MISTRA AND THE GENERATION FOUNDATION

ON CLIMATE CHANGE AND CORPORATE STRATEGY

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EXECUTIVE SUMMARY

MISTRA and the Generation Foundation are exploring new research agendas that better meet the needs of business as they address the challenge of climate change. The Tällberg Foundation was commissioned to identify where global corporations sensed a gap in their knowledge in this area. The project goal was to define where new research could support business leaders in developing a strategic response to the effects of climate change that protects the future viability of their business and, importantly, recognising their role in mitigating climate change.

For this project, in-depth conversations were carried out in August 2006 with senior representatives of nine global corporations lasting from 40 to 120 minutes, either face-to-face or by telephone (see List of Interviewees, Annex 1). These conversations were structured around a questionnaire on the company strategy regarding climate change (see Annex 2).

The study revealed a high level of awareness of climate change. The participating companies are already taking action to reduce their greenhouse gas emissions. However, there was evidence that companies are having difficulty in looking deeper into the issue, and in planning a strategic response to its longer term effects. The problem was cited as too complex and with unusually high levels of uncertainty.

In an attempt to simplify the problem and understand where companies have the most doubts, three key findings have been defined and examined in this report.

First, companies are seeking assistance in translating the scientific information available on climate change into information upon which they can make strategic or investment decisions. Companies need a clearer picture of how the economics of the marketplace will look once society has begun to adapt to climate change.

Secondly, an important driver of changes to current business practice is the policy framework that will, inevitably, be put in place. The interviews resulted in a clearly articulated wish for an analysis of potential policy options for addressing climate change. A better understanding of the impact of changing legislation and regulation on business was considered critical to inform decision-making at board level and place climate change at the centre of company strategy. Legislation is also tightly coupled to consumption patterns, including public procurement, and thus to the future financial picture for business.

Thirdly, at the centre of the framework, the individual within the company is a key player. Each individual is not just business leader or employee but also citizen, consumer and voter. There was agreement throughout the study that an important task to undertake is the integration of climate change into the very centre of education – particularly business and economics education. Education of current managers and the sharing of best practices between businesses were also considered critical.

Corporate leadership is now slowly emerging. The picture emerging from the study was that while energy companies are now discussing climate change at board level, most companies are still asking their corporate communications departments or those responsible for the environment to manage the issue. For these companies, planning for a new marketplace that is sensitive to climate change has not started. It seems that, while accepting climate change as a reality, they are still struggling to picture how it will transform their business through altered consumption patterns, new legislation, rising costs of raw materials and logistics.

To better understand the position that business leaders find themselves in, a new knowledge base and new conceptual tools are needed. Part II of the report presents ideas for some such tools or conceptual models that will aid the evolution of business thinking in the face of climate change.

The conclusion of this study is that any attempt to provide assistance to the business community in tackling climate change strategically must go to the very heart of the issue – the difficulty that today’s business leaders have in addressing the complexity and far reaching consequences of climate change on the market place.

Inspired by this conclusion, this study presents a proposal for a new curriculum for business education and a new research agenda into climate change and corporate strategy. This stems from the fact that the business community requires a better grounding in systems thinking and an understanding of the ecological and social context in which they operate. This must be provided by business education. Moreover, a financial representation of the costs of business activities to the ecological system would enable leaders to start to address the deeper implications of climate change to their business. Taken together, a proposed new research agenda and a new approach to business school curricula will both prepare to change the mindset of business leaders, and provide the fundamental materials to ensure a proactive business approach to climate change.

PREAMBLE

Climate change is, for the first time, forcing mankind to take stock of his relationship to the natural world. Before approaching the topic of corporate strategy and how business is addressing the challenge of climate change, we reflect briefly on the system which is their market place, and how it has evolved over the millennia.

All human activity takes place in a wider ecological, social and economic context. Humans as a species are indeed an integral part of the ecological system, as are millions of other species. We developed economic activity for our survival, welfare and wealth and this economic activity depends upon the transformation of energy, matter, water and air. Our present society is based on 200 years of incessant technological change in the pursuit of higher productivity and economic growth. In parallel, the human species has, during this time-span, multiplied at a rate unique in history. Technological change has made the growth of the human species possible and the growth of the human species has made economic activity explode at an unprecedented pace. Over this time, humans organised themselves into communities to improve productivity and security. Corporations are one such human community, focussed on the pursuit of profits and growth.

Human behaviour and the application of our technologies are now causing major imbalances in the ecological system – of which man is a part. We have been oblivious to the effects of our cumulative actions. Knowledge of our relationship to ecology has been incomplete, disorganised and very unevenly interpreted by cultures, value systems, religions, political ideologies, and levels of human development across the continents.

It has only been the piecemeal emergence of nature's reactions to the activities of Man that has made us aware of disturbances, new risks, new dynamics and new interdependences within the ecological system. These reactions are now better and better understood by scientists from a large variety of disciplines. We are starting to be able to understand the big picture. We are starting to understand Earth as a system and a number of thought leaders are providing us with attempts at mega theories, like James Lovelock's Gaia Theory. The scale of the problem is now emerging.

Innovation and technological change will be a necessary but not sufficient ingredient for dealing with the problem at hand. In the end, it is the change of human behaviour, lifestyles, social organisation, economic behaviour and governance that will secure the necessary change for our survival.

There is an emerging consensus that the problem of climate change is a common problem, that is, a political problem. Individual corporations can develop new technologies, new markets, new products and services, but they can only act with confidence in response to consumer demand. New innovations can only succeed if the consumer accepts them – and consumers can only buy innovations that are made available for purchase. Policy instruments influence both manufacture and price. The media and NGOs stimulate debate that further affects consumer choices. Thus, the market system depends on a tightly knit web of inter-

dependencies. This whole system must undergo transformation together to respond to the challenge of climate change.

This report seeks to capture the status of corporate thinking regarding the position of business in this society-wide response to climate change and builds on conversations with senior representatives from global corporations who have tried to articulate their needs in facing this challenge. The following chapters present and then analyse the study findings. The core challenge of climate change is the combination of its scope and ubiquity, its systemic nature and its complexity; energy use is responsible for climate change and energy underpins every aspect of our current lifestyle. It is clear that, just like the rest of us, corporations – the drivers of the economy – are facing a change to their business context that they do not fully understand.

PART I: DETAILED PRESENTATION OF FINDINGS

UNDERSTANDING HOW CLIMATE CHANGE IS CREATING A NEW BUSINESS ENVIRONMENT.

The strongest learning from this project is that even the front runners of the global business community are not finding a path through the complexity of the market-wide transformation destined to occur as a result of climate change. Scientific data generated by the research community has not been translated into information that business can use. Temperature change, melting ice, rising sea levels, fresh water shortages and extreme weather patterns will translate into changing energy prices, water rationing and altered consumer lifestyle choices – among many others. Companies will need to understand these changes and respond.

“The place where there is the least research being done is on adaptation. What is going to be needed to be done and where is it going to need to be done, to help companies and communities adapt to a climate change future – because it is going to occur, it’s just a matter of degree.”

“We tend to view climate change as an energy generation issues, we need to look a lot more on the demand side.”

Most interviewees recognised the systems nature of the climate change challenge:

“[We need to] create mutual understanding on what must be done in different areas of society; business, academia, NGO’s, the political system etc.”

But within all participant businesses, it is either an advisor or corporate social responsibility department that is asked to take care of climate change and then report to the board.

“It will be discussed at board level when we give them an update on the progress of our environmental and sustainability strategy.”

Unlike other more familiar business risks, such as launching a new product, the short term costs of steps to mitigate climate change are not being calculated in relation to long term financial risk or business opportunity. This is due to an incomplete understanding of the complex effects that climate change will have on business in the future.

A frequent request during the interviews was for assistance in simplifying this complexity. Companies require a translation of the scientific information on climate change into scenario illustrations of possible new business environments, not least from an economic perspective.

“How would the fundamentals of how we do business change over time in the face of the potential disruption we will experience over the next 30 years? We need scenario planning and thought leadership.”

In some companies there are pockets of awareness; managers who see climate change causing difficult to predict effects on their market predictions for long term business.

“Some units have done scenarios, e.g., for China. Many of the global markets look very positive until you factor in the effects of climate change on water scarcity and fights over oil as the prices rise – when the fundamental assumptions of this market will dramatically change.”

Some see big changes ahead which would seriously impact their core business:

“What structural changes are expected? When will transport be so expensive that the transport structure will change?”

“It’s a big concern as to whether climate change will have a big effect [on health]; increased morbidity rates, increased disease vectors changes, in the sense of diseases being in places they have not been previously”

Ultimately, the major worry to the business community is the resulting costs to the bottom-line and, beyond the business, to economic growth in general.

During the interviews for the current project, it was clear that there is a need for a business-focussed approach to understand the financial implications of climate change, using

the language of risk and opportunity. A thorough financial analysis of climate change would move the issue out of the environment box and into the core business discussions.

“If I want to persuade our managing board that this is a major issue, I [should] talk about climate change in financial terms, in economic terms, in market development terms, in GDP terms, then [they’ll] really understand.”

The two financial questions that need to be tackled in a business strategy are the cost to the business of changing current practice, and the long term effect of climate change on business success. A fuller comprehension of these two areas and of the cost-benefit equation is currently missing.

“We probably do not have the necessary knowledge to do the risk analysis on the impact of climate change on the business.”

There were a number of clearly exasperated comments regarding the need to convince shareholders that any significant investments related to climate change were a valid part of a business strategy.

“A big issue for company strategy is the view of the financial community that sees the cost of everything and the value of nothing”.

The financial community is, however, beginning to stir. Initiated by the United Nations, the UN Institutional Investor Summit on Climate Risk recognises the central role of investors in both stimulating and supporting the scaling up of new technology. This group, which has now convened twice, recognises climate change as a risk that requires concerted action from the business community. The below quote is from the introduction of a call for action to all financial sectors from institutional investors, companies and governments, written in 2005:

“Recognising that climate change embodies risks and opportunities of a significant magnitude for investors and our economy, and represents one of the greatest challenges facing our planet, we are compelled to seek improved approaches in responding to the fiscal ramifications of climate risk for institutional investors, fund managers and financial advisors, companies, and others.”

Some companies felt they had shareholders who would support a wide-sweeping strategic response to climate change, but for most, high returns on investment and business growth are still considered the key drivers and thus a significant consideration for strategy development.

“You can’t spend 10 billion unless you know you are going to make a profit because there is a whole set of shareholders who will quite reasonably complain, asking why we are imposing a climate tax that our competitors do not impose upon them.”

A more general request from all companies interviewed was for some clearer ‘economics of climate change’, that would reflect the costs of potential legislation and the disruption that the physical changes climate change may bring to the wider global economy.

“There are still a lot of people who claim that trying to address climate change is bad for the economy”

The overall economics of climate change is still in its infancy. Companies eagerly awaited the now published Report from the Stern Review on the Economics of Climate Change commissioned by the Cabinet Office and Treasury of the UK Government. We now know that the author, economist Professor Nick Stern, indicates that considerable extra costs will be incurred by waiting to address the rising emissions rather than investing in changes now. It remains to be seen whether this report will provide the clarity that the business community was waiting for.

In the States, the Carbon Mitigation group, working at the Princeton Environment Institute as a partnership between Princeton University, Ford and BP, has developed the Wedges approach. This model identifies ways to cut emissions using existing technologies in such a way that costs of mitigation can be estimated.

Critically, all interviewees felt that the debate on the economics of climate change must start in earnest.

“I would really like to move from that scientific debate to more on the economic debate, as I think that is the biggest constraint.”

THERE IS CONSENSUS THAT PUBLIC POLICY MUST SUPPORT CHANGES IN CORPORATE STRATEGY. PROLONGED UNCERTAINTY REGARDING THE FORM THIS POLICY WILL TAKE CAUSES CONCERN.

All companies interviewed felt that public policy will need to underpin any corporate or social response to climate change. All interviewees lamented the fact that that no clear statement of direction is emerging from policy makers, global or national.

“Here in the US, the lack of clear federal mandates on emissions is a problem. It would be much easier if we knew what the targets were.”

Costs to business from climate change will be linked to policy. Corporations currently do not know whether their future business environment will be shaped by punitive legislation or policy that stimulates certain markets through incentives.

“Certain industries know what they want. For example, the utilities, when planning to build a new power plant, need to know the costs for operating that plant going forward so they can cost it in. For the auto industry – although they would never say this publicly – they need to know if they are going to be held accountable at some point for the emissions that result from people driving their vehicles.”

Interviewees did not express strong opinions on which type of regulation may achieve optimum results for the climate and penalize business least. There was, however, agreement that research was needed to identify policy tools that could stimulate innovation, and create a customer base and marketplace favourable to ‘climate-friendly’ products. Unsurprisingly, a preoccupation for companies was that any policy should ensure a level playing field between competitors.

There was a hint of realism among companies that it would take time for leadership to emerge from the corporate world.

“Even the worst case scenario with respect to transport or energy would not stir our supply chain leaders because they would be perceived as something that would affect everyone.”

This illustrates a business reality – not all companies are front runners. There is therefore a need for policy to stimulate innovation. But, companies see a stalemate at the moment.

The only clear action taken to date that would drive global companies is the Kyoto protocol, with the European Emissions Trading Scheme the only initiative in implementation stage. These two do not provide enough clarity or security for companies operating in many different markets across the world to plan strategic investments, changes to business strategy, or even predict their markets 5 years from now.

“We’re in a bizarre catch 22 situation - governments feel they can’t act because it may penalise or antagonise the corporate environment. And companies, who see the challenge, would potentially invest in either solutions or other forms of climate mitigation, but need the certainty of long term regulation.”

There was agreement that informed business leaders can encourage national policy making, and even, as with the Gleneagles process, influence global forums. It is clearly working at State-level with California taking a lead position:

“... one of the reasons Schwarzenegger signed the legislation was because he’d seen business leaders in our meeting saying it was a good idea.”

A wide analysis of existing legislation and the identification of best practice legislation would be welcome by many interviewees. One interview identified as a potential area for study the different legislative approaches in the UK and Germany for stimulating use of renewable energy.

“Germany took a much more holistic view – 270 pieces of legislation that in one way or another went to support building of the renewables [market]. ... [they] looked beyond price and recognised that they needed to align a whole set of people. In the UK, people would have said that that was interfering with the market.”

The power of cross-border policies to resolve blocks to progress was discussed, with the lack of a co-ordinating system for rail transport across Europe mentioned as an impediment to a climate-friendly supply chain.

“[There is] lack of innovation in society in the area of transport. The railway system in Europe does not help business move towards sustainable modes of transportation. An efficient European railway system is a way to reduce use of trucks and thereby considerable reduction of CO2 emissions. If this could be solved there would be an enormous impact on climate change in Europe.”

In both the Gleneagles statement and the principles from the UN Institutional Investor Summit, public procurement was cited as a powerful agent for change, not only in creating a secure market for climate-friendly products, but on the support this gives in the form of a public statement. This view was echoed in our findings.

“Public purchasing could influence much more by setting purchasing rules that benefits environmentally sound products and services.”

An important insight was that the positioning of climate change under environmental legislation has slowed its integration as a topic critical for sustainable economic growth.

“Without politicians willing to take it out of the box and treat it as an integral part of public policy, as defence, as healthcare, it remains as a subset of the environment, which is something that is necessary but not a principle driver – not something that you worry about to deliver economic growth.”

This mirrors the positioning of climate change within corporations as a Corporate Social Responsibility topic.

Finally, some recognised that effective legislation may not be in place in time to enable changes to be made as fast as is needed. This discussion raised an important question.

“How can companies respond to the challenges of climate change with the inconsistent or inadequate legislation (which is reality) that does not level the playing field – particularly with respect to competing with local businesses that do not operate to any internationally agreed standards?”

This quote raises an additional question of how to manage extra risks that are associated with being a first mover. Such risks could, perhaps, be diminished by incentive schemes.

PUBLIC AWARENESS, SHIFTING DEMANDS, CUSTOMER CHOICE AND CHANGING MARKET BEHAVIOUR MAY POINT TO AN IMMINENT TIPPING POINT

Leadership from the public arena has been slow to emerge, but the number of forums, both public and corporate, new research projects initiated and the volume of writings focussing on climate change has ballooned. The media has only recently adopted climate change stories as worthy of newspaper front pages and long TV features. Reports of both the flow of scientific research and the bold statements of public figures are now appearing daily.

A true response from the general public seems to be only emerging slowly, however, and business is cautious to move too far ahead.

“Our bigger problem is that there has to be a customer. It is not clear who the customer is.”

“What will be the signals from the consumer that will help companies adapt? They are not currently sending signals to cosmetics manufacturers telling them to use less packaging”

In the present project, all companies interviewed were already looking at energy efficiency and reducing emissions. Only two companies are considering steps beyond this, such as investing in new product development, as a means to tackle climate change and prepare for a new business context – and even these two are not making significant changes to the core business just yet.

In most cases, this is because they don't feel the market is ready.

“How can we be sure that the political and public support will be in place after 2015 for the necessary investments to be made now? Is there a way to research the movement of this consensus such that companies feel able to rely on that being in place?”

Frustrations regarding the lack of pull for climate-friendly products from consumers came through clearly in several of the interviews.

“An interesting area to research is therefore people behaviour and what is stopping them from buying environmentally sound products and services? The technology is there, the products are available and affordable. For example, customers are changing mobile phones twice a year but do not change energy supply to renewable energy. What does it take to change attitude?”

There is a role for public policy to change people’s purchasing habits, thereby stimulating a market that is in someway disadvantaged at the outset.

“How can policy makers play a part in consumer choices? Fiscal policy can have a huge impact on what people do. Are there other mechanisms that could be encouraged?”

For some, the relationship between politicians and voters, who are the ultimate consumers of commercial activity, is the one that will resolve the stalemate.

“...when you move climate to being as important as health or defence – things that the general population holds the government accountable for, then...you build that consumer/voter concern and awareness. My view is that if you get these two right, you will never have to build business strategy, because once you have a customer, business will move remarkably quickly, changing to serve that customer.”

However, according to most, politicians were not creating this change and developments in the media and marketing may shape consumer choices more strongly than policy.

“I’m hopeful that we are at a tipping point [with climate change] where business and companies like ours can create the consumer, like the computer companies have done. No-one knew they needed and iPod 10 years ago, and now everybody needs one. We need to teach the consumer that they need a more sustainable product”

The tightly inter-related market system in which companies operate was described as causing paralysis by some interviewees as they wait for pull or push from either side.

“We only do new things when our suppliers or customers ask for them.”

The principle thing that is missing is the right supply side capacity. We need to build suppliers and contractors, and the skills there.

For manufacturers of fast moving consumer goods, there has been a recent, unexpected stimulus to the market for products that promote good environmental practice in the form of the new strategy from Wal-Mart. This is a clear illustration of how a belated partnership between manufacturers and retailers can create change.

The role of the retailer – our direct customer – is key. The new strategy of Wal-Mart has changed the attitude of [our] US business dramatically – from those who resisted sustainable initiatives most, to the business demanding precisely this.

It is difficult to predict from where the first moves toward substantial change will come. This situation differs from a normal business environment assessment in many ways, not least because of the depth of change necessary, its potential to redefine lifestyles and thus significantly change markets. A tipping point may occur where consumers desire to prevent protect the planet for their children causes a change of consumption patterns so abrupt that corporations are simply not prepared.

The emerging need for assistance in shaking out of this paralysis led to the coining of a phrase during the interview process, namely “choreography for change”. Some companies are waiting for a choreographer to emerge and show them the steps.

CHANGING MINDS – LEARNING ECOLOGICAL SYSTEMS IN BUSINESS

Companies reflect the voice of the individual in society, by responding to the consumer and through the knowledge-base and values of their leaders and employees. The lack of awareness throughout the business was cited frequently as an impediment to progress in addressing climate change. New graduates joining the company, particularly those who have studied economics or business, were considered unaware of sustainable development in general and climate change in particular, as part of the future business environment.

A current lack of awareness of climate change within business means that the need to enact significant change now is not universally recognised.

“When you match up what are the most important sustainability issues, material to the business and the competitive environment we are in, climate change does not map out as a highly material issue, based on where we operate. We see the risks associated with climate change, the actions [reductions in emissions and energy saving measures] that we have put in place are in balance at the moment – for the business”

To counter embedded resistance within companies, all interviewees agreed that climate change should be integrated into the higher educational system. Both universities and business schools must provide the view of climate change as an integrated part of economic growth, technology and general knowledge, not as a sub-set of environmental studies.

When people are learning environmental scanning for business, climate change should be part of that as it is a key element of the business environment. It should be embedded in business thinking. We should be making sure that people who are running businesses are doing some kind of scenario planning that enables them to make good strategic decisions.

Despite this awareness of the need for a wider knowledge and awareness of climate change in business schools, no-one in the interviews acknowledged the complexity of this pedagogic task. The role of ecology and philosophy in developing a systems understanding of the global marketplace and its social and natural context is not recognised. This reflects the common educational background from which today’s managers graduate.

Regarding the role of general employee awareness, and their role as citizens and voter, the need to ‘spread the word’ was mentioned several times; with all business leaders interviewed applauding the efforts of Al Gore. Another key area regarding communications that emerged was the importance of sharing best practice among companies who succeed in changing internal culture.

I think [Company] would be encouraged to take this lead if it were presented with other success stories, tangible initiatives

“Another thing that leaders do not realise is the power of their statements in public. If a large business says publicly, for example, that from the year X they will only allow carbon-neutral fuelled cars in their global business fleet – this will have an enormous impact on the car manufacturers”

Leadership is needed from the corporate world. It is emerging slowly in high profile as individuals such as Lee Scott, Richard Branson and Rupert Murdoch make public statements of commitment to change. All eyes will on them now to see whether there will be a deep transformation to the way each of these leaders then run their businesses to follow their words. This is a key step to providing a guide for the wider business community, particularly for the smaller and medium sized companies for whom risk taking is even more challenging for their survival.

A note regarding the findings from this study is that the interviews were carried out in August 2006 and painted the above picture of the situation regarding climate change and corporate strategy. Discussion of the topic has been moving remarkably fast since then. While it is important to bear in mind the timing of the interviews, the findings and conclusions remain relevant.

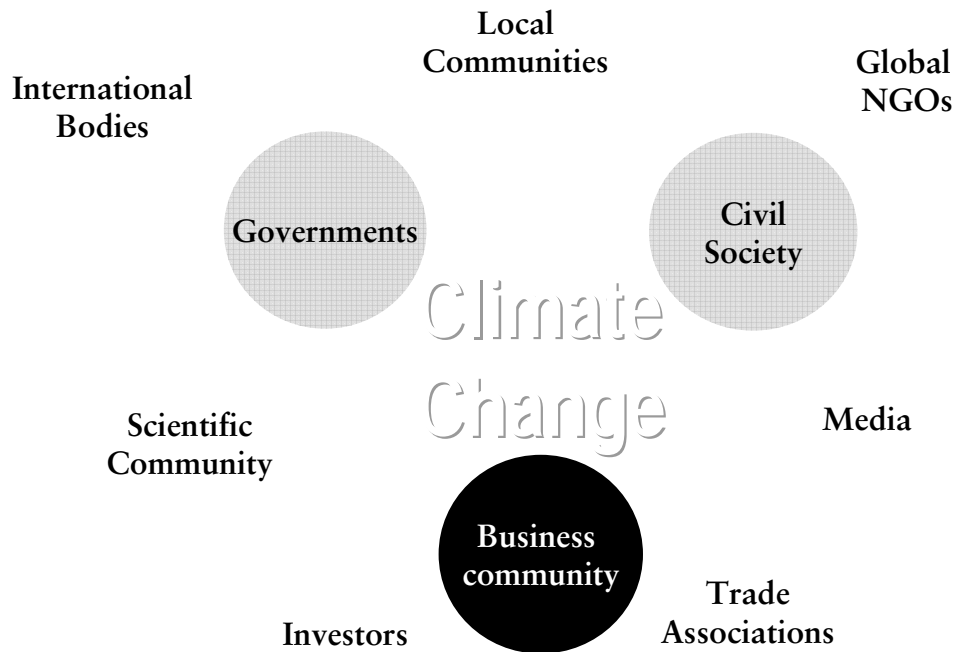
PART II: ANALYSIS – CLIMATE CHANGE AND CORPORATE STRATEGY

In the past chapter, we presented the main findings of the interviews conducted for this study. In this chapter, we draw out the main messages from the study. To do this, we have chosen to structure our analysis in three parts using diagrammatical thought models that illustrate the key concepts that have been discussed. These models scratch the surface of the more extensive work that would need to be done to illustrate these concepts.

First, interviewees lamented the complexity of the system response needed to address climate change. We present a simplified graphic to analyse this inter-related system that we call the market place. In this part we also illustrate the time scale for some of these changes. Second, we illustrate how corporations are moving at different speeds with regard to the evolution of their strategic thinking with respect to climate change.

Finally, we assess how the different sections can be brought together through systems thinking. This model places the role of the individual as central to the whole system and illustrates how the impact of climate change on the company and the strategic planning for a climate-sensitive future depends upon personal actions. This thinking leads us to make our conclusions and a proposal for research in the field of climate change and corporate strategy.

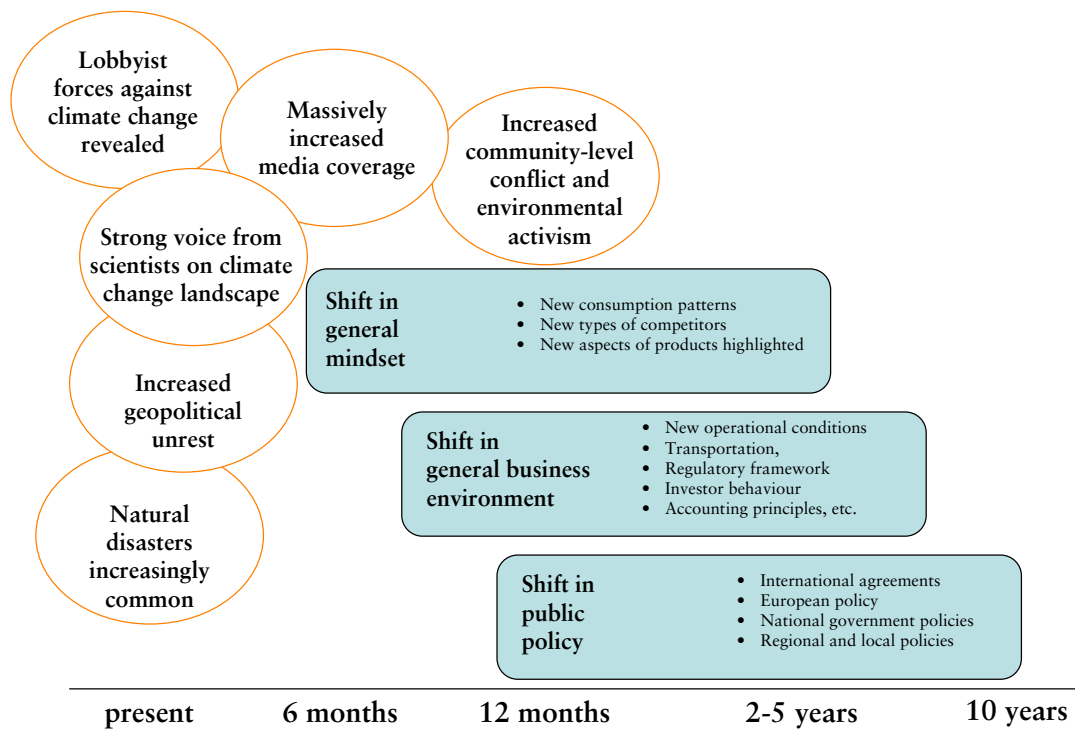
MODEL ONE: THE BUSINESS COMMUNITY IS ONE OF MANY INTER-RELATED PLAYERS TACKLING CLIMATE CHANGE



Climate change is a systems problem, and companies sit within the same ecological system that includes their suppliers, their market and wider society. Each of these individual stakeholders are uncertain of the role they need to play to address climate change in relation to other sectors of society. Figure 1 presents a scheme of the major players and seeks to illustrate how these all exert pressure on the three major institutions in modern society, the government, civil society, and the business community. The individual plays pivotal roles in each of these institutions, as voter, citizen and consumer that will determine the outcome of any attempt to change the system.

Companies say that they can only make what they are sure will sell and market research does not yet say that the consumer is ready for climate-friendly product. But on the other hand, consumers can only respond to clearly presented new ideas, or new products that are on the shelf. One interviewee admitted: no-one knew that they needed an iPod ten years ago. Maybe the consumer does not always lead.

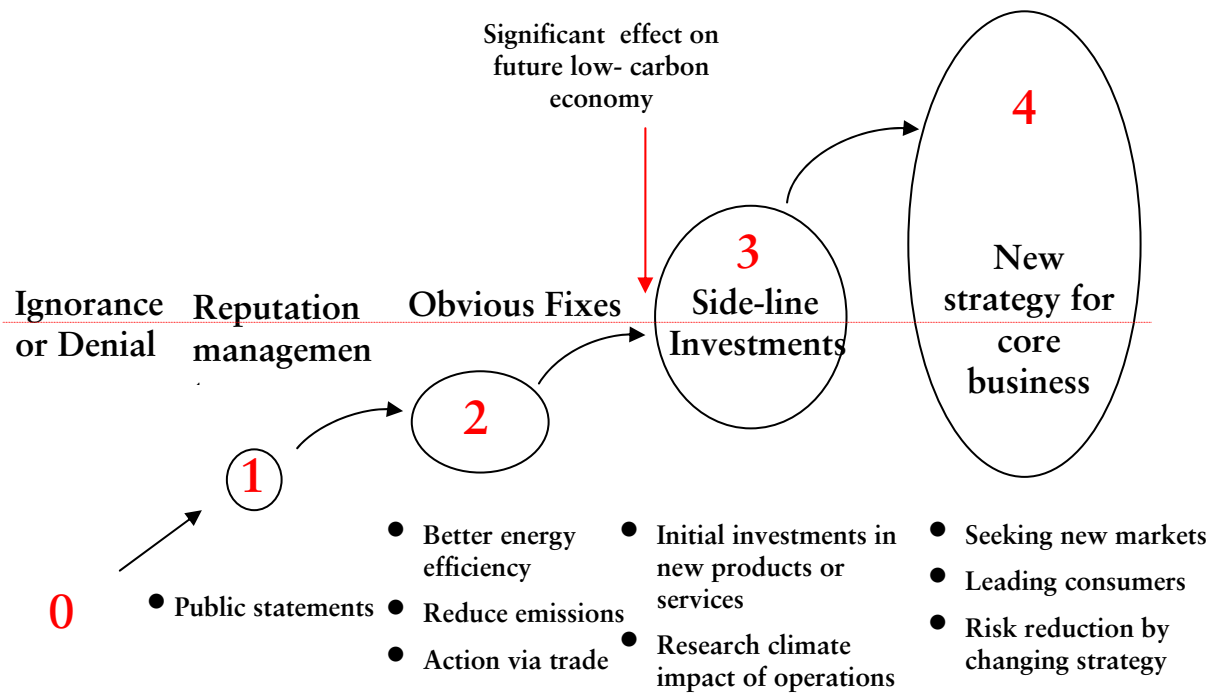
The uncertainty over who should respond to climate change first, and how, causes a paralysis, be it the company itself, its customers, its suppliers, or, indeed, the regulators of industry. Each player in the system waits for the others to move. Companies are currently not prepared to take a risk, for example, that there are no buyers for their products, no return on investment, or that they lose out competitors in the market place.



The figure above shows that changes within wider society are already taking place as a result of climate change and that more are expected. Smaller signs of change are also now appearing everywhere within society in response to the climate problem. Each change has repercussions on other sectors, nudging each to make small adjustments to their behaviour toward the creation of an economy that is sensitive to climate change. It is increasingly clear that this must eventually emerge.

An alternative scenario to this gradual nudging change is that there will come a tipping point in which the whole system will be convulsed by a sudden change, in which companies will be the ones that take the largest hit if they are unprepared. The effects of this evolution on each and every business, whether gradual or abrupt, will be profound.

MODEL TWO: DIFFERENT PHASES FOR COMPANIES AND CLIMATE CHANGE



Climate scientists have recently expressed frustration at the slow pace of acceptance from the business community that climate change is relevant to them. The interviews in this study clearly showed that companies are responding at different speeds to possibility that they may need to adapt their business models to climate change. As with most situations requiring change, the early stages are characterised by denial:

1. Denial – “It is not true”
2. Denial of relevance – “It is true, but it is not happening us”
3. Denial of urgency – “It is happening us but not now”
4. Denial of responsibility – “It is happening us but someone else is taking care of it”

The size, sector and leadership of business are all critical in determining how quickly the board can leave denial behind and begin to plan a response to climate change.

The graphic above shows four stages of corporate response to climate change, each deeper in its considerations of company activities. When major changes to emissions and energy efficiency in company-wide activities are made, and the core business has been assessed competitiveness in a climate-sensitive future, the company can be said to have started to reduce the climate change risks for future generations.

Many businesses and even entire business sectors have not begun to see the relevance of climate change to their daily activities. These are stuck at a stage of denial that we call phase 0. Once past this phase, the evolution of a company's response to climate change can be described in four progressive phases.

Phase one is represented by an early awareness of climate change and an acceptance that it is a problem for society. A typical reaction to an emerging external issue is for those responsible for a company's reputation to be asked to generate appropriate public statements and to scan company operations for practices that are not in-line with these statements. Examples of areas that risk earning a company the reputation of being climate "unfriendly" are the unnecessary use of excessively energy-intensive raw materials or activities that clearly waste energy.

In phase two, a company will begin to ensure that they have addressed the more pressing concerns regarding climate change, such as taking steps to improve energy efficiency and begin to reduce emissions of greenhouse gases. These will be, however, only the easily avoidable impacts on climate change that also save money, such as reducing energy wastage in offices and factories. In phase two, no significant investments in re-engineering factories or any changes to core business are made.

The internal mechanism to implement this second phase of response to climate change is often by setting targets. All the companies we interviewed are taking phase two activities seriously, although there are some highly advanced approaches to both energy efficiency and emissions reductions that could be implemented should a serious response to climate change become a core part of business strategy.

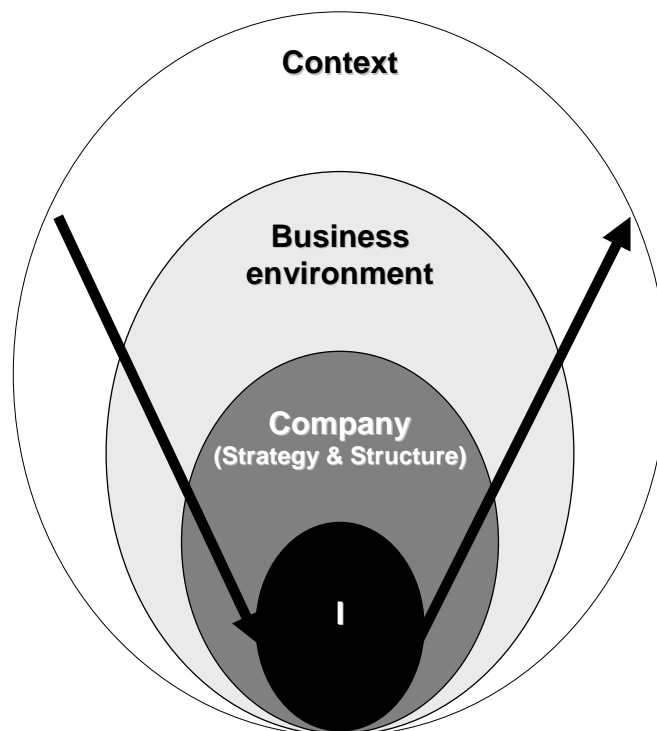
The third phase is where a company recognises that the future may require substantial changes to the core of their business strategy. Here it may make investments in climate-aware innovations within its existing sector of operations and investigate an alternative focus for a business model. Investment may also be increased in the activities it was undertaking in phase two, such as the purchasing of emissions free energy, changing certain manufacturing practices, or reviewing their approach to transport. The core of the business strategy, and thus the main engine for growth and profit will, however, remain unchanged.

Phase four is the point when the actual core business activity of the company alters to respond to the demands, risks and opportunities brought about by climate change. Significant investments are made in new areas, and the core business focus begins to shift towards a new way of working, new product lines or services, new primary materials and a new approach to interacting with the ecological, social and political system in which the business sits.

Many companies, mainly smaller, mainstream businesses, are not yet in phase one. No large businesses have yet entered phase four, although some niche companies, often small or medium sized enterprises have emerged with a core business based on climate-aware technology, products or services.

The companies interviewed for this project were almost all well immersed in phase one activities, were aware of the problem and are making assessments with respect to emissions and energy efficiency. Some had gone beyond managing their emissions and were assessing their product portfolio and its position in a low-carbon future. Pockets of denial, however, still remain. Within the interviews some comments indicate that not all businesses are feeling either the urgency or the responsibility to respond, stating that they are not a key player in finding the solution for halting climate change.

MODEL THREE: THE INDIVIDUAL AT THE HEART OF NECESSARY CHANGE



Climate change is an issue towards which it will be increasingly hard to only have a rational, professional attitude. Its impact, ubiquity and complexity are unparalleled. Still, we need tools to aid our thinking and our discussions, through which we can place the climate change issue in perspective. The figure above, called the “onion”, can provide one such tool.

It presents a graphic description of the different layers that surround a decision-maker, an individual – in this case for instance a corporate CEO. In a generic discussion (regardless of the issue) we can place this person quite naturally at the centre of his/her world. Around, in a first layer lies the organisation, its structure, strategy and operations. This organisation however, does not operate in a vacuum, but rather in a market, a business environment with customers, suppliers, competitors, investors and other stakeholders. Finally, this market itself is embedded in a context – social, political, economic, technological and ecological.

In a more climate change specific description, again applying the model to a corporation with its CEO at the centre, the same illustration can be used (this time described from the outside in): The context is provided by the knowledge-base around the issue in our societies – rapidly evolving science and the highly dynamic general discussion. The operating environment is dominated by the evolution of those factors that influence the company’s climate change stance and strategy: regulatory frameworks, consumer behaviours and behaviours of other stakeholders, etc. Then, inside the organization itself, the issue has a dynamic of its own, affecting different parts of the operations in different ways. And finally, the individual tackles the question from the perspective of his/her own standpoint.

From the perspective of change and change management, the “onion” emphasises two things. Firstly, the fact that genuine and profound change of an organisation stems from changed mindsets in the people that form the organisation (beginning at the decision-making levels, but spreading throughout). And secondly, that the change process must involve clarifying for the individual leader the nature and scope of the shifts and changes in the context, in the market/business environment and in the organisation (symbolised by the arrow on the left) before discussion how the individual’s new behaviour and actions can influence each layer going out (arrow to the right).

These models help to centre our thinking on the task of the individual who, at a time of transition, must be in a position to not only grasp the challenge but also see where, in the words of more than one interviewee, there are levers that are in his/her power to pull and create change. The study findings recounted that business managers and leaders are not clearly seeing either the problem or the areas where they are responsible for creating change. By looking at the problem schematically, the complex challenge of climate change to the business community can begin to be unravelled.

PART III: CONCLUSION AND PROPOSAL FOR RESEARCH

It is taking all sectors of society some time to digest the news that the climate is changing and that this will significantly alter the conditions in which we live and conduct our business. The course of scientific consensus-making has now come to an end and the next task is for society to respond. This study has looked specifically at the response of global corporations and how research can stimulate the change process needed from this influential sector of society.

Scientists around the world are generating data predicting dramatic changes to the world's physical environment. These data are essential to the progress of the debate. Still, they do not describe how climate change will play out in terms of the physical, social, legislative and economic environment in which business will find itself in the next 10 to 15 years – or even for the remainder of this decade.

Climate change is a true systems problem. It cannot be addressed without a long term viewpoint or an understanding of the interdependencies between the business environment, wider society and ecology. To survive and flourish in a future where the operational impacts on the climate must be tightly controlled and where the physical environment is increasingly unpredictable, an evolution of thinking by business leaders is needed.

The obvious omission in business operations and economics of the costs to nature needs to be rectified. This can only be done by introducing a deep appreciation of the global social and ecological system in which business sits. For this to take place, a new approach to educating the business leaders of the future and a well-grounded systems-based cost analysis are required.

Today, climate change is generating extraordinarily high levels of uncertainty in the business community, resulting in inaction. Uncertainty regarding climate change covers four critical areas.

What will happen:

- Uncertainty regarding the physical consequences of climate change and the speed and severity of change
- Uncertainty regarding the consequences to the business environment, in terms of nature, timing and costs of the changes

How to act:

- Uncertainty regarding the role played by business in influencing the response to climate change of society as a whole
- Uncertainty regarding the critical actions to take within the business, and the cost and efficacy of these actions

This study clearly showed that companies are navigating within existing business models in their approach to the climate change challenge. There is little sign yet that any boards are thinking about changing core business practice, or even evidence that this is considered a possibility. As scientific predictions of even graver effects of climate change continue appear, these business models will be challenged. For example, companies base their models on the current market economy, and legislators assume that small adjustments to this market economy will provide a route out of the problem. These assumptions may not hold. Another assumption by business is that the necessary speed of change requires action from policy makers. But will political leadership be sufficient or must business leaders play a role?

The findings in this report highlight three areas where interviewees indicated a wish for greater clarity. 1) The financial implications of climate change for business. 2) The characterization of an optimum legislative framework. 3) The design of a pedagogic approach to integrate climate change into the way that people think about the business environment and corporate strategy. Although companies participating in the project differ in the level and depth of their appreciation of the climate change problem, the above three areas of need emerged from all nine interviews.

The report concludes that companies are asking for help to manage the complexity of climate change, before they can begin adapting their strategy. In our analysis, it became clear that the heart of the issue was the management of complexity at the level of education and approach to business as a part of the wider system. The request for a better understanding of policy tools and a policy framework for climate change is a specific area of study that can be developed elsewhere.

In addressing the central issue of understanding how to prepare business and its leaders for tackling climate change there is an important role for a player such as MISTRA in initiating new research in this area. The study conclusion incorporates a research proposal that MISTRA could instigate in order to accelerate the necessary changes in the business community.

We propose that research into Climate Change and Corporate Strategy should be approached in two parallel segments: first, the definition of a new research agenda exploring how climate change can be integrated into business strategy, specifically the development of new methodologies for integrating the costs of ecological effects and environmental depletion into the cost structure of a business; second, the design of a new curriculum for educating business leaders of the future, and training current executives.

By funding this research, MISTRA will encourage sustainability thinking in the business research community. When faculty and researchers in business schools spend time probing more deeply into the need for a systems-based approach to the true cost of doing business, this thinking will more automatically feed into and shape the education of both current and future business leaders.

CASE FOR A NEW RESEARCH AGENDA

A new research agenda is required that explores how climate change can be integrated into the core business strategy of a global company, and develops new methodologies for calculating the full cost of business today to the ecological systems that support us.

Climate change will impact global businesses in all areas, from investor relations to supply chain practices and relationships with customers, suppliers and legislators. Operating in this new business environment will demand a change in strategic thinking. What would a corporate strategy (or business plan) that fully addressed the impacts of climate change look like? We recommend that MISTRA fund research into how to rework a business strategy such that it is appropriate for a climate-sensitive future marketplace.

Areas to include in this investigation are*:

Strategy

- How to deal systemically with issues that affect the entire company (e.g., first wave environmental awareness, IT, Y2K, etc.).

Leadership

- Interactions between company leaders and legislators in developing public policy.
- Motivating cultural change throughout a business – beyond awareness raising.

Finance

- New methodologies for accounting for costs to the ecological system (see below)
- The financial implications of climate change on P&L, both in the short and longer term, referring to the work of centres such as Harvard, Potsdam, Tyndall.

Marketing

- Customer behaviour change (choice, levels of consumption, etc)
- The role of marketing, R&D/innovation and even the entire business model in consumer lifestyles.

Organisation

- Integrating climate change mitigation into the fabric of company operations, looking beyond energy efficiency measures and emissions controls.

Operations and logistics

- Strategic risk management and climate change – identifying and mitigating risks throughout the company, from manufacturing sites to transport.

The ecological costs of business practice are currently excluded from companies' finance and balance sheets. Current product life-cycle analyses typically excludes activities of the entire business, such as executive air travel, fleets of cars and the impact of company activities on fresh water reserves, etc. A methodology for developing a comprehensive cost/benefit analysis that addresses impacts of daily business activities and products on the planet and climate is needed. A small number of representative products can serve as tools for this research, such as a car, a standard 'ready-meal', a mobile phone, a cosmetic, a pair of training shoes and a piece of furniture such as an office chair.

(*This list suggests example areas to be investigated. It is not intended to be conclusive)

Based on this new approach to the climate economics of business, it will become clearer to global companies how they can integrate climate change into business strategy. Moreover, the methodology developed by this research will underpin the teaching of a new curriculum for business administration and economics.

CASE FOR DESIGNING A NEW CURRICULUM

The leader of a corporation today will not be able to steer a business towards success in the next few decades without an appreciation of the system, both social and ecological, in which the business operates. The business community thus requires a systems thinking-based curriculum for business and economics schools, and for executive training colleges.

Climate change has shown without doubt that to avoid the mistakes of the past industrial age, education for business leaders must provide a thorough grounding in the components of systems thinking and manage to instil a capacity for managing the inter-relatedness of these components.

The educational systems from which current business leaders emerge rely to a large extent on a reductionistic approach – breaking down complexity into disciplines and into manageable parts. While tools for managing both the complexity and the uncertainty of the current challenge are therefore certainly urgently needed, climate change is a systems problem and should be addressed more fundamentally through a better education and practice of systems thinking.

The elements missing from current business administration courses are an introduction to ecological systems and life sciences, cognitive sciences, and philosophy. The goal of a new curriculum would be to achieve full integration of the thinking necessary to address climate change throughout existing programmes. Climate change is relevant to all interfaces between the company and its business environment, both internal and external, from finance to innovation, product distribution and investor relations and crucially, to the way the company activities affect the natural resource base of the planet and the fine balances that maintain not just the climate, but ecosystems, ground water reserves, air purity and soil fertility. The list could go on. A new curriculum would prepare future executives for steering business through in the new ecological reality that is upon us.

ANNEX 1. LIST OF EXECUTIVES INTERVIEWED

ABN AMRO:	Richard Burrett, Managing Director, Sustainable Development
BP:	Chris Mottershead, Distinguished Advisor, Energy and the Environment
Ericsson:	Jonas Roupé, Director of Strategy, Ericsson Global Services
IKEA:	Thomas Bergmark, Social & Environmental Manager and Evamay Lawson, Project Leader Social & Environmental Affairs
J&J:	Brian Boyd, Worldwide Environmental Affairs, USA
Swiss Re:	Chris Walker, Managing Director of Greenhouse Gas Risk Solutions
Unilever:	David Duncan, Senior Vice President R&D, Home and Personal Care, and Adrian Nelson, Vice President R&D, Home and Personal Care, Strategy and Capability
Vattenfall:	Arne Mogren, Vice President, Public Affairs
AB Volvo:	Anders Johannesson, Vice President Environmental and Public Affairs and Inge Horkeby, Director Corp. Environmental Auditing

ANNEX 2. QUESTIONNAIRE ON CLIMATE CHANGE AND CORPORATE STRATEGY

This questionnaire will be completed during a telephone interview or face-to-face interview at your convenience.

The “Climate Change and Corporate Strategy” project is designed to identify gaps in corporate knowledge that MISTRA and the Generation Foundation can seek to fill through their funding of long term research programmes. It is also a strategic tool to help companies deliberate internally on how to address the challenges associated with global climate change.

INTERNAL FOCUS

Q1) Please indicate how you are including the following in your business strategy:

- a) the impact of climate change on the vitality/viability of your business in 10-20 years
- b) the impact of your business activities on the climate (discuss current and future business models)

Q2) In a potential roadmap for addressing climate change, indicate the key areas for focus within your business and mention framework plans for areas you consider key. e.g., energy use, product mix, innovation strategy, supply chain, consumer communications, internal know-how and leadership competence

Q3) In drawing up your map, in which of the areas mentioned above do you require more knowledge or understanding?

EXTERNAL FOCUS

Q4) Do you view the following external processes as facilitating or hampering your company's ability to address climate change? Please give details.

The below are examples to stimulate thinking, but please add or ignore in accordance with your experience.

- NATIONAL LEGISLATION
- TRADE LEGISLATION
- GLOBAL AGREEMENTS/PROTOCOLS
- LOCAL INITIATIVES TO ADDRESS CLIMATE CHANGE
- COMPETITOR AGREEMENTS (E.G., TRADE ASSOCIATIONS, CODES OF CONDUCT)
- FINANCIAL MARKETS AND INVESTOR PRIORITIES
- DIRECT CORPORATE INTERACTION WITH POLICY MAKERS
- INTERACTION WITH IPCC AND OTHER ACADEMIC RESEARCH
- OTHERS (PLEASE LIST)

Q5) Would the role played by business in any of the above benefit from more research? If yes, please specify.

Q6) In conclusion, what new knowledge creation, research and/or educational programmes would you like to see research foundations support?