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Communicating about Climate Change with Corporate Leaders and Stakeholders

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ABSTRACT: Within the corporate sector, climate change represents an unfolding market shift; one that is driven by policy, but also by pressures from a variety of market constituents such as consumers, suppliers, buyers, insurance companies, banks and others. The shift is manifest in changes in market demand, cost of capital, operational efficiency, access to raw materials within supply chains (most notably in energy use) and other issues of business concern. In fact, when viewed in this way, business leaders and stakeholders can be agnostic about the science of climate change and still see it as a business issue. In the face of a market shift, successful companies must innovate. And as in any market shift, the implications of addressing climate change are not uniform, and the burden will not fall evenly. There are both risks and opportunities; there will be both winners and losers. Certain companies, industries, and sectors will be impacted more than others. This chapter will discuss the ways in which climate change poses market risk and the strategic responses that companies might adopt to respond to and mitigate that risk. This focus is critically important as the solutions to climate change must come from business. The market is the most powerful institution on earth, and business is the most powerful entity within it. Business makes the goods and services we rely upon: the clothes we wear, the food we eat, the forms of mobility we use and the buildings we live and work in. If business does not lead the way towards solutions for a carbon neutral world, there will be no solutions.

Communicating about Climate Change with Corporate Leaders and Stakeholders

If society is to adequately address the issue of climate change, the solutions must come from the market, and more specifically the corporate sector. The market is the most powerful organizing institution on earth, and corporations are the most powerful organizations within it. Without business, there will be no solutions. Business will develop the buildings we live and work in, the forms of mobility we employ, the clothes we wear and the food we eat. Indeed, if there are no solutions coming from business, there will be no solutions.

With that as a starting point, communication of the importance of climate change within the market must mobilize business leaders and stakeholders. The goal of this chapter is to present models and frameworks for doing that. Its central message is that climate change must be presented as a market shift if it is to be seen as a business issue that will gain the attention of business decision-makers. When framed in this way, corporate decision-makers can mobilize pre-existing structures and processes to shift resources in the most efficient and effective way to addressing solutions. This chapter will explore those two dimensions of climate change as a business issue – how to understand climate change as a market shift and how to understand the resultant organizational response – and offer a note of caution to the limitations of this framing.

Climate Change as a Market Shift

Climate change represents a market shift, in the form of both systemic risks that span the entire economy and local risks that impact specific sectors, industries, and

companies (Hoffman and Woody, 2008). In this form of framing, business leaders can remain agnostic about the science of climate change but still recognize its importance as a business issue. The full business scope is not an appeal to morals or "corporate social responsibility" (CSR) but a response to key business constituents who are bringing climate concerns to the corporate agenda through core business concerns.

The exact forms of this shift can include: Regulatory shifts that will alter the price of carbon and shift product markets at all levels of local and global economies, creating ripple effects throughout entire value chains; Financial market shifts, with investors and shareholders considering the issue of climate change in relation to their capital asset decisions; Risk management shifts, with insurance and reinsurance companies considering their exposure to the physical, financial, and disclosure risks posed by climate change; Consumer shifts with demand moving away from energy wasteful products towards more energy efficient offerings. And all of this change will lead to critical questions of whether climate concerns alter the fiduciary responsibilities of the executive leadership of the firm, particularly in relation to "materiality" under the Sarbanes-Oxley Act.

But, as in any market shift, there are both risks and opportunities, and both winners and losers. For example, industries such as the electric utility, steel, aluminum, oil and gas, and automobile sectors face more risks than others. Electric utilities are concerned with the impact of climate change on the value of their existing and future energy-producing assets. Because new generating capacity can have an expected lifespan of fifty or sixty years, utilities are particularly sensitive to uncertainty surrounding future market shifts as they relate to strategic investment decisions taking place in the present. Similarly, companies in highly energy-intensive industries, like aluminum smelting and cement

production, worry about the ongoing availability of reliable, low-cost, long-term energy sources. Oil companies find their operations, and more importantly their products, squarely in the middle of the climate debate. For example, oil giant Shell's operations alone are responsible for roughly 3.6 percent of global CO_2 emissions through fossil fuel creation and, particularly, use. Similarly, automobile companies find themselves under more intense scrutiny than most industries for the greenhouse gas emissions created by their products.

But where there are economic uncertainties, there are also business opportunities. Some companies will find their strategic position improved vis-à-vis their competitors if they develop the right strategy in the face of this market shift. A market shift around climate change will increase demand for lower-carbon sources of power such as natural gas, wind, biofuels, landfill gas, and solar—which, in turn, will create opportunities for engineering and construction firms that build these types of power facilities. Shifts will also create advantages for automobile companies that develop expertise in advanced diesel, hybrid, electric, and fuel-cell drivetrains as well as car sharing systems that reduce greenhouse gases from cars on the road. Many appliance companies see climate change as an opportunity to provide more energy efficient washers, dryers, dishwashers and refrigerators to a consumer market that is searching for climate solutions within their own home. And the construction industry is witnessing increased demand for energy efficient buildings, particularly as clients seek sustainably certified buildings from groups like the US Green Building Council® and Energy Star®.

Just how large are these market shifts? In some sectors, they will involve incremental changes like shifting from incandescent lightbulbs to compact fluorescent or LED lightbulbs. In other sectors, the shift can be transformational. Just as the computer

industry eliminated the typewriter in the early 1980s; the compact disc replaced the phonograph album in the mid-1980s, and; the 1984 dissolution of the Bell System caused structural changes in the telecommunications industry, climate change is poised to create similar upheaval. Some have likened the market impact of climate change to that faced by the electric utility industry in the wake of the oil crisis of the 1970s, altering "production economics, cost competitiveness, investment decisions, and the value of different kinds of assets" (Enkvist, Naucler, and Rosander, 2007). Mark Carney, Governor of the Bank of England warned that climate change leaves investors and insurance companies exposed to losses that are "potentially huge" and that "a wholesale reassessment of [fossil-fuel related] prospects, especially if it were to occur suddenly, could potentially destabilise markets" (Clark, 2015).

In order for corporate leaders to make sense of climate change and direct resources to solving it, market language and market framing is necessary. Scientific discussions of radiative forcing or carbon loading, or political arguments around denying or acknowledging the nature of the problem will not resonate with nearly as much impact on business leaders as the language of a market shift. As such, this renders the oft asked question "does it pay to be green?" (King and Lenox, 2001) irrelevant. In the face of a market shift, companies must innovate to adapt and, at times, to survive. Asking if it "pays to be green?" is the same as asking if it "pays to innovate?" Certainly, the answer to that questions depends on who does it, when they do it, and how they do it. This links the question to the realm of core business strategy. To elucidate this linkage more clearly, business decision-makers must explore two dimensions of the climate market shift. First, what business constituents are driving climate change within the market? Second, what

frames best describes the business imperative to respond? As this chapter unfolds, it becomes clear that much of the specific language of climate change should recede, being replaced by the core language of business.

What business constituents are driving climate change within the market?

One over-riding belief within the corporate sector is that "expenditures on reducing pollution beyond the amount that is in the best interests of the corporation or that is required by law in order to contribute to the social objective of improving the environment ... [is] pure and unadulterated socialism ... There is one and only one social responsibility of business; to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud" (Friedman, 1970). Any effort to gain the attention of a business executive would best not contradict this critical view. Corporations are in business to increase their profits, and managers are driven to take actions that benefit their investors. But, climate change is changing the "rules of the game." Managers acting in the best interests of their investors must increasingly consider climate change in their decisions. This evolving reality is driven by a host of business interests that strike at the core of business decision-making.

Figure 1

Climate Change Strategy is Driven by Multiple External Constituents

As shown in Figure 1, market pressures for corporate climate strategies can fall into four categories (Hoffman, 2000). *Coercive drivers* – in the form of domestic and international regulations and the courts – compel companies to address the issue of climate change as a matter of legal compliance. Regulations alter markets through a variety of methods, whether they be a direct carbon price or more indirect forms like renewable portfolio standards, efficiency standards for buildings, cars or appliances, net metering or feed in tariffs (National Research Council, 2010). Much of the conversation in economic circles has sought carbon trading as a way to allow greater flexibility and therefore, greater opportunity for corporations to tailor response strategies in ways that blend with, rather than constrain, their competitive strategy.

Looking beyond coercive pressures to the more systemic market shifts, climate change is being driven by: *Resource drivers* – emerging from suppliers, buyers, shareholders, investors, banks and insurance companies – alters the company's access to raw materials and financial capital. *Market drivers* – emerging from consumers, trade associations, competitors and consultants – alters competitive dynamics as companies vie for a shifting consumer base. Finally, *social drivers* – from environmental non-profit organizations, the press, religious institutions and academia – speak to the extent to which the changes in the market posed will remain in place and continue to grow. For example, the growing infusion of climate change concerns within education -- see the 350.org divestment movement -- and religious institutions -- see the statements by Pope Francis (2015) and leaders of other religious denominations (Cooke, 2015, Waskow, 2015) -- direct attention to the foundations of norm and value development in our society. In short, the

issue of climate change will not go away and, "Businesses that ignore the debate over climate change do so at their peril" (Crane, 2004).

As this lengthy list illustrates, the firm is part of a complex web of inter-relationships. This web is becoming increasingly infused with demands and expectations for action on climate change. By connecting climate to key business constituents, business leaders can recognize its importance in business decision making. But for that recognition to lead to fully executed actions, a second consideration must be considered. As important as the source of the pressure to adapt corporate strategy to address climate change, the form of that pressure becomes critical for understanding and communicating the business imperative. And in each case, the driver of attention translates the issue into a form with which the firm is already adept at addressing. This leads to a framing of the business imperative to address climate change.

What frames best describes the business imperative to respond?

Discrete pressures on the firm translate climate change into fundamental business concepts in direct relation to its source. As insurance companies apply climate pressures on the firm, climate change becomes a risk management issue. From competitors, it becomes an issue of strategic direction. From investors and banks, it becomes an issue of capital acquisition and cost of capital. From suppliers and buyers, it becomes an issue of supply chain logistics. From consumers, it becomes an issue of market demand.

In effect, climate change becomes less an external environmental issue and more a core business issue as the firm's business channels adjust to bring the issue to managerial attention through pre-existing avenues related to marketing, accounting, finance,

operations, etc. In each case, the firm has a pre-existing model and language with which to conceptualize the issue and formulate a response. By realizing this "fit," firms can begin to see climate change as a strategic issue, no longer directed by external social interest, but rather by internal strategic interests as shown in figure 2 (Hoffman, 2000).

Figure 2

Multiple Frames for Communicating the Business Imperative of Climate Change

Using Figure 2 as a guide, the challenge for business leaders is to find the most effective frame to communicate the business imperative for addressing climate change. What follows is a discussion of 6 of the more compelling ways to frame the business imperative of addressing climate change (Hoffman, 2005). In order of increasing engagement with the core strategy of the company, they are: regulatory compliance, risk management, corporate reputation and internal culture, capital acquisition, and strategic direction and market growth.

Value in regulatory compliance. While regulatory compliance is typically viewed as a cost of doing business, the regulatory terrain of climate change is complex and emerging on many levels. In order to think strategically about climate change regulations, business managers must have a multi-pronged approach. They must be aware of developments in policy standards at the international, national and regional levels; they must be prepared to respond if and when those standards emerge; and finally, they must assess whether they can have an influence on the form of what those standards might be (Hoffman, 2007).

For many within the corporate sector, the question is not if there will be climate regulation, but when. As such, many see an opportunity to develop the skills and capacity to reduce greenhouse gas emissions in anticipation of that eventuality. But, regardless of the prospect of future carbon policies (such as a carbon price or carbon trading), many existing policies have outcomes of reducing carbon emissions. These policies include efficiency standards for buildings, automobiles and appliances; energy related policies like tax subsidies and production tax credits to lower the costs of renewable energy generation, feed-in-tarriffs and net-metering rules to encourage increased generating capacity, and renewable portfolio standards to change the mix of those generating assets (National Research Council, 2010). Eventually, if a carbon trading scheme is established, corporate executives will need to develop capabilities in commodity trading, either buying or selling carbon credits.

Finally, one key aspect of the value in regulatory compliance is the ability to influence the form of future regulations. Companies must be aware of the policy options being considered and decide which would most benefit their own business strategy. And those that have demonstrated a credible knowledge base in reducing greenhouse gas emissions can gain a "seat at the table" in the development of sound and effective policy. For example, in one study (Hoffman, 2007), corporate decision-makers shared broad agreement about several key aspects of prospective policy: market-based trading, sequestration credit, the need for federal regulation to supersede a growing "patchwork quilt" of state regulations, and credit for early action. Corporate decision-makers differed, however, in their views on other issues, such as the baseline date for reductions, credit for

(and definition of) indirect emissions, and preference for sector-based versus economy-wide policy.

Value in risk management. Greenhouse gas reductions can become an opportunity to reduce financial risks. This value frame can be adopted as an independent strategy, or it can be compelled by insurance and reinsurance companies who are growing concerned with their exposure to climate risks. In this frame, climate change has direct effects on market activity and insured liabilities. "Very few environmental conditions affect our economy, natural resources, or citizens' lives more than climate. Up to one-third of the US gross domestic product is directly influenced by weather and climate" (Lubchenco, 2011). According to the Coalition for Environmentally Responsible Economies, there are presently $7.4 trillion of corporate assets that could be threatened by climate change (CERES, 2002).

As the signs of climate change become more pronounced, these looming threats becomes more pronounced. In 1998, weather related 21 disasters such as fires, floods, storms and droughts caused approximately $89 billion in economic losses globally. The first decade of the 21st century was the hottest decade on record. As a result, the years 2005 and 2012 rank as the two most costliest years for natural catastrophe insurance payouts since 1980, with a total of more than $160 billion and $110 billion in damages respectively (National Oceanic and Atmospheric Administration, 2015). Swiss Re estimates that global warming could cost $300 billion annually by 2050 in weather damage, pollution, industrial and agricultural losses and other expenses (Cortese, 2002).

In the US alone, extreme weather events have become both more frequent and more intense with a large decrease in the number of extreme cold waves and an increase in both extended heat waves and extreme rainfall events (Kunkel, 2013). In 2011, the US

experienced more than $60 billion in losses related to extreme weather and climate events (National Climatic Data Center, 2013), $26 billion of which were insured property losses from thunderstorm hazards, such as hail, strong winds, and tornadoes (Freedman, 2012), surpassing the previous national record of $9 billion set in 2008 (Samenow, 2011). The remainder was attributable to events such as droughts, heat waves, and wildfires.

Beyond the physical threats of climate change, some legal experts estimate that climate-related legal damages could eventually reach payouts similar in scale to asbestos or tobacco litigation (Schiller, 2012). This effect might become particularly pronounced if litigation proceeds from claimants or State Attorneys General that seek to hold fossil-fuel companies and other major contributors to greenhouse gas emissions liable for causing global warming. The states of New York (Gillis and Krauss, 2015) and California (Penn, 2016) have already begun such investigations, and regardless of the outcome, their actions represents the beginning of what could be decades of inquiry.

Value in corporate reputation and human resource management. Greenhouse gas reductions may be an opportunity to enhance a corporation's reputation. This can have important benefits with a variety of constituencies, including, but not limited to: voters who may influence future policy; jurors who may sit in judgment on legal cases; investors who may consider environmental strategies in making investments; communities who may influence a company's ability to expand or site new facilities; reporters who may write stories about a company's initiatives; employees who may work for a company; activists who may decide to protest a company's operations; and consumers who may purchase a company's products or services.

Beyond external reputation, there are benefits to corporate climate strategy that emerge from within the company. Often overlooked and under-rated, there is value in the engagement of a company's workforce. Many companies have found that the adoption of greenhouse emissions strategies can improve the morale of the company and thereby increase the retention rates of skilled workers, lower the costs of recruiting and training new ones, and attract and retain higher caliber applicants. Novo Nordisk, a Danish pharmaceuticals company, has seen its turnover rate drop to five percent, half the industry average since it initiated its "Values in Action" program as a way to infuse 31 sustainability principles into its strategy. The outdoor company Patagonia claims to have 5,000 applicants for each opening, due in large part to its strong environmental and social mission (Hoffman, 2005). Such organizational initiatives are difficult to quantify in economic terms, yet they are real.

Value in operational efficiency. At the operations level, climate strategy should focus on finding new ways to do more with less. The key is to alter the use of resources. By reducing resource inputs or the production of greenhouse gas outputs, it is possible to lower the costs of production, costs of compliance and the company's carbon footprint. Specific emphasis focuses on dematerialization of production processes, optimization of supply chain logistics, development of more efficient manufacturing processes, utilization of alternate materials and processes, shifting from products to services in the marketplace and linking companies together within their industrial ecologies. This requires more directed engagement with external constituents including competitors, trade associations, suppliers, customers, regulators, and NGOs who can provide vital information and

expertise, can help develop markets and support for climate-related initiatives, and are important adjudicators of credibility and reputation.

Value in capital acquisition. In May 2002, the Rockefeller Philanthropy Advisors organized the Carbon Disclosure Project (CDP), mobilizing $4 trillion in institutional investors to petition 500 large corporations to quantify their GHG emissions. They estimated that share prices could fall as much as forty percent for heavy carbon-emitting industries and twenty-nine percent for banks without adequate carbon risk management strategies (Hoffman, 2005). Today, CDP work with 822 institutional investors holding $95 trillion in assets and thousands of companies to help reveal the risk in their investment portfolios (Carbon Disclosure Project, 2016).

These efforts are directed specifically at mainstream investors, and more specifically, the socially responsible investment (or impact investment) community; investors that consider environmental, social and corporate governance (ESG) criteria to generate long-term competitive financial returns and positive societal impact. As of year-end 2013, it was estimated that more than one out of every six dollars under professional management in the United States—$6.57 trillion or more—was invested according to socially responsible investment strategies (US Forum for Sustainable and Responsible Investing, 2014). These investors can direct capital flows to companies that establish strong track records at addressing issues such as climate change, what is known as a "positive screen."

Other movements are seeking to move investments away from companies that are contributing to climate change, what is known as a "negative screen." For example, the 350.org divestment movement has compelled some universities, such as Stanford and

Georgetown, to divest from coal companies (McDonald, 2015). Many more universities have undertaken similar action around the world, with more facing pressure from students and faculty. Similarly, Pope Francis' encyclical letter on climate change, Laudato Si (Pope Francis, 2015), has compelled many Catholic institutions to reconsider their investments in fossil fuel companies (Diallo, 2015).

Certainly, through both negative and positive pressures, the investment community is considering climate change in their investment decisions with real import for corporate decision-makers. In this way, considerations for cost of capital link climate change and business strategy directly through monetized metrics, perhaps the most compelling language for business leaders. This linkage is most profoundly through efforts at "integrated reporting" which seeks to combine sustainability reporting with financial reporting to identify, measure and communicate — both internally and externally — strategic business value derived from and driven by the integration of climate change and economic growth (Eccles and Krzus, 2010).

Value in strategic direction and market growth. Greenhouse gas reductions can expose important information and insights for guiding new strategic directions. By measuring environmental costs and risks associated with product or process lines and remaining alert to changes in consumer preference, media attention, community concerns and regulatory program trends, companies can exit increasingly risky business lines and enter new, and more profitable product and service lines that may be enhanced by climate-related developments.

This frame represents the most advanced approach to addressing the market shifts related to climate change. In assessing product and process line changes to address carbon

constraints, companies generally begin with a focus on value in regulatory compliance and risk management. But with time and experience they shift their climate-related strategies to emphasize business opportunities and top-line enhancements. In fact, the mere presence of risk from greenhouse gas intensive operations, products, and services signals the potential for business opportunities based on carbon efficiency. These opportunities may signal a need to exit certain sectors, sell strategic assets, enter new markets or develop new forms of partnerships. Ultimately, the most effective climate-related strategies must connect greenhouse gas reductions with a company's core business strategy.

The value of climate strategy must be adapted to the specific organization. Each of these frames, and external drivers that push it, can be employed by corporate leaders and stakeholders to articulate the business imperative to address climate change. But, not all frames are applicable in each corporate organization. The drivers in figure 1 and the frames in figure 2 vary in their importance and influence based on the individual company and the individual issue. The presence and size of each wedge will differ markedly and the proper wedge must be tailored to the specific company. For a consumer goods company like Proctor & Gamble, consumer demand will be the value frame that will create the most engaged response. For a company like Walmart that manages a large supply chain network, operational efficiency (particularly in transportation efficiency) will hold the most relevance. Executives at the appliance company Whirlpool admit that they do not use the words climate change to compel action among their employees. They use energy efficiency, which has been a core concern for the company for decades.

And, just as the wedges differ based on the company, they also differ based on the issue. While climate mitigation activates a certain series of wedges – most notably

regulatory compliance, driven by government regulation -- climate adaptation activates others – most notably risk management, which is often driven by insurance or supplier considerations.

In summary, what matters most for gaining the attention of corporate leaders and stakeholders on the issue of climate change is presenting the issue as a market shift driven by key business constituents that possess concern and translate it through core business channels. By linking such key business constituents to the existing interests of the corporation, managers can articulate ways to merge climate change and business strategy in ways that create value for the corporation. Once this linkage is created, the next step for the corporate leader is to mobilize the organization to respond. This requires a second set of considerations for diffusing climate change considerations throughout the company.

Mobilizing an Organizational Response to Climate Change

While the specific corporate action for addressing climate change will be in the form of technological and economic activity, it is the culture of the organization that guides the development of that activity (Bazerman and Hoffman, 1999). Corporate leaders must focus on developing an organizational culture that will fully engage the issue and find innovative ways to fit it with structures of the firm. Therefore, realizing the strategic benefits in greenhouse gas reductions requires a change in the structural elements of the organization, most notably the reward structures, selection processes, training procedures and organizational structure (including distribution of responsibilities and reporting channels). Companies must engage workers as partners in identifying and enacting strategies for reducing their greenhouse gas emissions.

Ultimately, an effective strategy must focus on diffusing responsibilities for climate action throughout the organization. This is how the final connection between the external pressures for climate action and the internal organizational response aligns. Through the diffusion process from external constituent, to business imperative frame to internal department, internal staff begin to articulate climate change in the language of the finance, accounting, marketing and other departments. Climate strategy can be directed to any one of a number of organizational functions as shown in figure 3 (Hoffman, 2000), each designed to address a set of external constituents and the concerns they raise because they share a common language and set of perspectives.

Figure 3

Climate Strategy May Reside in one of Many Functional Departments

In fact, one can often determine a great deal about how a company addresses the issue of climate change, as well as all environmental issues, by identifying the department in which the lead position on sustainability resides. Legal departments typically treat the issue as one of legal compliance and protection; marketing departments typically treat the issue as one of external presentation; operations departments treat the issue as one of material acquisition and production. To develop an effective strategic response, the firm must push climate change responsibilities to the functional levels best equipped to handle them. They must diffuse from the periphery of specialized departments to the core of the organization's functional competencies. For the long term, the proportion of climate change responsibility falling to the EH&S department will diminish as other departments become engaged. Through this process, it transforms the work roles and functions of the various departments within the organization. But adopting these changes requires a careful

process of organizational change management that can effectively yield the desired response.

Organizational Change Management

In the more successful cases, the organizational change process goes through a series of phases that are depicted in figure 4 (Hoffman, 2000) which segments the process into four general phases (Lewin, 1947), subdivided into eight critical steps (Kotter, 1995).

Figure 4

A Road-Map For Organizational Change

Phase one: Diagnosis. The first phase of a change process is diagnosis, realizing that change is necessary and then deciding what strategic actions to take in response to critical external signals. To remain connected to these external signals, many firms participate in boundary spanning activities with organizations that are sensitive to changes in the environment. These activities can include: business/business relationships, business/government relationships and business/environmental NGO relationships. Climate change offers a new form of boundary spanning partner; namely that of scientific organizations. Indeed, many companies (such as those in the reinsurance and fossil-fuel sectors hire their own climatologists to remain connected to the scientific trajectory of this issue). Through such collaborations, corporate managers can remain connected to vital sources of information on both external signals for change and available options for organizational change management.

In selecting a response that is tailored to the distinct culture of the individual organization, a careful analysis of the organization's purpose, structure, internal

relationships, reward structures and leadership systems must be undertaken. Any attempt to simply overlay a formulaic program devised externally will merely create the illusion of change without any lasting substance. Thus, the diagnostic phase is a stage of careful reflection, considering questions specific to the distinct demands, needs and capabilities of the organization. Boundary spanning will help trigger this diagnosis, but the challenge for the manager comes in interpreting these external signals and tailoring a strategic response.

On the issue of climate change, a critical component of the diagnosis phase is an emissions profile assessment (Hoffman, 2007) in which the firm can identify and prioritize emissions reduction options, research the means to reduce emissions, consider products and services that may be affected by carbon constraints, and develop potential strategies that are complementary to the core business. To identify sources, types, and magnitude of emissions, as well as the vulnerability of business lines, companies need a basic awareness of the tools and protocols available to gather information about both direct and indirect emissions. Direct emissions come from sources owned by the reporting company and generally include emissions from on-site production processes, from the direct combustion of fossil fuels in boilers and furnaces, and from on-site power generation. Indirect emissions are those that do not directly occur at the reporting company's facility, most commonly electricity, heating or cooling, and steam purchased from a third-party provider. Some companies measure actual emissions, while others estimate emissions using fuel-based calculations.

All of these aspects of the diagnosis – external pressure, internal competencies and greenhouse gas emissions profile – will form the baseline from which the change management process can begin.

Phase two: Unfreezing. Once the change management process begins, the second, unfreezing, phase is intended to prepare the organization for change. Organizational change is likely to encounter resistance (examples of which will be discussed later) and the unfreezing phase is designed to lower the barriers of this resistance, gaining buy-in from the organization on the necessity of change. It comprises three fundamental steps: establishing a sense of urgency, forming a powerful guiding coalition, and creating a vision.

Establish a sense of urgency. No change process will ever succeed if the members of the organization are not clear on why it is being done and what level of importance it holds for the organization. One obvious way in which the organization can be motivated into action change is through a crisis or organizational jolt. Clearly a disaster on the scale of Hurricane Katrina or the Gulf Oil Spill will garner support for change processes, but a manager will typically not have (nor desire) such an empowering event.

Successful managers will initiate change by taking a hard look at the company's competitive situation, market position, technological trends and financial performance. This may involve the development of a strong audit program, identifying the weaknesses in the present organization, assessing the full range of environmental risks and calculating the costs of existing programs that do not offset them. Surveys (Hoffman, 2007) have found that climate-strategy development requires an assessment for how operations and sales may be affected— both for the positive and the negative—by climate change-related factors and, as a result, how such factors may alter competitive positioning. As part of this analysis, companies consider their emissions profile relative to industry peers and the industry's position relative to other sectors, all in the face of potential future regulatory developments, trends in input costs (such as energy), and potential changes in customer

preferences. Only by tying the climate agenda with core business interests will an organizational change process be accepted. At other times, consultants can act as external change triggers, producing a report that highlights the necessity for change. More commonly, a government enforcement action can precipitate action. Once a significant percentage of the organization feels that business-as-usual is unacceptable, then the change process can begin.

Form a powerful guiding coalition. Major renewal programs start with one or two central proponents. But without a sufficiently powerful core of supporters, the effort will likely fail. One of the initial active supporters must be the head of the organization. Without such top level support, the change process will lack legitimacy. With this in mind, CEOs from major corporations have made public pronouncements of their company's commitment to climate change mitigation and adaptation in the form of speeches, policy statements, Congressional testimony, financial resources, and personal support.

But the powerful coalition does not stop there. While CEO support will spur broad-scale organizational support, a core nucleus of champions must include participants from throughout the organization and beyond. The larger the organization, the larger the necessary coalition. Thus, an analysis that identified the departments or functions that will act as change initiators, implementers, and resistors is in order. Surveys (Hoffman, 2007) have identified Accounting, Finance, and Marketing as often less supportive of program implementation than other departments, while the Environmental, Health & Safety and the C-Suite are most often the change initiators.

Once the guiding coalition is developed, direct and open communication among its members is necessary to form a solid working base. Meeting and sharing assessments of

the problems faced by the company and the opportunities they create can foster a minimum level of trust, communication and commitment. To facilitate greater cohesion, many companies choose to create specific departments whose function is to foster greater cross-functional collaboration on this issue.

Create a vision. Even if all employees accept the need for change, it is important that they understand the goals of the initiative and their role in the process. The guiding coalition must develop a picture of the future that is relatively easy to communicate and goes beyond the numbers and figures of a standard five year plan. This vision generally emerges from a draft developed by one or two individuals but is fine-tuned over months to fit a format that appeals to customers, stockholders and employees.

This step is often conducted in an iterative fashion with goal setting. Some companies set goals and then set a vision to achieve them. Others consider their options for reducing emissions and then set goals accordingly. The precise ordering is a matter of individual management style. But, in the end, the vision includes a clear statement of the effort's ultimate goal. This too must be presented in a form that readily fits the culture of the organization. Some companies develop goals for emissions reductions, others for energy efficiency improvements, sourcing renewable energy, reducing solid waste, or increasing use of hybrid biofuels and vehicles. Most companies develop goals by analyzing risks and opportunities in their many business units. Those that have achieved the most dramatic greenhouse gas reductions stress that they set stretch goals beyond what their original analysis indicated was possible (Hoffman, 2007). In establishing the urgency of the business case for climate-related strategies, companies typically focus on the quantifiable financial benefits of energy efficiency projects, the less quantifiable reputational and

organizational benefits of "doing the right thing," and scenario planning that highlights the future likelihood of, and impact from, carbon regulations.

Phase three: Movement. Once the foundations have been laid for effectively unfreezing the organization, the actual movement, or implementation of the change plan, should be relatively easy. In fact, "the ease of implementation should be a good gauge of how well the unfreezing process has broken down any pockets of resistance to the change" (Northcraft & Neale, 1994: 615). Four steps comprise the movement phase: communicating the vision, empowering others to act, planning for and creating short term wins and consolidating improvements and producing still more change.

Communicate the vision. The transformation process is impossible unless the majority of employees, hundreds or even thousands of people, are willing to help, often to the point of making short-term sacrifices. To gain this level of buy-in, executives who are part of the management team communicate the vision of the initiative by articulating it clearly and often, and integrating it into all aspects of the corporation's goals and objectives. This includes speeches, newsletters, training programs, plant and office signage -- everywhere that can remind employees of the changes that are taking place around them. An often neglected communication tool is the executives who can communicate the vision by their example. If employees hear executives say one thing and do another, cynicism will inhibit their conformance to programmatic objectives.

Empower others to act. Once begun, the transformation process involves all employees in its progress. In developing this level of engagement, poorly designed organizational components (such as the organizational structure, the reward system, the hierarchical power system, and the accessibility to necessary information) can inhibit the full utilization of all

corporate members and reduce the chances of successful transformation. Organizational inhibitors create drag which will slow that momentum, divert resources from its growth and stifle creative and cooperative action. Some companies have developed financial incentives for employees to make changes in their work habits, and in some cases lifestyles, to better integrate concern for climate change into their everyday routines. But, it is important to note that it takes a great deal of time to change both beliefs and behavior.

Plan for and create short-term wins. Nothing will help build momentum more than visible success. Short-term wins show the organization what goals it is striving to achieve and present clear examples that these goals are real. They encourage participating members to increase support and may serve to coax non-committal employees to join the effort. To help, in this effort, many companies are able to identify a variety of low-cost options for reducing their greenhouse gas emissions. These "low-hanging fruit" opportunities often include behavioral or technological changes that improve efficiency, reduce energy consumption and signal change throughout the organization.

Consolidate improvements and produce still more change. The message of this stage is quite simple — do not declare victory too soon. While celebrating the culmination of a series of short-term wins, managers may feel inclined to relax the effort and rest assured in the appearances of having cleared a major hurdle with the road to come becoming easier. This attitude can kill the momentum so hard fought for in the preceding months. Instead, clear signs of performance improvement should be taken as an opportunity to refine original goals, integrate them deeper into the organization and strive for further change that will firmly establish itself into the organizational culture. It must be kept in mind that the mobilization costs in initiating the change process are high. If the objectives achieved are not

progressive enough to anticipate environmental demands and successfully capitalize on them, the opportunity to correct these short-comings will not likely come again.

Phase four: Refreezing. Once the desired changes have been fully implemented, refreezing is the process of institutionalizing the new changes. Part of this process includes communicating to the employees how the new changes have helped the organization meet the business urgency that was laid out in the establishment of the vision. This should be every bit as prominent as the publicity efforts that kicked off the initiative. Employees must be shown in a tangible way that they have achieved the program's objectives and what that achievement means for organizational success.

The refreezing process also involves establishing new changes into the formal structures and informal habits of the organization. The changes must be able to be supported and continued without the involvement and oversight of the guiding management team. In short, the artifacts that embody the organization's culture must reflect the organizational change effort in their entirety to ensure that the cultural change process is perpetuated. In terms of tangible structures to ensure that this occurs, attention can be directed at the processes by which employees are rewarded for their job performance, initially hired, indoctrinated into the corporation, assigned their job tasks and positioned within the structure of the organization and its components.

Reward structures. First and foremost, how are the reward structures organized within the company? If a plant manager receives pay increases and positive promotion reviews for increasing yield and output, will climate change be considered relevant to his or her daily responsibilities? Not likely. Regardless of the extent of top-level speeches and corporate environmental policies, reward structures are highly influential in how

individual managers will perform their job tasks. Described as "rewarding A, while hoping for B," "managers who complain about lack of motivation in their workers might do well to consider the possibility that the reward systems they have installed are paying off for behavior other than what they are seeking" (Kerr, 1995). Beyond pay, reward structure also includes issues such as job design, non-cash awards, benefits, "perks," and the career ladder. Many companies link climate-change goals to rewards, bonuses, and public awards. Others employ novel techniques such as promoting tree planting, participation in personal GHG reduction programs, or the purchase and use of low-emission vehicles and bicycles by employees (Hoffman, 2007).

Selection. Once reward structures are established, the criteria by which new employees are selected from the field of candidates must reflect the type of people that will be receptive to the cultural and performance expectations of the new organization. Finding that type of individual is a matter of fit. Do the attributes and inclinations of the person being hired fit with the expectations and objectives of the organization? Getting the best individuals into the organization is critical to the organization's performance. Getting the wrong individuals for the newly forming values will result in a value incongruence that can precipitate one of several negative outcomes: internal tension and poor performance, active resistance and attempts to subvert the established values, or high turnover rates (Hoffman, 1993). Many companies are finding that a positive reputation on climate change enhances their ability to both obtain and retain the highest quality people, particularly where young people are concerned.

Socialization. Once selected, the task of socializing the new employee into the new culture of the organization becomes critical. A formal training and awareness process must

be established to convey to the new employee the organization's goals, norms and preferred ways of doing things. As there is no way that a new employee can be a perfect fit to the organization, the socialization process becomes a means to mold the new employee to fit the organization, teaching them about greenhouse gas reduction in much the same way that companies teach new recruits about safety. Socialization can include several techniques such as a prescribing indoctrination program, initial and on-going training courses, making role models visible, assigning a mentor, and delineating a carefully outlined career ladder that highlights the importance of climate change performance to moving up it.

Organizational structure. Finally, of course, the structure of the organization must be configured in a way that facilitates the new reward systems and organizational objectives. This structure is comprised of both the formal and informal systems of regulated decision flows. The formal structure establishes direct and formal authority, reporting requirements and responsibilities. The informal structure describes the more fluid communication patterns and power relationships that exist. While the reward structures promote a set of actions and initiatives that may favor new environmental strategies, structural arrangements must be established that allow those strategies to be implemented. It is very often the form of the organizational structure that can create the greatest obstacles to a successful organizational change process.

Resistance to Change. Organizational change will involve the unlearning of what has been ingrained over the organization's history. And this will often invite resistance. Basic assumptions about organizational procedures and the realities of the external environment can become rigidly set and are difficult to reset. At times, this rigidity can be

positive, allowing the organization to react rapidly to changes that fall within the range of issues previously encountered. But it can also operate as a pattern of thought and action which can limit possibilities for action. The structural inertia this creates can take many forms. This section will consider five: habitual routine, resource limitations, communication breakdowns, fear of the unknown and threats to established power bases.

First, stability in patterns of thought and action can be perpetuated by *habitual routine*. Often the perpetuation of habit stems from either unconscious thought or conscious thought; an individual's realization that changing what has become established will involve some form of short-term costs. While inefficient or inconsistent with long term objectives, these established routines can become familiar, comfortable, reliably predictable and hard to change.

Second, *resource limitations* can restrict the ability of an organization to overcome sunk costs in plants, equipment and personnel. They can become psychological roadblocks which bias mangers away from certain actions or responses to demands for change. Short term demands may deny the manager any opportunity to consider long term gains, which although they may be encouraging, are only potential. Short term costs predominate, thus biasing the manager to over-discount the future.

Third, interdepartmental *communication breakdowns* can perpetuate environmentally inefficient routines. In the face of possible cost benefits, established reward and incentives systems within organizations often mask the opportunities available through change. For example, energy costs are often paid out of one department's budget, while installation and maintenance of lighting upgrades are billed to another. Neither

department will trigger the need to change due to departmental responsibilities and rewards.

Fourth*, fear of the unknown* can drive organizational inertia and the continued reliance on basic underlying assumptions. Both external and internal change can be upsetting for organizational constituents, particularly when the outcome or consequences of change cannot be predicted. In fact, psychology research shows that people are often guided by defensive perception, the belief that any change will be painful, regardless of the objective facts (Bazerman, 2005).

Finally, *threats to established power bases* can cause resistance to organizational changes. Culture establishes a structure of power which will bias the perspectives of those who benefit from the existing system benefits. Alterations in the structure and roles of the organizational members may be competence enhancing for some and competence destroying for others. The environmental management department may resist the transfer of some of their responsibilities to other departments since, the very act may minimize their own usefulness. Conversely, without a clear view of the overall costs and benefits, other departments may resist the addition of new responsibilities as they see the profitability of their individual operations diminished. In the face of such changes, self-preservation may override concerns for environmental or economic objectives. The result may be organizational confusion or battles for survival among rival departments.

In the end, organizations can restrict the development of new ways of thinking about climate change and its relationship to economic competitiveness. But properly designed change management processes can help to develop truly integrated corporate

strategies to address the issue in ways that fit with, not clash with, existing organizational structures.

A Note of Caution

The focus of this chapter has been to fit climate change within the existing models of business management in order to activate the development of solutions from within the corporate sector. And while this translation strategy is critical to gain buy-in from corporate leaders and engage the resource apparatus of the company, it can only be a first step in the full transition to a carbon neutral economy -- or, more realistically, a carbon negative economy (Kunzig, 2009). By framing climate change strictly as a continuing shift in ordinary strategic concerns from existing stakeholder demands, something is lost in grasping the full scope of the issue. Responses will not be dictated by ecosystem constraints or biophysical realities, but rather by internal strategic norms which yield routinized responses. These responses are generally grounded in strategies for eco-efficiency, which do not challenge the fundamental underlying models of the free market economy which are causing the problem in the first place. These models treat the environment as a limitless source of materials and a limitless sink for waste, and are built on a belief system that sees perpetual economic growth based on continued consumption as desirable and possible. So, while fitting climate change within existing market logics are important for slowing the velocity at which we are approaching a climate system collapse, they do not fully address the roots of the problem (Hoffman and Ehrenfeld, 2015). For the long term, corporate climate change strategies must move beyond *reducing unsustainability*, and moving towards *creating sustainability* (Ehrenfeld, 2008).

To fully capture the urgent necessity of this shift, we must come to terms with the notion that we are now living in the Anthropocene, a new geologic epoch in which we cannot talk about the Earth's ecosystems without recognizing the human role in altering them (Crutzen & Stoermer, 2000). We, as a species, have grown to such numbers, and our technology has grown to such power, that we are altering the ecosystem on a planetary scale. In this frame, climate change is but one of nine "planetary boundaries" (Rockstrom et al., 2009) that represent "thresholds below which humanity can safely operate and beyond which the stability of planetary-scale systems cannot be relied upon" (Gillings and Hagan-Lawson, 2014: 2). The other eight are ocean acidification, ozone depletion, atmospheric aerosol loading, phosphorous and nitrogen cycles, global freshwater use, land system change, loss of biodiversity and chemical pollution (Gillings and Hagan-Lawson, 2014). Scientists believe that three have already been exceeded: climate change, biodiversity loss and the nitrogen cycle (Rockstrom et al., 2009). "Unless there is a global catastrophe such as a meteorite impact, world war or pandemic," these planetary boundaries will continue to be approached as "mankind will remain a major environmental force for many millennia" (Crutzen, 2002: 23).

This necessitates deep changes within the market economy. A simple solution based on existing logics – such as a carbon price – will not solve the problem. What is needed are far more systemic changes in our present conceptions of the market economy (Hoffman & Jennings, 2015). Capitalism must evolve to address this problem as it has evolved to address numerous challenges in the past. Indeed, questions around such changes are occurring on the periphery.

For example, there are growing questions around the underlying theories and models used to understand, explain and set policies for the market. Two that have received significant attention are neoclassical economics (Beinhocker & Hanauer, 2014) and principal-agent theory (Stout, 2012). Both theories form the foundation of management practice and are built on extreme and rather dismal simplifications of human beings as largely untrustworthy and driven by avarice, greed and selfishness. And both lead to the pernicious notion that a corporation's sole purpose is to serve shareholders to the detriment of society. This, in turn, leads to an increased focus on quarterly earnings and short-term share price swings; it limits the latitude of strategic thinking by decreasing focus on long-term investment and strategic planning; and it rewards only the type of shareholder who is "shortsighted, opportunistic, willing to impose external costs, and indifferent to ethics and others' welfare" (Stout, 2012).

Other adjustments in the underlying assumptions in the market lead to an examination of accepted metrics for economic calculations which lead to actions that do not address climate change, such as discount rates and Gross Domestic Product (GDP). Economist Nicholas Stern (2006) stirred a healthy controversy when he used an unusually low discount rate when calculating the future costs and benefits of climate change mitigation and adaptation, arguing that there is an ethical component to this metric's use. To find alternatives to GDP, French ex-president Nicolas Sarkozy created a commission whose report (Stiglitz, Sen & Fitoussi, 2010) recommended new metrics that shift economic emphasis from simply the production of goods to a broader measure of overall well-being that would include the value of wealth to be passed on to the next generation. That wealth would be diminished by inaction on climate change. These are but a small

number of ways in which capitalism must evolve if it is to address the issue of climate change.

Conclusion

In the final analysis, the solutions to climate change will, indeed they must, come from corporations within the market. And corporations are beginning to adjust as the market shifts to apply pressures to address the emergent realty that we are altering the global climate through our collective economic activity. The signal for this transition comes through business constituents that are sensitive to these warnings and are able to translate those sensitivities into a language that business understands: consumer demand, cost of capital, operational efficiency and others. As market expectations continue to shift and technological development advances, certain industries face demise while others rise to fill their place in ways that have been happening for centuries (Schumpeter, 1975). In such transitions, there will always be those with an interest in resisting and trying to delay such market transformations and those who will capitalize on them. There will always be winners and losers, the difference between them determined by their strategic positioning with respect to the issue. The key for those concerned about addressing climate change is to support those that will gain from this market shift, counter those that will lose from it, and engage those that lie in the middle, uncertain as to the effects of these changes on their business future.

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