

**Adapting for a
Green Economy:**

**COMPANIES,
COMMUNITIES
AND CLIMATE
CHANGE**

A Caring for Climate Report



WORLD
RESOURCES
INSTITUTE

A Caring for Climate report by the United Nations Global Compact, United Nations Environment Programme (UNEP), Oxfam, and World Resources Institute (WRI)

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Foreword

Twenty years ago, world leaders gathered at the Earth Summit in Rio de Janeiro and signed the first global agreement to tackle climate change. At the time, the impacts of climate change on communities and economies were just beginning to be understood, and the role of the private sector in responding to these challenges was only just emerging. But two decades later, climate change is no longer a distant threat looming on the horizon; it has emerged as arguably the greatest global challenge of our time.

And while much of the responsibility to drive climate change solutions that address the needs of the poorest and most vulnerable rests with governments, it has become increasingly clear that business will be an essential partner in preparing for and responding to the impacts of a changing climate and in building a global green economy.

At the end of this year, governments will gather in Durban, South Africa, for the next round of United Nations negotiations to advance global action on climate change. In June 2012, the UN Conference on Sustainable Development (Rio+20) will seek to secure new and comprehensive commitments to sustainable development.

This publication aims to support the efforts leading up to Rio+20, as well as the activities, processes, commitments and partnerships that flow from it. By highlighting the nexus among climate change risks and opportunities, sustainable development and climate change adaptation, *Adapting for a Green Economy* provides useful guidance to business leaders and policymakers alike.

The devastating environmental, social and economic impacts of climate change are already being felt around the world, with the poorest nations and communities disproportionately affected. This report offers insights on important questions surrounding the role of business in adaptation:

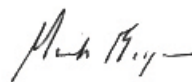
- In practice, how can businesses address risks in their own supply chains and operations while also supporting the adaptation efforts of the communities on which they depend?
- How can the private sector build climate resilience in partnership with communities in ways that are mutually supportive?
- What are the barriers that may prevent effective business engagement in adaptation?
- How can business investment in adaptation complement necessary public policies, and how can public policies create the context for appropriate private sector action?

Developed in collaboration with Oxfam International, the World Resources Institute and the United Nations Environment Programme (UNEP), *Adapting for a Green Economy* is based on the results of a qualitative survey of business leaders who support the Caring for Climate initiative, a joint United Nations Global Compact-UNEP platform involving more than 400 businesses committed to advancing climate action.

There is much that businesses of all sizes and sectors can contribute to effective climate adaptation. This report provides actionable information that can help create effective strategies that benefit business and communities, coupled with common-sense suggestions for supportive government policy.



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Executive Summary

Drawing on the results of a 2010 survey of corporate signatories to the United Nations Global Compact and the United Nations Environment Programme Caring for Climate initiative, as well as on existing literature, this report makes the business case for private sector adaptation to climate change in ways that build the resilience of vulnerable communities in developing countries. It then offers actions that companies and policymakers can pursue to catalyze and scale up private sector action on adaptation. It is ultimately the responsibility of the public sector to meet the critical climate change adaptation needs of the poor and vulnerable; thus private sector engagement cannot substitute for critically needed public investment and policies. However, private sector investment can serve as a pivotal part of a comprehensive government-led approach to addressing climate impacts.

This report is a resource for companies with a national, regional or global reach that are interested in increasing their strategic focus on adaptation in developing countries where they have operations, supply chains, employees and current or potential customers. While many companies are focused on climate change mitigation — slowing the rate of climate change through reduction of greenhouse gas emissions and other strategies — most have yet to develop strategies for dealing with the immediate to long-term consequences of climate change. This report is also aimed at national and international policymakers involved in climate change and sustainable development dialogues and decision-making, including those who will participate in the United Nations Conference on Sustainable Development in 2012 (Rio+20). It is hoped that the report's findings will be useful for a much wider range of actors as well, including small, local businesses in developing countries that are on the front line of climate impacts; civil society organizations seeking to strengthen their work around climate change and sustainable development; and subnational policymakers, who are in a key position to shape a productive interface among government, communities and businesses.

Private Sector Adaptation, Sustainable Development and the Green Economy

The challenges that communities in developing countries face as a result of climate change — such as more frequent and intense storms, water scarcity, declining agricultural productivity and poor health — also pose serious challenges for businesses. Community risks are business risks. Both local and global companies depend on community members as suppliers, customers and employees. They also depend on local resources, services and infrastructure to be able to operate. It is difficult to separate community well-being from companies' viability and, in turn, overall economic growth.

Businesses that make these connections and adapt to climate change with community needs in mind can gain a competitive edge. Businesses that respond to climate change in ways that undermine communities' efforts to adapt may face reputational and brand risks, and they may even lose their ability to operate in certain locations. Through responsible, strategic approaches to addressing climate change risks and opportunities, in consultation with people in affected communities, companies can:

- Avoid costs, manage liabilities and build resilience to climate change impacts by addressing climate risks throughout their operations and value chains, while at the same time increasing community resilience.
- Expand market share and create wealth in communities by developing and deploying new products and services that help people adapt.
- Access new opportunities to collaborate with the public sector, as developing country governments seek corporate partners who can effectively deliver goods and services that support high-priority climate change adaptation efforts.
- Build corporate reputation and exercise good corporate citizenship by showing commitment to decreasing climate vulnerability and promoting long-term resilience in places where it is needed most.

Investment or other private sector actions taken to adapt to climate change can also have the benefit of promoting a transition to a “green economy”, which has been identified by governments as one of the anchoring themes of Rio+20. In its simplest expression, a green economy is one that is low-carbon, resource-efficient and socially inclusive. In a green economy, growth in income and employment can be generated by strategic public and private investments in developed and developing countries that reduce greenhouse gas (GHG) emissions, improve resource efficiency and prevent the loss of biodiversity and ecosystem services (that is, the benefits of nature to people). Businesses can accelerate the transition to a green economy by taking advantage of the natural synergies that exist between green economy initiatives and climate change adaptation opportunities. When businesses work with communities to restore mangrove forests as natural barriers against storms, or develop affordable drip irrigation equipment that can be used by small-scale farmers facing water scarcity, they are also greening the economy.

Business Perspectives and Action on Adaptation

The Caring for Climate survey revealed that 83 percent of 72 responding companies believe that climate change impacts pose a risk to their products or services. A slightly higher percentage of companies (86 percent) think that responding to climate change risks, or investing in adaptation solutions, poses a business opportunity for their company. Many Caring for Climate companies surveyed have employees and operations in developing countries, which are disproportionately vulnerable to climate change and have limited resources with which to adapt. Not only are companies that operate in, have markets in or source in developing countries exposed to risk, but they can also play a critical role in building climate resilience in these countries.

However, beyond planning for the most obvious or immediate threats — increasingly unreliable access to key inputs like water and energy, for example, or damage to assets from flooding — most companies are not yet taking concrete steps to address climate change risks and to respond to new opportunities in a comprehensive, integrated way.

There is not yet widespread understanding among Caring for Climate signatories

of what climate adaptation is and what it means for them or for the markets they serve. Uncertainties about the location, magnitude, potential timing and consequences of climate change impacts make it risky for them to tackle adaptation on their own, and few good tools exist to help businesses assess climate risks and opportunities. The survey revealed that companies find it difficult to incorporate scientific climate change data, which typically cover a large geographic area and span a long-term time frame, into practical business decision-making, which tends to be shorter-term in nature and location-specific. Information about the full range of adaptation costs and benefits is often not available as an input to companies’ investment analyses. Companies may see few economic and policy incentives to make significant up-front investments that bolster long-term climate resilience, for the company and for communities that will be most affected by climate change impacts.

These factors can make it difficult for businesses to make adaptation a strategic priority. Even if key internal stakeholders have prioritized adaptation, it can be hard for them to find the capacity to consult and communicate with a wide range of key external stakeholders, including suppliers and customers. Few Caring for Climate signatories are engaging with suppliers around the issue of climate risk, and few are exploring how their customers’ needs may change as a result of climate change impacts, and what the corresponding business implications — and possible missed opportunities — may be of shifting demands and preferences. Companies also reported challenges in analyzing the connection between their own adaptation needs and community needs; only half of the companies that responded to the Caring for Climate survey said that they have recognized the possible social consequences (positive or negative) of their adaptation strategies. In the end, very few Caring for Climate signatories have been able to design comprehensive adaptation goals with corresponding business indicators to track economic performance and progress towards those goals.

Although business adaptation to climate change is clearly at a nascent stage, approximately one-third of companies surveyed reported having a strong emphasis on addressing climate risks, and about the same percentage reported a strong emphasis on responding to adaptation opportunities.

The survey revealed some emerging best practices in how companies are responding to complex climate change challenges and opportunities while contributing to sustainable development. This report provides several case studies that not only serve as models for other companies, but also provide evidence that private sector adaptation at the nexus of company needs and the needs of vulnerable communities in developing countries makes good business sense.

Strategic private sector adaptation to climate change must be a purposeful process: It will not happen by chance. Companies must prioritize adaptation and take action to address risks and pursue opportunities. Governments can assist companies to overcome barriers to investment and harness the resources and innovation of the private sector to contribute to the public good.

Practical Measures for Companies

Companies will find that addressing the impacts of climate change necessitates a departure from business as usual; traditional approaches are insufficient. Adaptation champions within the company will want to focus their colleagues' attention on three key questions: 1) What does climate resilience mean for the company? 2) What will position the company to navigate risks and lead markets in a warming world? and 3) How will the company engage partners to minimize risks and seize opportunities? Effective, comprehensive responses to these questions will require companies to...

- Connect climate “adaptation” and “resilience” to the company and corporate culture, building on existing mitigation initiatives.
- Integrate climate adaptation into core strategic business planning processes.
- Align business objectives with adaptation priorities.
- Build a portfolio of climate-resilient goods and services.
- Build mutually beneficial strategies with stakeholders; build communication channels.
- Partner with internal and external decision-makers.

Practical Measures for Policymakers

Governments have a central role to play in catalyzing private sector provision of goods and services that support climate change adaptation and in encouraging climate-resilient business practices. Some public sector efforts to incentivize business contributions to adaptation must be developed and implemented through agreements at the international level. Policy focus at the national and local level, however, is essential, because adaptation challenges and solutions are specific to each locality, and business barriers and opportunities will be country-specific. To create a facilitating environment for private sector investment in climate change adaptation, policymakers can...

- Demonstrate policy and finance commitment to adaptation.
- Engage businesses as stakeholders in planning and implementation.
- Stimulate the market for adaptation through financial and risk-reduction incentives.
- Develop policy and regulatory frameworks to guide corporate practices.
- Provide businesses with the information and tools they need to make investments that support climate resilience in vulnerable communities.
- Consider new forms of public-private partnerships to tackle the most complex challenges to sustainable development and climate resilience.

Conclusion

Addressing the adaptation needs of vulnerable communities at the scale that is necessary will require unprecedented levels of cooperation, collaboration and resource mobilization among governments, businesses, civil society groups and communities themselves. The private sector has much to contribute to the development and implementation of climate change adaptation solutions, including sector-specific expertise, technology, significant levels of financing, efficiency and an entrepreneurial spirit. The key is to find the nexus of shared interest where business incentives align with communities' adaptation needs. Companies that rigorously assess climate change risks and opportunities and implement creative solutions that build long-term resilience will create business value while making important contributions to sustainable development and equitable green growth.

1. CLIMATE CHANGE RISK, SUSTAINABLE DEVELOPMENT AND IMPLICATIONS FOR BUSINESS

Introduction

Climate change is not a distant threat looming on the horizon. It is already here¹, and it is arguably the greatest challenge of our time. The impacts of climate change — from rising temperatures to glacial melt and rising sea levels — threaten global economic stability and security. Climate change also hampers implementation of the United Nations sustainable development agenda, specifically achievement of the Millennium Development Goals.²

To date, much emphasis has been placed on the need to mitigate global warming by reducing emissions of harmful greenhouse gases (GHGs). However, it is equally important to develop comprehensive strategies that enable people to thrive and remain resilient under changing climatic conditions. While all countries will face climate change impacts, this imperative is particularly urgent for vulnerable communities in developing countries. These countries — along with many others — are already experiencing more extreme weather events, increased food and water insecurity, and negative health effects, and they have the fewest resources with which to cope.

It is ultimately the responsibility of the public sector — through the provision of public finance and through targeted international, national and local initiatives — to meet the climate change adaptation needs of vulnerable communities. Many critical adaptation interventions can and will be made only through public or civil society investments (for example, building the capacity of communities to mitigate disaster risk, prepare for disasters and engage with policymakers on disaster risk reduction and management). However, the private sector also has an important and complementary role to play in helping communities adapt.

Leading companies, large and small, are turning greater attention to the implications of climate change on their businesses. Companies are starting to recognize risks of rising costs for inputs and raw materials, disruptions in their supply chains, threats to their labour force, and changing customer demand. They are just beginning to understand the nature and potential impact of these climate change threats and the implications of community vulnerability for their own

ADAPTATION AND RESILIENCE

Caring for Climate, a sub-group of the United Nations Global Compact, defines climate change adaptation as “initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects.”

Resilience is defined as “the ability of a social or ecological system to absorb disturbances while still retaining the same basic structure and ways of functioning, the capacity for self-organization, and the capacity to adapt to stress and change.”

A list of key climate change terms and concepts used in this report is provided as Annex A at the end of the report.

business activities.³ In fact, businesses often face shared challenges with those in communities where they source or operate.

At the same time, some communities in the developing world have begun to adapt to climate change and build their resilience to climate impacts, often in ways that have co-benefits for sustainable development. Such activities include conserving water, improving natural and man-made barriers that protect against storms, planting drought-resistant seed varieties, and using innovative financial tools, such as microinsurance, to manage increasing climate-related risks. Many adaptation activities contribute to sustainable development, and sustainable development can also build communities’ resilience and ability to adapt to a changing climate.⁴

While climate change presents a challenge of enormous breadth and complexity, it can also serve as a catalyst for positive economic transformation. Climate change provides a “wake-up call” warning that the prevailing economic model is not sustainable.⁵ Climate change solutions require a better balance among growth, resource use and equity. This more balanced model — which many are referring to as the “green economy” — is quickly gaining traction and will serve as one of the anchoring themes of the United Nations Conference on Sustainable Development in 2012 (Rio+20).⁶

UNEP defines a green economy as one that

“results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities.”⁷ In its simplest expression, a green economy is one that is low-carbon, resource-efficient and socially inclusive.⁸ In a green economy, growth in income and employment can be generated by strategic public and private investments in developed and developing countries that reduce GHG emissions, improve resource efficiency and prevent the loss of biodiversity and ecosystem services (i.e., the benefits of nature to people).⁹ Recent analysis by UNEP shows that reallocating just 2 percent of global GDP from “brown” to “green” investment can enhance long-run economic performance and increase total global wealth.¹⁰ Significantly, it does so while enhancing stocks of renewable resources for public benefit, reducing environmental risks and rebuilding our capacity to generate prosperity,¹¹ especially for the world’s poor, whose livelihoods are heavily dependent on natural resources.

Investing early in green economic growth can help buffer the impact of climate change on vulnerable communities. Private sector investments that help vulnerable people and communities adapt to climate change impacts — particularly those that facilitate improved use of increasingly scarce resources, or help to renew and restore them — are an important part of the broader green economy paradigm. The inextricable linkages between human and environmental well-being, economic and social stability, and the long-term profitability of the private sector provide the foundation for green economic growth. It is in businesses’ interest to adapt to climate change in ways that contribute to sustainable development, and to ensure that their adaptation choices do not impede communities’ long-term resilience. Businesses will need to deploy their resources, innovative capacity and expertise to develop effective adaptation solutions, and in so doing they must revise their existing models and risk-management structures. It is essential for companies to work in direct partnership with national, regional and local-level stakeholders to ensure that these adaptation solutions address priority needs. Private sector engagement cannot substitute for critically needed public investment and policies, but it can be a pivotal part of a comprehensive approach to addressing climate impacts.

This chapter highlights the connections among climate change impacts, human development, and economic and social stability, and the resulting risks and opportunities that climate change adaptation presents for the private sector. Drawing on data gathered through a 2010 survey of Caring for Climate corporate signatories, as well as on existing literature, it makes the business case for private sector adaptation investments in two key areas — operations and the value chain, and new products and services — as businesses engage with climate-vulnerable communities in the developing world. The chapter also sets the stage for a presentation of strategic measures that businesses (Chapter 2) and governments (Chapter 3) can adopt to facilitate private sector strengthening of economic and social resilience to climate change.

There are two primary audiences for this report: companies and policymakers. The report is written to assist businesses with a national, regional or global reach that are interested in increasing their strategic focus on adaptation to build internal support, analyze their climate risks, take action and contribute to the green economy. It also speaks to national and international policymakers involved in climate change and sustainable development dialogues and decision-making, including those who will participate in Rio+20. It is hoped that the report’s findings will also be useful for a much wider range of actors, including small, local businesses in developing countries that are on the front line of climate impacts, and civil society organizations seeking to strengthen their work and form new alliances around climate change and sustainable development issues. Many of the policy measures presented can be used by subnational policymakers, who are in a key position to shape a productive interface among government, communities and businesses around the issues of climate change adaptation and long-term resilience.

ABOUT CARING FOR CLIMATE SIGNATORIES AND THE 2010 SURVEY

Caring for Climate signatories are a diverse group, comprising 262 large companies and 115 small and medium-sized enterprises from 65 countries across the globe. Chief executive officers endorse the Caring for Climate Statement to demonstrate leadership in advancing practical solutions and strategies to address climate change and to help shape the global climate change policy agenda.

A survey of Caring for Climate signatories was developed through a partnership among the United Nations Global Compact, the World Resources Institute (WRI), Oxfam and the United Nations Environment Programme (UNEP). The survey sought to explore the following areas: assessment of the impacts of climate change on business operations and investments in adaptation solutions; corporate climate change adaptation strategies; and companies' global climate change policy positions and policy engagements. The 160 companies of the Caring for Climate Working Group on Climate Change and Development were invited to participate in the survey, which was fielded online in November 2010.

Caring for Climate received 72 responses from companies across a variety of industry sectors with operations in developed and developing countries. Survey analysis was conducted by the UN Global Compact in collaboration with master's degree students from the Earth Institute, Columbia University. Survey responses were reported in aggregate form only and were not attributed to individual respondents.

Because Caring for Climate signatories are, by definition, among the businesses that are the most interested in and engaged on climate change, their perspectives and actions in the area of climate change adaptation may not be representative of the private sector as a whole. However, the survey provides a useful "snapshot" of where a set of leading companies currently stands on this issue.

Notes: *By endorsing the Caring for Climate Statement, signatories commit to undertake serious efforts to address climate change and to report progress in the spirit of continuous improvement. The full statement can be found at www.unglobalcompact.org.*

The Caring for Climate Working Group on Climate Change and Development comprises senior corporate executives from Caring for Climate signatories as well as representatives from the UN Global Compact, UNEP, WRI and Oxfam. The outcomes of the Working Group will feed into important United Nations processes, and in particular into the Secretary-General's High-Level Panel on Global Sustainability and the UN Conference on Sustainable Development in 2012 (Rio+20).

Impacts of Climate Change on Sustainable Development and Economic and Social Stability

Global temperatures are rising, with serious implications for other physical and biological systems.¹² Most climate change science has focused on these long-term physical effects. The human impact of climate change has received much less attention.¹³

People in every country in the world will be affected in some fashion by climate change, but it disproportionately impacts poor communities in developing countries. By virtue of their geography, greater reliance on natural resources, and lack of infrastructure, developing countries have greater exposure to environmental risks. At least 70 percent of the world's poor live in rural areas,¹⁴ and many smallholders are already struggling to survive on marginal rural land. They are thus highly vulnerable to water-, temperature- and weather-related crises. Further, poor communities lack access to crucial assets and financial savings that provide a necessary buffer when faced with these shocks.

Men and women are not equally affected by climate change. While in many societies women supply most of the labour needed to produce food crops, women typically have restricted access to markets, land and credit. Therefore, while they are heavily dependent on the natural resources most threatened by climate change, they have limited resources with which to cope.¹⁵ Women (and children) are more likely than men to die in disasters, which are becoming more frequent and intense due to climate change, and in post-disaster areas women are at risk of gender-based violence, trafficking and other forms of exploitation.¹⁶

Threats posed by climate change to human development

The physical effects of climate change have serious consequences for people across the world, particularly those who are already poor and vulnerable. Anticipated climate change impacts include:

- Water shortages and droughts.
- Increased frequency and severity of floods.
- More unpredictable weather patterns.

- More frequent and intense storms and weather-related disasters.
- Decreased agricultural productivity and rising food insecurity.
- Public health problems.

While there is some uncertainty about the exact nature, timing, location and magnitude of climate impacts, many of them are already materializing, and they will be worsened and accompanied by new threats. The section that follows explores these climate change impacts and their effect on human well-being and sustainable development in more detail.

WATER SHORTAGES AND DROUGHTS.

Water is the lifeblood of communities and a driver of economic health and well-being, and in 2010, the UN General Assembly adopted a resolution on the human right to water.¹⁷ With glaciers and snow in rapid retreat, those that depend on snowmelt from major mountain regions like the Hindu-Kush, Himalaya and Andes will face severe threats to their water security. Changing rainfall patterns will lead to periods of extreme drought in some regions. Drought reduces agricultural and livestock productivity, increases fire hazard and reduces the amount of water available for human health and economic activity. Climate change stymies current efforts to ensure equitable access to water across the globe to the one billion people who already lack access to safe water.¹⁸

- A recent study of 60 years of data from 925 rivers that provide nearly three-fourths of the world's water supply found that one-third of the rivers are significantly affected by climate change, mainly in terms of diminished flow. The Ganges, Niger, Colorado and Yellow Rivers are among those affected.
- The Intergovernmental Panel on Climate Change (IPCC) reports that by 2020, up to 250 million people across Africa are expected to face increasingly severe water shortages.

- The IPCC projects that by 2080, Africa will see an increase of 5 to 8 percent of arid and semi-arid land under a range of climate scenarios.
- Since the 1970s, rainfall has decreased by an average of 2.4 percent per decade in tropical rainforest regions.
- A climate model produced by the United Kingdom Meteorological Office predicts that by 2080, 30 percent of the earth's surface will be subject to extreme drought, compared with 3 percent at the beginning of the twenty-first century.

Sources: Renton, 2009. *Suffering the Science: Climate change, people, and poverty*; IPCC, 2007. *Climate Change 2007: Synthesis Report*; Global Humanitarian Forum, 2009. *Human Impact Report: Climate Change – The Anatomy of a Silent Crisis*.

INCREASED FREQUENCY AND SEVERITY OF FLOODS. Rising sea levels and more frequent heavy precipitation events in some regions will lead to more frequent and damaging floods. People in the heavily populated, low-lying deltas of Asia and Africa and those living on small islands are particularly vulnerable, and they are some of the poorest communities in the world.¹⁹ Flooding causes severe economic damage, erodes natural and human-constructed storm barriers, and results in loss of life. It also leads to loss of agricultural land. Increased salinization of coastal areas can have a detrimental impact on agriculture.

- Under current sea-level rise projections of around 40 centimeters by the end of this century, the number of coastal dwellers at risk from flooding could increase from 13 million to 94 million during this period.
- A sea-level rise of 1 meter could affect 17 percent of Bangladesh's land area, destroying the homes and livelihoods of 25 million people.
- In 2010, flooding in Pakistan due to heavy rains affected more than 20 million livelihoods and caused \$9.5 billion in economic damages.

Sources: Asian Development Bank, 2009. *The Economics of Climate Change in Southeast Asia: A Regional Review*; Renton, 2009. *Suffering the Science: Climate change, people, and poverty*; Oxfam America, 2010. *Fact Sheet: Pakistan Floods*; Ahmed, 2010. "Pakistan flood damage at \$9.5 billion."

MORE UNPREDICTABLE WEATHER

PATTERNS. A 2009 Oxfam study highlights a number of consistent observations from farmers in the developing world, including: shrinking of temperate "transitional" seasons; higher overall temperatures, particularly in winter; more erratic rainfall and increasingly unpredictable starts to the rainy seasons; an increase in unusual and "unseasonable" weather events; heavier rains and longer dry spells; and stronger, shifting winds.²⁰ Less predictable weather patterns make it difficult for small-scale farmers, who are already living on the edge, to decide when to cultivate, sow and harvest.

- Communities in Nepal are concerned about warmer and drier winters, with declining rain and snow that normally falls in hilly districts from December to January.
- In Uganda, farmers report increasingly unreliable precipitation during the long rains from March to June.
- In Vietnam, communities say that storms are increasingly tracking south into areas that had never experienced them before.

Source: Jennings and Magrath, 2009. *What Happened to the Seasons?*

MORE FREQUENT AND INTENSE STORMS AND WEATHER-RELATED DISASTERS.²¹

While no individual extreme weather event can be attributed to climate change, the trend line is striking: Climate-related storms are increasing in frequency²² and intensity.²³ According to the Intergovernmental Panel on Climate Change (IPCC), it is likely that "future tropical cyclones (typhoons and hurricanes) will become more intense, with larger peak wind speeds and more heavy precipitation associated with ongoing increases of tropical sea-surface temperatures."²⁴ When a severe weather event outstrips a community's coping capacity, disaster occurs. As a result of weather-related disasters, each year nearly 90 million people require urgent assistance due to injury, loss of property, exposure to disease, or shortages of food and fresh water.²⁵

- Ninety-eight percent of those seriously affected by weather-related disasters live in the developing world, and developing countries experience 99 percent of all deaths and over 90 percent of economic

losses from weather-related disasters.

- From 2004 to 2009, the annual cost of weather-related disasters in developing countries ranged between \$50 and \$230 billion per year.

Source: Global Humanitarian Forum, 2009. Human Impact Report: Climate Change – The Anatomy of a Silent Crisis.

DECREASED AGRICULTURAL PRODUCTIVITY AND RISING FOOD INSECURITY.

At lower latitudes, crop productivity is projected to decrease for even small local temperature increases, especially in seasonally dry and tropical regions, which will increase the risk of hunger.²⁶ Smallholders will face a particularly difficult struggle to maintain food security in the face of declining yields and loss of crops. The Food and Agricultural Organization recently said that global food production must increase by 70 percent — and double in the developing world — to adequately feed a population expected to reach 9.1 billion in 2050.²⁷ Climate change's devastating effect on existing food shortages and price spikes is particularly worrisome, given that nearly 1 billion people are already hungry today.²⁸

- In some African countries, by 2020 yields from rain-fed agriculture could decrease by up to 50 percent, severely compromising agricultural production and access to food.
- Within 20 years, climate change-induced declines in global food production could force global food prices up by 20 percent.
- Today, climate change is projected to be at the root of hunger and malnutrition for about 45 million people. That number is projected to climb to 75 million within 20 years.

Sources: IPCC, 2007. Climate Change 2007: Synthesis Report; Global Humanitarian Forum, 2009. Human Impact Report: Climate Change – The Anatomy of a Silent Crisis.

PUBLIC HEALTH PROBLEMS. Climate change will alter the spatial distribution of some infectious diseases.²⁹ Insect-borne diseases like malaria and dengue fever and water-borne diseases like schistosomiasis³⁰ are shifting geographically with rising temperatures and floods, expanding to regions with public health systems and populations that are ill-equipped to cope.³¹ Flooding greatly increases the risk of diarrheal disease due to poor sanitation. Mega-cities in tropical

areas will be hard-hit by disease due to their concentrated populations and vulnerability to extreme weather events. In addition to disease, climate change-driven heat waves pose a serious threat to human productivity and can result in increased health-related problems and mortality, particularly for farmers, labourers and others who work outdoors.

- The World Health Organization calculates that each year the health of 235 million people is affected by climate change, particularly due to malaria, diarrheal disease and malnutrition.
- Climate change-triggered malaria outbreaks are currently estimated to affect over 10 million people and kill approximately 55,000.
- Schistosomiasis is spreading to new areas of China, where a predicted 210 million more people will be threatened by the disease by 2030.
- In Delhi, India, mortality rates rise by up to 4 percent with every 1°C of temperature rise above the heat range that is considered tolerable. The figure is nearly 6 percent in Bangkok, Thailand.

Sources: Global Humanitarian Forum, 2009. Human Impact Report: Climate Change – The Anatomy of a Silent Crisis; Renton, 2009. Suffering the Science: Climate change, people, and poverty.

While each of these climate change impacts poses a serious threat to human development, it is striking to consider the cumulative effect of multiple climate impacts on existing conditions of poverty. A poor community or family might be able to recover from an occasional flood. However, if a flood is concurrent with a malaria outbreak, and the family loses its crops and faces rapidly mounting medical costs, its economic or physical survival may be at risk. Together, climate impacts and existing social and economic conditions can push people across critical thresholds or “tipping points”³² that far exceed their ability to cope. Should these climate and social tipping points occur, businesses operating in these regions would feel the impacts across all related areas of their operations and value chains.³³ It is precisely due to the complex connections between climate impacts and poverty that building long-term resilience in vulnerable communities requires such a comprehensive, multipronged response.

Economic and security implications of climate change

In the age of globalization, countries' economies are linked through a complex inflow and outflow of goods, services, technology, capital, information and labour. The interconnectedness of today's global markets makes all economies vulnerable to climate change, no matter where it occurs. Severe flooding in the Philippines, drought in Zimbabwe or fires in Russia can have a reverberating impact on economies around the globe. As Kofi Annan noted in his 2001 Nobel Prize speech, "Scientists tell us that the world of nature is so small and interdependent that a butterfly flapping its wings in the Amazon rainforest can generate a violent storm on the other side of the earth. This principle is known as the 'Butterfly Effect'. Today, we realize, perhaps more than ever, that the world of human activity also has its own 'Butterfly Effect' — for better or for worse."³⁴

If unaddressed, climate change will wreak considerable direct economic damage. It will disrupt global agricultural markets, destroy critical infrastructure and transportation, and hamper the flow of goods and services. It will also make energy markets more volatile and unpredictable³⁵ due to the challenges of meeting new peak demand, storm damage to energy installations,³⁶ and the impact of water scarcity on energy sources, such as nuclear power and hydropower.³⁷

It is difficult to put an aggregate price on this economic damage, given uncertainties and varying methodologies. The Stern Review, a study commissioned by the British government that analyzed the economics of climate change, estimated that the overall costs and risks of inaction on climate change would be equivalent to losing 5 to 20 percent of GDP each year.³⁸ An eight-country study by the Economics of Climate Adaptation Working Group determined that current climate impacts cost the locations studied from 1 to 12 percent of GDP each year, and that within the next 20 years climate change could more than double those percentage losses.³⁹ A recent report by the Asian Development Bank found that if the world continues "business-as-usual" emissions trends and fails to adapt, the economic cost of climate change to Indonesia, the Philippines, Thailand and Vietnam alone could equal a loss of 6.7 percent of their combined gross domestic product by 2100, in contrast to a projected global average of 2.6 percent.⁴⁰

The true economic impact of climate change includes more indirect, "hidden" economic costs, like reduced workdays and productivity, re-routing traffic, provision of emergency shelter and supplies, potential relocation and retraining, and more complicated government and corporate planning processes due to increased risk and uncertainty.⁴¹ "Non-market impacts," such as the geographic expansion of diseases and degradation of important global ecosystems, also have a considerable economic cost. However, these variables are difficult to adequately predict and measure. Government budgets will be stretched as the public sector tries to respond to these multipronged challenges.

An International Monetary Fund analysis shows that climate change-related economic losses will fall most heavily on developing and emerging economies, at least in terms of the size of their economies.⁴² Many of these countries already rely heavily on foreign aid and loans to support their social and economic development processes, and climate change threatens to undo progress they are making on both fronts. Further, many developed countries and global companies count on developing and emerging economies as current and future growth markets; climate change can thus have a damaging economic "ripple effect". Countries hard-hit by climate change will face challenges in their efforts to be dynamic international trade and investment partners, with follow-on impacts on overall global economic growth and stability.

The United States 2010 Quadrennial Defense Review warns that effects of climate change such as droughts, floods and disease, among others, could further weaken fragile governments around the world.⁴³ Climate change has been referred to as a "threat multiplier"⁴⁴ to national and international security by worsening existing problems of poverty, social tension, environmental degradation, ineffective leadership and weak institutions. Weather extremes, food and water scarcity, and climate-related public health threats are projected to displace between 150 million and 1 billion people as climate change unfolds.⁴⁵ Climate change may also lead to increased conflict over resources, including across borders. For example, a long-standing treaty governs India and Pakistan's shared use of the Indus River. The glaciers that feed this river are melting fast, and its flow will eventually become seasonal, with

serious implications for agricultural production in Pakistan, in particular. Treaty renegotiations may be difficult, due to existing tense relations between the two countries, and any major delays in securing Pakistan's water source that significantly affect its population could lead to social unrest.⁴⁶ One report estimates that 46 countries will face a "high risk of violent conflict" when climate change exacerbates traditional security threats.⁴⁷

Adaptation: a cost-effective approach for addressing climate change

The World Bank estimates that between 2010 and 2050 it will cost developing countries \$70 billion to \$100 billion per year on average to meet their climate change adaptation needs.⁴⁸ Unfortunately, current flows of finance for adaptation to vulnerable countries are much less than needed. Of the major public funding dedicated to climate change, less than 10 percent of approved funding has been allocated to adaptation, compared to 82 percent for climate change mitigation.⁴⁹

The evidence, however, is clear: It is much smarter to anticipate and address climate change impacts and build resilience up front than to simply respond to the human and economic costs after impacts occur. One main conclusion of the Stern Review was that the cost of taking action now would likely be several orders of magnitude less than the costs of inaction. The following examples illustrate this point for public sector investments, but the principle would equally apply to private sector investments. According to an analysis by the US Geological Survey and the World Bank, an investment of \$40 billion to reduce disaster risk could prevent disaster losses of \$280 billion.⁵⁰ Evidence from a mangrove-

planting project designed to protect coastal populations from storm surges in Vietnam estimated economic benefits that were 52 times higher than costs.⁵¹ In Brazil, a flood reconstruction and prevention project designed to break the cycle of periodic flooding in 2005 resulted in a return on investment of greater than 50 percent by reducing residential property damages.⁵² In its eight-country study, which included developing and developed countries, the Economics of Climate Adaptation Working Group found that between 40 and 68 percent of expected losses through 2030 under high climate change scenarios could be averted through adaptation measures whose economic benefits outweighed their costs.⁵³ In short, financing adaptation and resilience is a cost-effective investment that can pay for itself many times over.

Climate Change Adaptation and the Private Sector

Adapting to climate change at the necessary scale and scope requires a coordinated, multisectoral, global effort. To date, governments and civil society organizations have led this effort. They have advocated for increased public, grant-based funding for adaptation; stressed the need for good governance of global adaptation funds; prepared national and local climate change adaptation plans; and begun to experiment with adaptation approaches to determine what works. It is now timely to consider opportunities to create and build on synergies among strategies that allow for a transition to a green economy and measures required to adapt to climate change. The private sector will be a pivotal player in this process.

The private sector is a relative newcomer to climate change adaptation, although many companies have a long-standing focus on and commitment to environmental sustainability more broadly. To date, most businesses concerned about climate change have been more focused on reducing their GHG emissions to mitigate climate change than on responding to current and evolving climate change risks and impacts. The many reasons for this — including risk and uncertainty, lack of information and modelling tools, difficulty in communicating and championing adaptation inside the company, challenges of mainstreaming climate risk and opportunity analysis into core business processes, and lack of incentives to act today — are explored in detail in Chapters 2 and 3 of this report.

While most companies have not yet begun to understand how climate change will affect them, it will affect all companies — large and small — and some will be affected more than others. It is thus squarely in companies' business interest to engage on the issue of climate change adaptation. Companies are beginning to recognize that the physical, economic and social impacts of climate change translate into concrete business risks that must be assessed and managed through targeted adaptation measures. Further, there are inextricable links between healthy, resilient communities and vibrant, profitable businesses.

Community risks are business risks

Local and global companies rely on community members as employees, suppliers and customers. They depend on local services and infrastructure to run their businesses. If farmers are not able to meet production targets, or a local port is destroyed by a storm, or a community is ravaged by malaria, then businesses suffer as well. There is also a growing recognition within the private sector — underscored by the findings of the survey of Caring for Climate signatories — that while climate change poses significant risks to operations and value chains, it also brings new opportunities to improve business practices, and to create business value while helping people adapt. Well-designed business responses to climate change can help build strong, healthy communities in which people and companies can thrive.

The risk of maladaptation

Before turning to a discussion of the business risks and opportunities that climate change presents for companies, it is essential to point out that some business actions in response to climate change have the potential to exacerbate local vulnerability to climate change impacts. For example, if a company aggressively increases the size of a plantation to compensate for declining agricultural yields on the existing site, pushing smallholders to marginal and degraded land in the process, local livelihoods are put at risk. This type of private sector adaptation measure actually decreases, rather than increases, community resilience.

Climate change adds importance and urgency to businesses' environmental and social accountability commitments, due to the additional stress that it places on shared resources. Companies often have significant leverage over the way natural resources like water, forests and mangroves are managed and used, and over how local communities are engaged and compensated. In the context of climate change adaptation, it will be increasingly important that companies align their natural resource management practices with the needs of vulnerable people within the local community.

WHAT IS MALADAPTATION?

Caring for Climate defines maladaptation as "an action or process that increases vulnerability to climate change-related hazards. Maladaptive actions and processes often include planned development policies and measures that deliver short-term gains or economic benefits but lead to exacerbated vulnerability in the medium to long-term."

CHALLENGES ASSOCIATED WITH ADAPTATION IDENTIFIED BY CARING FOR CLIMATE SIGNATORIES

“Adaptation is a longer-term process and highly speculative in terms of what specific changes will take place and where, so it can be hard to develop business plans to address adaptation.”

“We can’t respond to what we don’t know.”

“Mitigation has been the sole driving force globally, with little discussion around adaptation. Most grading systems look only at mitigation and do not give scores or benefit to having adaptation strategies. There is a need for scoring systems to incorporate adaptation and also for the broader discussion to be more focused on it.”

Companies can avoid contributing to climate vulnerability by consulting with communities and designing their adaptation responses with communities’ climate change impacts and needs in mind. As is described in more detail in Chapter 3, integrating environmental and social safeguards into national laws, policies and regulations, and government contracts can also make important contributions to incentivizing business behaviour, averting maladaptation and improving community vitality and resilience to climate change.

Perspectives from Caring for Climate companies on adaptation

Among the 72 companies that responded to the Caring for Climate survey, 83 percent believe that climate change impacts pose a risk to their products or services. Seventy percent of the companies with climate change strategies in place reported that their strategy has some level of adaptation focus.

However, companies find it challenging to fully incorporate climate risks into their operations and value chains. Only around one-third of the companies reported that their climate change strategy has a “strong emphasis” on the issue of climate change risks. About one quarter have not yet been able to determine — or were not able to provide concrete information on — the percentage of their operating sites that are vulnerable to climate change. Qualitative responses from the survey confirmed a number of factors that make it difficult for companies to operationalize a focus on climate risks, including the long-term nature of climate change, the overall uncertainty inherent in projections of climate

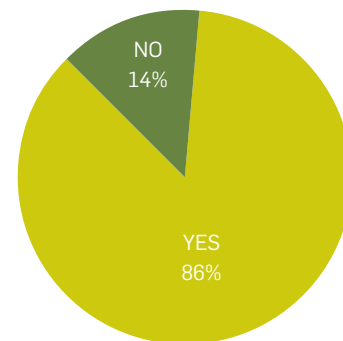
impacts, lack of good information and lack of incentives for action.

However, the private sector is also keenly aware that risk and opportunity tend to go hand in hand. Climate change adaptation is no exception. As shown in Figure 1, 86 percent of Caring for Climate companies surveyed said that responding to climate change risks, or investing in adaptation solutions, poses a business opportunity for their company.

Thirty-six percent reported that their climate change strategy has a “strong emphasis” on responding to opportunities. These findings echo one of the main findings of the Carbon Disclosure Project’s 2010 Global 500 report, which notes that relative to companies’ responses in previous years, “there has been a shift in emphasis from an approach dominated by risk, to one that now also embraces opportunity.”⁵⁴ The sections that follow dig deeper into the climate change risks that companies face, and make the case for opportunities for companies to adapt in ways that contribute to sustainable development and community resilience.

FIGURE 1. CLIMATE CHANGE ADAPTATION AS A BUSINESS OPPORTUNITY

“Does responding to climate change risks, or investing in adaptation solutions, pose a business opportunity for your company?”



Climate Change Risks for Companies

Rising temperatures, floods, extreme weather events and water scarcity take their toll on communities and the economy. These climate change impacts also present numerous risks for companies' operations and value chains. Companies will experience climate change risks and impacts in different ways and to different degrees, depending in large part on their business sector and the geographic location of their operations, suppliers and current and future customers.

A typology of climate change risks facing the private sector

Categories of risk confronting companies in the face of climate change include: physical and operational, regulatory and legal, financing, market, political, and reputational.⁵⁵ Specific examples of these risks were highlighted by Caring for Climate signatories in the survey. While all businesses face these risks, they are compounded for businesses with operations, employees, suppliers, and current or anticipated customers in developing countries. The survey data show that 53 percent operate in South America, 50 percent in Southeast Asia, 40 percent in South Central Asia, and 43 percent in Southern Africa. These companies are particularly at risk because, as noted earlier in this chapter, developing countries are disproportionately vulnerable to climate change and have limited resources with which to adapt. Companies can play a critical role in building and not undermining climate resilience in these markets.

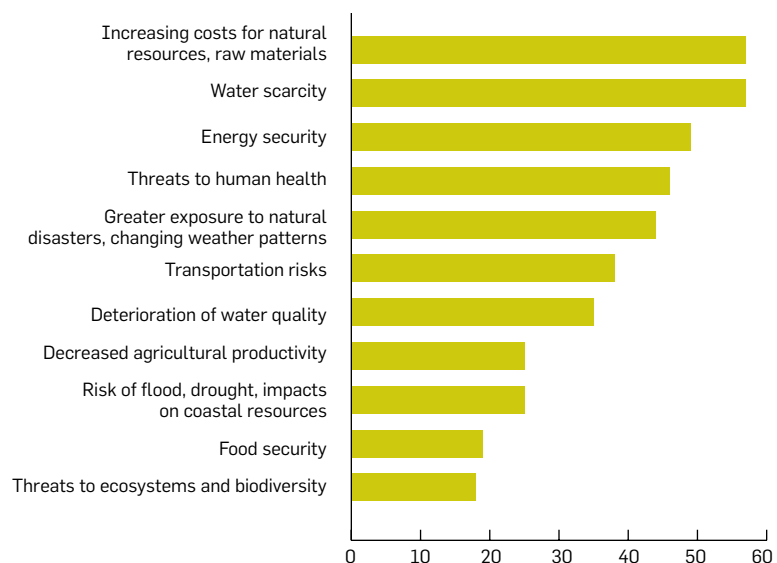
Physical and operational risks: Changing temperatures and precipitation patterns may lead to decreased availability and increased price of critical raw materials in the supply chain, especially agricultural commodities. Access to other core inputs, including water and energy, will become increasingly unreliable. Storms and floods may damage buildings, equipment and other physical assets, or create costly disruptions in production and transport due to damage to railroads, ports, bridges, power plants and other infrastructure. Companies may see increased employee absenteeism and decreased productivity due to the impact of more severe weather events and declining health. Insurance costs may

rise. As Figure 2 illustrates, Caring for Climate signatories recognize these physical and operational risks. In many cases, these risks will be of high priority to vulnerable communities as well.

Regulatory and legal risks: As countries adapt to climate change, they will likely use a range of regulatory tools to better manage their natural resources and reduce their disaster risk. For example, they may enact new land use or zoning regulations, or new building codes. They may put more stringent limits on water use and irrigation. While developed countries are farther ahead on enactment and enforcement of these types of regulatory frameworks, many developing countries are following suit.⁵⁶ Such regulations will force some companies to undergo operational changes in response, making some activities and processes more expensive or even unfeasible. Corporate decisions that fail to take climate change impacts into account could be subject to a range of legal challenges. Governments may also begin to require companies to disclose their climate risks and adaptation

FIGURE 2. COMPANIES' CONCERNS ABOUT CLIMATE CHANGE RISKS

Percentage of companies that consider risks as having "high" or "very high" impact on operations and strategy



INVESTOR INTEREST IN BUSINESSES' CLIMATE RISKS

In early 2010, the US Securities and Exchange Commission issued guidance for publicly held companies regarding disclosure of material climate risks. By July 2010 leading US investors had filed a record 101 climate change shareholder resolutions with 88 US and Canadian companies that face far-reaching business challenges from climate change, nearly a 50 percent increase in resolutions filed over the previous year. While some resolutions were mitigation-related, others focused on adaptation and management of climate risk. For example, a resolution filed by Calvert Investments with Kroger, a retail food chain, asked Kroger to report on how the company will assess and manage the impacts of climate change on the corporation, specifically with regard to its supply chain.

Source: *Investor Network on Climate Risk* (www.incr.com)

efforts, as the Securities and Exchange Commission has done in the United States (see text box above).

Financing risks: Climate change may also affect companies' access to capital, as investors become more aware of climate change impacts and the need for adaptation. Debt financing may be harder to attract or more expensive for companies that are seen as "high risk" to climate change impacts (as businesses with operations, employees and supply chains in developing countries will certainly be). Investors will likely have lower confidence in companies that are failing to analyze climate risks and to take proactive action to adapt and manage such risks, and may increase their demands or expectations for full disclosure in this area.

Market risks: In the face of climate change, certain products and services will become less relevant or ineffective. As some regions become hotter, wetter or drier, companies may find that their customer bases undergo dramatic geographic shifts. Among customers with higher awareness of climate change, demand could decrease for products and services that make inefficient use of scarce resources like energy and water or that exacerbate climate risks. As consumers in the developing world are forced to grapple with climate change, they may also have reduced spending power (particularly with respect to nonessential goods and services), thus impacting some companies' profitability.

Political risks: As developing countries struggle with natural resource, food security, health and economic challenges associated with climate change, they may face increased domestic conflict and instability. These types of disruptions are simply bad for business. While local companies based in climate-vulnerable countries will be most affected, political instability also poses significant threats for globalized companies operating in those countries, particularly companies with significant on-the-ground physical investments or sizeable market share.

Reputational risks: Among some consumers, particularly those in North American and European markets, companies seen as major emitters of GHGs — or those that are not taking adequate measures to reduce their emissions — are viewed unfavourably. As consumers across the globe become increasingly aware of and impacted by climate change, they may turn their attention to companies' adaptation strategies. A company may receive negative media coverage, be subject to civil society advocacy efforts, or even lose its ability to operate in a given location if it is perceived to be exacerbating climate vulnerability in developing countries through maladaptation, or not taking appropriate action to address risks. In this age of instant digital communications and widespread use of social media, it has become much less possible for companies to employ a double standard between their environmental and social accountability policies and their day-to-day actions on the ground in poor communities. Condemnation for bad practices can spread quickly, with considerable damage to a business's reputation.

Impacts of climate change on individual business sectors

Companies' physical and operational risks, in particular, are likely to be sector-specific. Table 1 provides illustrative examples of specific risks that companies in select industry sectors may face, confirmed by perspectives from companies participating in the Caring for Climate survey.

Businesses will find that climate change exacerbates existing operational and supply chain risks. It can also yield entirely new risks, and dangerous interrelationships among risks. As noted earlier in this chapter, climate change is a "threat multiplier." For example, food security and energy security are highly dependent on the availability and predictability of water

SELECT CLIMATE CHANGE RISKS IDENTIFIED BY CARING FOR CLIMATE SIGNATORIES IN THE SURVEY

- More stringent legislation related to climate risk management, and a greater number of lawsuits in cases of infringement.
- Brand and reputational damage, if there is a real or perceived inadequate response by companies to the impacts of climate change.
- Reduced consumer spending power due to economic impacts of climate change.

resources. Water scarcity can lead to stress throughout the entire food and energy system, and can generate economic collapse and social unrest. These types of interconnected risks will be particularly difficult for businesses to assess and manage.

As a result of climate change, traditional ways that businesses approach risk need to change. Integrated challenges require integrated solutions. If businesses look at these risks holistically from a climate change adaptation perspective, they will be able to better identify trends and emerging risks

and develop a comprehensive strategy to address them. Using a climate change adaptation lens for risk analysis will enable businesses to draw on a broader range of international best practices, tapping into businesses, policy and civil society expertise worldwide to more effectively respond to these risks. Furthermore, if businesses design their adaptation strategies with the needs of vulnerable people in mind, they will see greater coherence between their own strategies and public sector approaches to adaptation and resilience-building.

TABLE 1. CLIMATE CHANGE RISKS BY BUSINESS SECTOR

Business sector	Illustrative risks	Concerns expressed in the survey by Caring for Climate signatories in these business sectors
Agriculture, food and beverage	Water scarcity; crop damage due to weather extremes; increased exposure to new pests and disease; transportation problems	<ul style="list-style-type: none"> • Water scarcity is our primary vulnerability. • The impact of climate change on agricultural products is increasing.
Energy and utilities	Reputational risk; physical risk due to extreme weather events; peak demand could outstrip capacity; hot weather may reduce efficiency of extraction	<ul style="list-style-type: none"> • Our climate change risk includes potential physical damage to personnel and equipment, and potential disruption of the production activities of our offshore installations. • Significant climate changes (mainly in terms of temperature, but also wind and water conditions) from one year to another can cause substantial variations in the balance of supply and demand for electricity and gas. • Water shortages can reduce hydroelectric power production.
Manufacturing and consumer goods	Higher prices of raw materials; higher energy prices; unanticipated changes in customer preferences; supply chain disruptions	<ul style="list-style-type: none"> • Dramatically rising energy prices will have a negative impact on the operating costs of the company. • Reduced availability, supply and quality of raw materials is a concern. • We could face a production bottleneck due to a functional failure in our supply chain.
Banking and finance	Macroeconomic downturn hurts volume; customer defaults in retail sector; uninsured damage to project assets; exposure to indirect risks through investment portfolio	<ul style="list-style-type: none"> • Certain agricultural products might be affected by the intensification of droughts...it is necessary to put climate impacts into monetary terms to "wake up" the banking system. • Climate change changes our risk profile for certain sectors that we lend to and thus our lending "appetite" within those sectors.
Construction and building materials	Changes in building codes and regulations; reduced worker productivity due to heat; disruptions in delivery of materials; disruptions due to extreme weather events	<ul style="list-style-type: none"> • Legal risks take on considerable significance in the context of adaptation. Tougher legislation may give rise to a greater number of lawsuits due to cases of infringement. • Many of our plants are vulnerable because they are located in coastal areas worldwide.
Health care and pharmaceuticals	Changing disease vectors; increased water-borne illness; higher health insurance costs	<ul style="list-style-type: none"> • Potential and actual drought situations present a risk for us. • Water availability in several manufacturing regions is a concern.
Mining and industrial metals	Regulatory risk; vulnerable to energy and water shortages due to intensity of use; rainfall and flooding creates risk of overflow of storage reservoirs containing contaminants	<ul style="list-style-type: none"> • Increasing regulatory pressure will impact the steel industry in terms of impacts on the process, location of facilities and availability of raw materials. • Our main concerns are energy security (because much of our power comes from large hydroelectric plants via national power companies) and water security.
Insurance	Increased volume of claims; historical loss information less reliable; risk modelling and product pricing more complex; some risks may be uninsurable	<ul style="list-style-type: none"> • We conducted research on the expected impacts of climate change on insurance portfolios with regards to northern European winter storms. • We are seeing changing weather patterns and an increase in insured losses in some geographical areas.

Note: Illustrative risks have been drawn from a table found in Nitkin et al. that compiles existing literature on projected business risks, by sector. Nitkin et al., 2009. A Systematic Review of the Literature on Business Adaptation to Climate Change: Case studies and tools (3 of 4).

Adaptation Solutions that Promote Sustainable Development and Build Resilience

As companies ramp up and refine their analysis of what climate change means for them in real and practical terms, they should seek to identify “win-win” opportunities to adapt in ways that simultaneously contribute to efforts identified by communities that will be hardest hit and most affected by climate change. The key is to find the nexus of shared interest where business incentives align with the adaptation needs of vulnerable populations in developing countries. This nexus — shown in Figure 3 — bears exciting potential to advance sustainable development goals and stimulate economic growth, thus hastening the transition to a green economy.

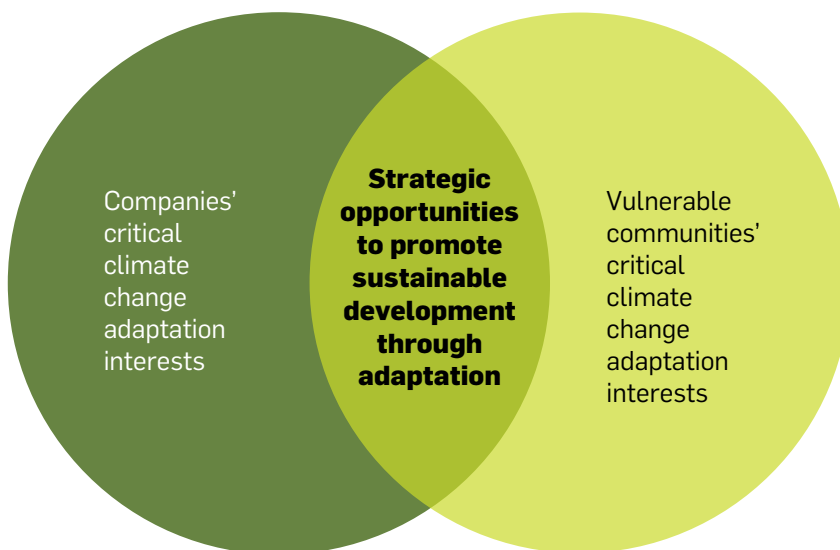
The business case for action

There is a strong business case for companies to identify and implement climate change adaptation measures that simultaneously address the needs of vulnerable communities in developing countries and their own bottom lines.⁵⁷ Sustainable development-focused adaptation can help companies:

Avoid costs, manage liabilities and build resilience to climate change impacts: In today’s globally integrated economy, many companies rely on suppliers or have on-the-ground operations in developing countries and emerging economies. By analyzing climate risks throughout the value chain and mitigating risks through concrete changes in such areas as production processes, improved management of ecosystem services, infrastructure and asset siting, supply chain communications and management, community outreach, and employee education and benefits, companies can better manage their liabilities and avoid significant costs and disruptions, while simultaneously reducing risks faced by vulnerable populations within the value chain. Businesses’ profitability depends on strong, resilient suppliers, employees and surrounding communities. It is important to note that if done well, these changes can create short-term value for businesses and their stakeholders, regardless of whether or when anticipated climate impacts happen.

Expand market share and create wealth in communities: Effective adaptation to climate change will require the development and deployment of a wide range of new and innovative products, strategies and services to help vulnerable people in developing countries manage climate risks and impacts. Many of these are also part of a green economy. Climate change presents an opportunity for companies to diversify and expand their market share while simultaneously addressing the consequences of climate change. As global companies invest in new adaptation markets in the developing world, it will be essential for them to partner with local companies and communities to ensure that technologies are appropriate and affordable, and that market expansion is accompanied by important knowledge and skill transfer. New markets can also be tapped by small-scale local entrepreneurs who are grounded in the needs of their communities and, through credit and other public incentives, can seize new opportunities to expand their businesses.

FIGURE 3. THE STRATEGIC NEXUS FOR PRIVATE SECTOR ADAPTATION EFFORTS



Access new financing streams: Under international climate change agreements, there will be increased public funding available for adaptation efforts in vulnerable communities in developing countries, and governments will look for corporate partners who can deliver the requisite goods and services. Not only does an effective response to climate change require financing for development of low-carbon technologies, it may also result in research and development funding for products and services that address critical adaptation needs. Local and global companies that take early action to develop expertise in climate change adaptation and green economy solutions will have a competitive edge in these contracting opportunities with government partners.

Build corporate reputation and exercise good corporate citizenship: Many companies have a long-standing commitment and track record in the areas of environmental sustainability and corporate social responsibility (CSR). Climate change adaptation needs provide companies with an opportunity to solidify the linkages between their business activities and CSR strategies in developing countries and to add urgency to existing efforts. Productive engagement with vulnerable communities on climate change adaptation and resilience-building and ensuring that business activities do not exacerbate climate vulnerability can be viewed as new components of the evolving definitions of good corporate citizenship and social and environmental accountability. Proactive, purposeful, well-documented, well-publicized adaptation measures may provide reputational benefits among key stakeholders — including customers, investors and potential employees across the globe — similar to the benefits currently associated with companies' reduction of GHG emissions.

Strategic opportunities for private sector investment in adaptation

The most promising opportunities for companies to complement public sector initiatives and investments in climate change adaptation lie in two key areas:

Building resilience within company operations and the value chain: Companies can conduct a comprehensive assessment of the climate risks they face, including risks faced

by their suppliers, employees and assets located in vulnerable regions, as well as the risks faced by communities in the areas in which they operate. They can then develop a range of measures to address climate risks and increase long-term climate resilience. Actions will be sector- and company-specific, but could include using more resource-efficient production techniques, conserving natural resources upon which they and communities depend, sourcing from local businesses to strengthen the economic base, and building capacity throughout their value chain to manage climate risk.

Developing and deploying new products and services: Successful adaptation to climate change will require improvements in water and energy management, new strategies for flood control, improved farming techniques and better early-warning systems for disasters. If companies factor climate risks into their market analysis, they can become part of what Oxfam is calling “the new adaptation marketplace”⁵⁸ by identifying, developing and deploying new products and services that will help weather the impacts of climate change. It will be important for companies to consult with affected communities and build new products and services from the bottom up to ensure that they meet priority adaptation needs.

Chapter 2 of this report, the case study provided in this chapter and in Chapter 2, and Annex B provide additional insights on what it means for companies to invest in these areas. There are a few existing examples and models of private sector investments in adaptation, but investments must increase exponentially to address future adaptation needs at scale. Companies' efforts in these two areas will require active and sustained engagement with national, regional and local stakeholders in vulnerable countries, particularly in Small Island Developing States and Least Developed Countries, to provide resources that people most affected by climate change want and need. Working with vulnerable communities to build their resilience and help them adapt to the consequences of climate change can enable them to become more economically, socially and politically resilient in the broadest sense, with positive benefits for the local and the global economy.

COMPANY CASE STUDY: SWISS RE

Swiss Re, one of the largest reinsurance companies in the world, has worked for 20 years to promote better understanding and management of climate risk. The company has pioneered the development and deployment of tailored insurance products, including weather risk insurance, to protect the rural poor in developing countries. A pioneering effort in India in 2004 reached more than 350,000 smallholders. In 2008, partnering with the World Bank and the government of Malawi, Swiss Re developed a derivative product to help protect Malawi against drought-related shortfalls in maize production. Swiss Re is currently collaborating with Oxfam, the Ethiopian government, a local non-governmental organization, and other partners through the Horn of Africa Risk Transfer for Adaptation (HARITA) project, which provides weather index insurance for smallholder rain-fed farmers in Ethiopia.

Around 85 percent of all Ethiopians depend on agriculture for their livelihoods, and they are some of the poorest farmers in the world. Their harvests and incomes are already threatened by drought, which will be exacerbated by climate change. To address this problem, Swiss Re and its partners developed a risk management package that enables farmers participating in a government social safety net scheme to pay for weather risk insurance premiums by contributing their own labour to community projects that reduce risk, including irrigation, soil improvement and composting. In the event of a seasonal drought, insurance payouts triggered automatically by low rainfall enable HARITA farmers to afford the seeds and inputs necessary to plant in the following season, without having to sell off productive assets to survive. Since the launch of the project in 2008, participation in the insurance scheme has rapidly increased, from an initial 200 households in the first year to 1,300 households in 2010. Many of these rural households are led by women.

In Ethiopia, Swiss Re has pursued an opportunity to create business value in the long term while assisting those most vulnerable to climate change. Only about 0.4 percent of Ethiopia's population of around 90 million has insurance, so the HARITA project also serves as an important step toward developing Ethiopia's nascent insurance market. The goal for 2010/11 is to provide insurance for up to 13,000 households.

Looking Ahead

Climate change is a challenge of tremendous complexity due to its scale, scope and urgency. There are robust linkages between climate change and sustainable development; thus climate change can serve as a powerful catalyst for transforming the way we pursue economic growth and poverty alleviation. Effective climate change mitigation and adaptation requires an unprecedented marshalling of global commitment, resources, innovation and expertise. While public investment and policies are fundamental to successfully tackling climate change adaptation in vulnerable communities, the private sector is a pivotal complementary player in this process. Climate change adaptation presents considerable risks and exciting opportunities for the private sector. Companies that rigorously assess these risks and opportunities and implement creative solutions that build

long-term resilience will create business value while bolstering people's efforts to adapt. Those that practice maladaptation, or otherwise undermine the efforts of vulnerable communities to adapt, may face increasing reputational and brand risks.

The chapters that follow offer options for companies and governments that will galvanize private sector adaptation investments at the critical nexus of companies' needs and communities' needs. These investments can serve as a crucial complement to public sector efforts. This must be a purposeful process: It will not happen by chance. If governments, companies, civil society and communities work together, we can transform climate risks and impacts rather than allowing them to transform us.

**2. DOING
BUSINESS IN
OUR CHANGING
CLIMATE:
MEASURES FOR
PRACTICAL
BUSINESS
ACTION**

Introduction

The new uncertainties and market volatility resulting from climate change will affect how companies do business. Companies with strategies for reducing their GHG emissions still must adapt to current and projected disruptions in the climate system for the coming decades.⁵⁹ The communities in which companies operate and sell their goods and services are facing these challenges today as our changing climate complicates economic development and exacerbates societal stresses. Many companies' long-term growth trajectories are linked to growing markets in developing and emerging countries that are among the most vulnerable to climate change impacts. Proactive companies will complement public sector-led adaptation efforts. By managing new risks and seizing new opportunities, they will help communities adapt to

a warmer world, and in so doing protect and promote their own competitive advantage in a thriving green economy that is low-carbon, resource-efficient and socially inclusive.

Companies need internal champions who can advance, guide, implement and communicate effective climate change adaptation strategies. To that end, this chapter presents a review of recent literature to set the context for private sector strategies that address climate change and development challenges. It also provides a summary of key insights from the survey of Caring for Climate signatories. It then presents a set of priorities and practical recommendations for how internal champions within companies can advance comprehensive plans to position themselves for long-term success in a changing climate.

THIS CHAPTER PROVIDES INSIGHTS FROM CARING FOR CLIMATE COMPANIES AND IDEAS FOR HOW TO:

<p>Determine what climate adaptation means for your company:</p>	<ul style="list-style-type: none"> • Connect climate "adaptation" and "resilience" to your company and corporate culture, building on existing mitigation initiatives • Integrate climate adaptation into core strategic business planning processes
<p>Identify critical climate risks, find opportunities:</p>	<ul style="list-style-type: none"> • Align business objectives with adaptation priorities • Build portfolio of climate-resilient goods and services
<p>Develop partnerships with shared value:</p>	<ul style="list-style-type: none"> • Build mutually beneficial strategies with local communities, suppliers, investors and other stakeholders, build communication channels • Partner with internal and external decision-makers

Private Sector Strategies for Adaptation: Experience to Date

Private sector knowledge, resources and innovation — essential to meeting climate change challenges for development — have largely focused on reducing GHG emissions (see text box) despite a growing acknowledgement of the importance of adapting to climate change impacts.⁶⁰ Many businesses are already confronting the costs of impacts like water scarcity, flooding and extreme weather events,⁶¹ yet strategic responses are lacking,⁶² with many appearing to take a “wait-and-see” approach to adaptation, and “adapters being the exception rather than the rule”.⁶³ Even for companies for which there is a strong, immediate business case for taking action, implementation of climate adaptation strategies is not common practice.⁶⁴

The current lack of focus on adaptation is especially significant given that most companies acknowledge that they are facing some level of exposure to climate change, whether it relates to physical impacts (such as constraints on resources or disruptions to the supply chain) or other impacts like financial uncertainty or fuel-price shocks.⁶⁵ Some companies’ vulnerability may be more imminent than they anticipate, and the choice will not be whether to respond, but rather when to do so, and in what manner.⁶⁶

To date, the primary example of private sector engagement in adaptation is the insurance industry. The sector as a whole has recognized the need for action on adaptation, and for good reason: An Allianz report estimates that from 2010-2019 the insurance industry’s average worldwide losses associated with climate change could total \$41 billion a year.⁶⁷ (See Munich Re case study in Chapter 3 for an example of an insurance company’s adaptation strategy.) However, even insurance industry responses have been primarily limited to European-based companies.⁶⁸

Although some leaders in other sectors are taking action, corporate action in aggregate is not proportional to the scale of the problem,⁶⁹ nor to the scope of the risks and opportunities involved.⁷⁰ Companies, for example, may be ignoring indirect risks to their supply chain or risks related to the vulnerabilities of local communities.

On the opportunities side, companies may not have the insights or tools they need to assess demand for new and existing products and services that will arise as a result of climate change. A business’s competitiveness will be determined by its ability to adapt to climate change as companies identify new

BUILDING CLIMATE CAPACITY: TEN YEARS OF PROGRESS ON GHG MANAGEMENT

Global business leaders, many of whom 10 years ago were disengaged from climate change issues, have made significant efforts to assess and reduce their GHG emissions. Companies have taken proactive steps to measure, manage and report their emissions to meet commitments to environmental sustainability, as well as in anticipation of more stringent emissions regulations and in response to growing stakeholder expectations.

In 2001, WRI and the World Business Council for Sustainable Development published the first edition of a corporate GHG accounting and reporting standard — the result of a stakeholder process to establish common standards and protocols for measuring and reporting GHG emissions. In 2003, the Carbon Disclosure Project (CDP) began surveying companies, asking them to self-report on progress they have made in GHG management and emissions reductions. Initially, about half of the world’s 500 largest companies responded to the survey. By 2010, an impressive 82 percent of Global 500 companies reported to CDP. CDP subsequently identified 48 Global 500 companies as “Carbon Performance Leaders,” and many are now taking advantage of new business opportunities driven by demand for low-carbon technologies. The CDP survey and reporting platform has expanded in recent years to collect information on supply chain emissions, companies in emerging economies, and water resource risks.

(Source: PricewaterhouseCoopers, 2010. Carbon Disclosure Project 2010, Global 500 Report.)

It is essential that a comparable level of progress and ingenuity for corporate adaptation measures be achieved within the next several years. General experiences building comprehensive mitigation strategies may allow companies to make even faster progress as they begin to develop adaptation strategies for climate change impacts.

Notes:

The CDP Carbon Performance Leadership Index (CPLI) includes all the companies in the Global 500 that made their CDP responses public and achieved a Carbon Performance Score in Band A. Companies in this band excel for overall performance — relative to those in other bands — indicating both higher degrees of maturity in their climate change initiatives and achievement of their objectives.

market risks and opportunities, navigate changing regulatory landscapes, and face increasingly significant costs.^{71c}

Building resilience within operations and the supply chain

Companies will need to assess how vulnerability to climate change impacts their own operations, and to develop different types of adaptation strategies for different types of risks accordingly — whether they represent an extension of existing conditions (for example, more extreme drought in drought-prone areas) or brand-new threats (for example, flooding due to rising sea levels). A high level of uncertainty regarding climate impacts and time frames can make the business case for action difficult to justify to internal and external stakeholders, such as employees, investors and consumers.⁷² Companies face difficulties dealing with information about large-scale, longer-term trends and incorporating this information into shorter-term financial planning models. This highlights a need for site-specific, busi-

ness sector-specific information about climate impacts.⁷³ Companies that are taking action typically focus on resource constraints already being felt — for example, water scarcity — and are thinking about the implications for operations and supply chains.⁷⁴

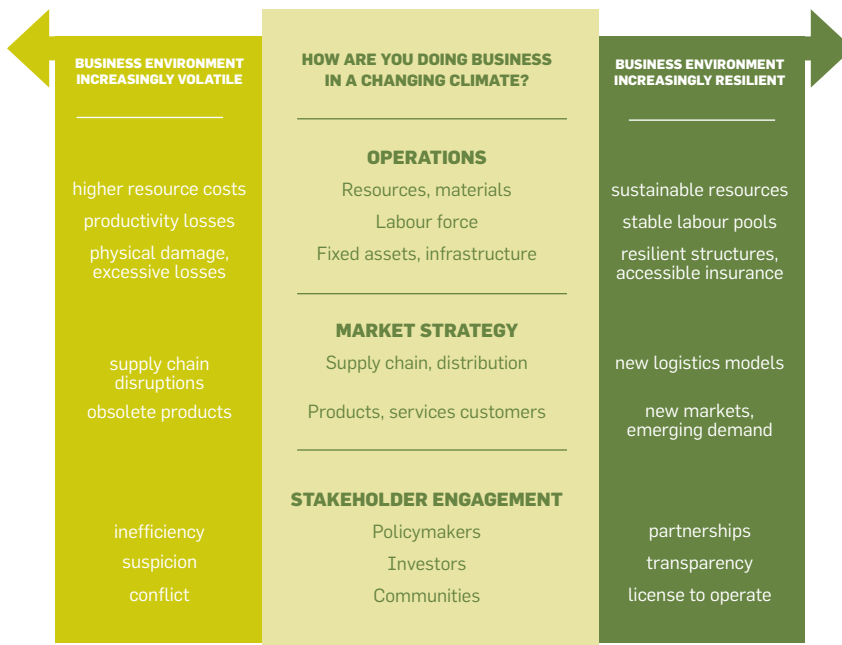
Uncertainty about long-term climate change impacts need not prevent companies from taking action. Many actions that companies can take based on their climate change planning process — improved natural resource management, for example — will benefit the company and climate-vulnerable communities and ecosystems regardless of climate impacts.⁷⁵ In the field of climate change, such mutually beneficial actions are often called “low-regret”⁷⁶ adaptation measures.

To build adaptive capacity and resilience, companies can ensure that new buildings, or assets and infrastructure installations, do not contribute to climate vulnerability in the surrounding area. They can support research on climate impacts and disseminate information and tools to help members of their supply chain — particularly the small-scale producers — manage risk. They can facilitate supply chain members’ access to information, equipment and technology that helps them withstand climate shocks. If companies create shared value⁷⁷ by sourcing from small and medium-sized enterprises, thus creating local jobs, the community will have a stronger overall economic base and be more resilient to crises.

Developing new markets and deploying new products and services

Numerous reports have highlighted the potential for “green-collar” jobs — jobs that seek to reduce harmful GHG pollution, such as those in the clean energy and building industries. Much less attention has been given to jobs that also build resilience to the existing and inevitable impacts of climate change. By developing new products and services that address these pressing adaptation needs, the private sector can create business value while helping communities to adapt. Building preparedness for climate change through investments in adaptation can incentivize new and expanded economic activity, supporting both new and existing green jobs in key sectors. Fostering economic growth in a manner that simultaneously creates value for communities through meeting needs for goods and services is central to creating a resilient green economy.

FIGURE 4. CLIMATE ADAPTATION AND CORPORATE STRATEGY: COST OR OPPORTUNITY?



Proactive companies can develop strategies to address climate change risks in their operations and supply chains, as well as strategies to capture new market opportunities and engage customers and communities to meet needs amid changing climate conditions.

An analysis conducted for Oxfam using United States Bureau of Labor Statistics industry data identified approximately 2 million jobs in the US alone across seven economic sectors that contribute to building climate resilience in the US and abroad,⁷⁸ including in developing countries. These sectors are: agriculture, climate change information and consulting, coastal and natural resource management, disaster preparedness and response, insurance, water management, and health.⁷⁹ If private and public sector actors around the world commit to taking action on climate change adaptation, rapid growth in these sectors is likely.

There are a growing number of real-world cases of companies expanding their businesses and creating jobs — at various skill levels and in diverse sectors — while partnering with vulnerable communities to build their resilience. Examples of affordable, adaptation-relevant technologies and services that are being developed and deployed include mobile water treatment plants and water filtration kiosks; drip (or precision) irrigation systems; text message-based flood warning systems; and weather-indexed insurance for crops.⁸⁰

Engaging communities, consumers and other stakeholders to build competitiveness and resilience

As companies begin to take action to increase their climate resilience, it is crucial to do so in a manner that takes into account their interdependence with the communities in which they operate. A thriving business requires “a stable and productive workforce, reliable infrastructure for energy delivery, and adequate networks for the transport of goods and raw materials to market. Healthy and functioning communities near business operations and suppliers are critical to the well-being of employees and, by association, the ability of facilities and supply chains to operate. It is imperative therefore that surrounding communities also be able to withstand severe weather events and recover quickly in their aftermath, as well as adapt to physical effects and long-term impacts such as sea-level rise.”⁸¹ New strategic models will be needed to address resource constraints, or regional instability,⁸² in a world where finding multiple suppliers for certain commodities is increasingly difficult, and where relocating proves more costly and controversial. Otherwise businesses face many additional

AVOIDING “MALADAPTATION” RISKS

Failing to take community needs into account can unintentionally cause “maladaptation,” as noted in the first chapter of this report. This introduces reputational risks for a company.

(Source: United Kingdom Department for International Development, 2010. The Private Sector in Adaptation: The Case for Action.)

For example, if a company depends on water availability and takes a reactive approach to adaptation, it will try to procure future water rights in water-scarce regions where it has water dependent operations. This would be detrimental to the communities in those localities, and could result in sociopolitical tension and damage the company's brand, even if it is not the major user of water. If, on the other hand, the same company planned for climate change adaptation strategically, it could invest now in more cost-effective, integrated water management — in conjunction with the community — in advance of climate change impacts, and thus increase the chances for the long-term vitality of the community and the company's installations.

vulnerabilities, including potential resource conflicts, reputational damage and loss of their social licence to operate, decreased health quality and productivity of workers, and disruptions to operations and supply chains (due to climatic and societal factors).⁸³

From a practical standpoint, companies can protect their operations and markets (especially in regions vulnerable to climate impacts) by encouraging adaptation efforts and increasing climate resilience in communities in which they operate, and from which they hire staff, source supplies and sell goods and services.⁸⁴ Both risk management and business development should incorporate the adaptation needs of local communities.⁸⁵ Strategic climate change adaptation investments can increase a company's and a community's capacity to respond to climate change obstacles and opportunities.⁸⁶ Companies can partner with local communities to conserve natural resources on which they both depend. They can also work with local governments, civil society and citizens to design climate-resilient development and infrastructure plans and to prepare for emergencies. Proactive, positive relationships with the full range of local private and public sector actors — including entrepreneurs, civil society groups, citizens and local government officials — form a strong foundation for effective corporate engagement on climate change adaptation.

Insights from Caring for Climate Companies

“The most difficult quantitative assessments are related to agriculture, particularly on smallholder farms, and particularly in developing economies. Ironically, this poses the greatest opportunity for our business, for climate mitigation, and for helping the communities we serve adapt.”

— *Caring for Climate corporate signatory from the consumer-goods sector*

Experiences among Caring for Climate corporate signatories offer several useful insights, but perhaps the most important one is that though many companies have well-established strategies for reducing greenhouse gas emissions, relatively few have comprehensively tackled the challenge of adapting to changing climate conditions. Best practices are still emerging, and examples from the Caring for Climate companies are described in this chapter (and in Annex B).

Companies can focus on several aspects of adaptation, including: building internal awareness about climate adaptation and how it differs from mitigation; incorporating climate impact exposure into existing risk management systems; building business value by providing climate-resilient goods and services; and finding mutual benefit in helping communities, customers and suppliers adapt to the impacts of climate change.

The following discussion highlights challenges companies are encountering, as well as examples of emerging best practices.

Survey Insight No. 1: There is a strong need to understand “adaptation” in the corporate context.

There is not yet widespread understanding among Caring for Climate companies of what climate adaptation is and what it means for them, their suppliers or the markets they serve. Many companies do recognize certain climate risks — particularly related to energy and water — but other risks and opportunities have yet to be fully explored and interpreted in business terms. Those companies that have built adaptation strategies often develop them in parallel to mitigation options, understanding that some opportunities can have dual benefits.

Although uncertainty does not justify inaction,⁸⁷ the uncertainties about the magnitude and potential timescale of climate change impacts make it difficult for many companies to effectively tackle adaptation on their own. For example, most businesses plan in the relative short-term, whereas some climate change impacts are expected to occur over long time-horizons. As one company from

the chemicals sector observed, the speculative nature of long-term climate change makes a strategic business response difficult. Sometimes the highest priority components of an adaptation strategy can also be the most challenging to assess and manage.

Some companies are actively seeking to better understand these uncertainties and develop appropriate strategic responses. In order to remain competitive, companies will need to incorporate climate change adaptation priorities into their business strategies in a way that considers a range of possible impacts on the vulnerability of both their own operations and the communities in which they operate. This involves not only monitoring changing climate impacts, but also creating flexible and iterative adaptation plans that can be updated as necessary. The following are a few examples of emerging best practices, drawn from responses to the Caring for Climate survey.

Emerging best practices among Caring for Climate companies

- *Communicating adaptation imperatives as core business priorities.* For example, at one global beverage company, “climate adaptation” translates into “water security” priorities. Since water is a key input in this company’s products, the translation links adaptation directly to the business implications of water scarcity and enables an integrated strategic business response.
- *Recognizing diverse climate impacts on their operations, labour force, customers, suppliers and host communities.* For example, a mining and metals company reports that climate change impacts on communities where it operates also directly impact the company itself, particularly with respect to the health and availability of their local labour force. Some companies that responded to the survey, including those outside the insurance and financial sector, are even starting to quantify climate risks and assessing them in terms of financial loss and reputational damage.
- *Integrating adaptation needs into core business planning processes.* Some companies use ex-

isting risk management frameworks as a first step for institutionalizing adaptation priorities for their operations, while others are focused on product development, supply chain management, and new market strategies. For example, an electric power sector company conducts climate impact modelling and assessments of how those impacts affect their entire business value chain. This helps to inform a comprehensive response.

Survey Insight No. 2: New risks and opportunities to navigate

Adaptation to a changing climate is expected to introduce both economic risks and opportunities. Caring for Climate signatories agree. Fifty-six percent of companies surveyed see accessing new markets for climate adaptation-related products and services as an opportunity of “high” or “very high” importance to their company. Few companies, however, have thus far been able to design comprehensive adaptation goals with corresponding business indicators to track economic performance and progress toward those goals. While some companies understand the potential risks that climate change impacts may have for their operations, few companies have explored how consumer needs may change and what the corresponding business implications — and possible missed opportunities — may be of shifting demands and preferences. Similarly, companies can easily overlook risks related to maladaptation if they do not recognize community and customer needs and impacts.

Emerging best practices among Caring for Climate companies

- *Identifying new risks or new market opportunities relating impacts of climate change.* Companies are observing and anticipating specific challenges, such as floods or droughts, in certain regions or sectors. The insurance industry, as mentioned earlier, is taking proactive measures to prepare for climate risks. Some companies are seeing climate risks upstream among their raw-material suppliers and taking steps to increase resilience in their supply chains. Some companies are also identifying new market opportunities with water-, energy- and resource-efficient products. However, few companies (only 31 percent of Caring for Climate companies surveyed) have insti-

tuted formal processes for evaluating and developing solutions for customers facing changing climate conditions.

- *Developing business strategies with mutual benefits to the company and community resilience.* In some cases, companies are anticipating and preparing for water scarcity or flooding and responding with strategies that also help communities adapt to these conditions. In other cases, companies are protecting against rising food prices (and building competitive advantages) by helping suppliers and communities adapt agricultural production to new climate conditions.⁸⁸

Survey Insight No. 3: Opportunities and challenges in engaging key people and partners

Businesses must overcome some key constraints to designing and implementing comprehensive adaptation measures. A primary challenge is often limited awareness of the need to adapt, which in turn limits interest and engagement as well as external incentives for action.⁸⁹

The survey of Caring for Climate signatories indicated that levels of awareness about climate change impacts varied within organizations. Reports have suggested that many companies (and a majority of key decision-makers within those companies) consider climate change to be a strategically important issue, but they often do not translate this awareness into concrete action. Climate change impacts may not be fully considered or integrated into corporate strategies.⁹⁰ As one financial services company noted, it has been very difficult — especially amid the global financial turmoil — to prioritize the development and implementation of new climate adaptation strategies. The Caring for Climate companies surveyed cite a number of important steps to pursue, including engaging and educating their employees, integrating their adaptation strategy into core business processes, building capacity and resources, and working with their supply chain partners.

Limited engagement among other audiences can also be a barrier to effective adaptation strategies. Investors are expressing interest in corporate adaptation but are not always in the communication loop. Middle managers and subsidiaries, as well as suppliers and customers, are facing direct climate impacts but are often unengaged in corporate climate adaptation

strategies. Partnerships with communities and civil society are an important element of effective adaptation, but only half of the companies that responded to the Caring for Climate survey reported that they have recognized the possible social consequences of their adaptation strategies.

Various obstacles prevent these important communications. As with approaches to climate mitigation, engaging a large number of suppliers can be challenging, and many companies have few personnel allocated specifically to climate change issues. Similarly, companies can have difficulty finding the capacity to communicate with the wide variety of audiences that are interested in the companies' actions.

Emerging best practices among Caring for Climate companies

- *Engaging multiple audiences with climate change communication strategies.* Some companies are finding ways to communicate with multiple interested stakeholders, including governments, investors and customers. Companies are primarily using existing communication channels, such as sustainability reports, stakeholder dialogues and civil society partnerships, to share information about climate change strategies.

In general, there are limited examples of companies proactively engaging stakeholders as partners in climate adaptation strategies. It represents an area where there are many opportunities to find valuable partners.⁹¹

Measures for Practical Business Action: Enabling Internal Champions

As the previous section notes, companies face new strategic challenges in a changing climate. As markets and communities adapt to climate change, they can also help the transition to a green economy where innovative companies can stake out competitive advantage in determining ways to meet emerging community needs. Companies should be assessing adaptation needs for their internal operations and their interactions with the communities in which they operate. The physical, social and economic impacts of climate change are of immediate commercial concern.⁹²

Internal champions will be needed to develop and communicate adaptation risks and opportunities. Champions can come from anywhere within an organization, including environment and sustainability departments or business units and executive leadership. They must lead and inspire efforts to identify and address new uncertainties, engaging a variety of stakeholders inside and outside the company. In order to be successful in integrating adaptation priorities across all areas of business operations and strategy, they also must have access to executive decision-making processes. Their common objective: finding the means and the partners to build climate resilience into their companies and in support of the communities in which they operate or sell goods and services. The recommendations offered in this section are not intended to be comprehensive or prescriptive, but are offered to help guide these internal champions.

Companies across all sectors and markets — even today’s leaders on climate change issues — face a steep learning curve regarding adaptation, but important lessons can be drawn from the emerging best practices discussed in the previous section. Those insights can help champions develop answers to three primary questions:

- **What does climate resilience mean for your company?**
- **What will position your company to navigate risks and lead markets in a warming world?**
- **How will your company engage partners to minimize risks and seize opportunities?**

What does climate resilience mean for your company?

PRIORITY: Understand key differences and alignments between mitigation and adaptation risks and opportunities.

Connect climate adaptation needs to your company and corporate culture, building on existing efforts to mitigate GHG emissions. As with any new factor impacting your business, there is a need to internalize and understand how climate change will directly and indirectly affect your company. To build awareness and educate colleagues, communicate adaptation terminology in more familiar terms (for example, market trend analysis). Finding what resonates with your corporate culture will be critical. If your corporate culture is characterized by engineering perspectives, for example, you might choose to communicate adaptation in terms of fundamental problem and solution decisions. Or if you are reaching out to finance-oriented colleagues, you may wish to highlight quantitative impacts to the company’s bottom line.

There may be opportunities to leverage existing initiatives that are aimed at reducing your company’s impact on the climate. Many internal and external initiatives related to mitigation of GHG emissions may be opportunities to incorporate adaptation strategies. Companies may find it useful, for example, to utilize existing cross-functional climate strategy working groups. These groups draw on individuals with varying responsibilities, including operations, finance, marketing, business unit management, research and development, and government affairs, among others. Such a group can understand climate change impacts from a variety of perspectives and develop options for communicating “adaptation” in terms the company understands and can support.

If your company already assesses and reports GHG emissions regularly for mitigation purposes, you can build in complementary adaptation risk and opportunity reviews. This can help you identify potential points of conflict among climate mitigation and

adaptation priorities, as well as opportunities to simultaneously reduce emissions and enhance resilience (see text box for examples of resources and tools).

PRIORITY: Integrate climate change adaptation into core strategic business planning and management processes (such as operations, supply chain management, and market strategies).

Identify where your company has existing strategic management frameworks that can help build climate change resilience, and incorporate climate adaptation risks and opportunities into existing management frameworks. Depending on your sector and company, the appropriate strategy to respond to climate adaptation risks and opportunities can take many different forms. Corporate climate strategies can seek to secure a strong level of commitment from executive management to ensure they become systemic and fully integrated in all aspects of business operations. You can encourage this by highlighting business implications for climate-driven changes across various resource inputs, such as water, energy and timber. If your operations, supply chain or customers depend on ecosystems, completing an ecosystem service review, for example, can help identify the risks and opportunities associated with climate-driven ecosystem change.⁹³

In terms of other tools and frameworks, your company can also assess general strategic climate risks and impacts that incorporate climate change considerations into existing management approaches, such as Enterprise Risk Management (ERM) frameworks, an Environmental Management System (EMS), or supply chain and logistics management frameworks. For companies that utilize scenario planning as part of their business strategy, climate change vulnerabilities can be factored into the scenarios explored, and the adaptation lessons learned from these exercises can be built into strategic planning.

Identify where a relatively weak understanding or critical uncertainties about climate change adaptation risks and opportunities exist, and reach out to partners who can assist. Various tools and resources can help highlight priority areas for your company's climate change strategy and clarify areas of uncertainty. These provide a useful starting point for developing an adaptation strategy.

Understanding the relative strengths and weaknesses of your knowledge can help define priorities or pinpoint areas where expert input would be beneficial to improve knowledge and help manage uncertainties. These may include issue area experts, universities, non-governmental organizations, industry groups and others. Your company can leverage these existing knowledge bases and peer and industry expertise to define and progress toward your adaptation strategies.

What will position your company to navigate risks and lead markets in a warming world?

PRIORITY: Align business goals and performance indicators to reflect climate-resilient priorities, risks and opportunities.

Review current goals and indicators to identify opportunities to integrate climate adaptation priorities. Some existing metrics, such as operational goals, can help your company enhance climate resilience with gains in resource conservation, efficiency, diversification, reputational benefits and sustainable sourcing. Enterprise goals, such as revenue targets and market share indicators, can improve your company's competitive positioning in markets for climate-resilient goods and services. Reviewing these goals with a view to creating climate-resilient operations, markets and communities may suggest opportunities to integrate adaptation priorities into existing goals or develop new complementary goals. Companies may also wish to develop "stress tests" — assessments of how business operations and strategies would work under certain conditions — to evaluate exposure to climate impacts and opportunities to meet new community needs.

PRIORITY: Build a portfolio of climate-resilient goods and services.

Identify market needs and opportunities to build business value while helping customers and communities adapt. Climate change can have far-reaching impacts on consumers and communities. Periodic assessments and research on buyers' needs can reveal new business opportunities. For example, climate resilience can be built into a strategic process for meeting the needs of vulnerable communities and the emerging market demands from at-risk consumers.

RESOURCES FOR CORPORATE CLIMATE CHANGE ADAPTATION STRATEGIES

Understanding where and how climate shifts can directly and indirectly affect your company can reveal important strategic insights. Tools, resources and internal and external experts can help complete comprehensive risk assessments, as well as innovation and opportunities assessments. Companies can engage nonprofits, government and intergovernmental agencies, academics and consultants, among others, to access this expertise. Below are some examples of resources that may be helpful:

Tools

United Kingdom Climate Impacts Programme (www.ukcip.org.uk/business/) offers a number of methodologies intended to help organizations understand and prepare for potential climate change impacts.

Climate and Development Knowledge Network (www.cdkn.org) combines research, advisory services and knowledge management around climate change adaptation and development issues.

Corporate Ecosystem Services Review (www.wri.org/project/ecosystem-services-review) helps corporate managers proactively develop strategies for managing business risks and opportunities arising from their company's dependence and impact on ecosystems.

Publications

Adapting to Climate Change: A Guide for Food, Beverage and Agriculture Companies. Business for Social Responsibility: 2011. www.bsr.org

World Resources Report: Key Question Eight. "How can national-level governments learn from the private sector and encourage investment and decision making to promote the public good in a changing climate?" World Resources Institute, UNEP, UNDP, World Bank: 2011. www.worldresourcesreport.org

A Fresh Look at the Green Economy. Oxfam America: 2010. www.oxfamamerica.org

Climate Risks and Business: Practical Methods for Assessing Risk. International Finance Corporation: 2010. www.ifc.org

Business Leadership on Climate Change Adaptation. PricewaterhouseCoopers: 2010. www.pwc.co.uk

The Business of Adaptation (briefing paper). AccountAbility and International Institute for Environment and Development: 2009. www.iied.org

Breaking Ground: Engaging Communities in Extractive and Infrastructure Projects. World Resources Institute: 2009. www.wri.org

Making Climate Your Business: Private Sector Adaptation in Southeast Asia. World Resources Institute, SIDA, and CSR Asia: 2009. www.wri.org

The New Adaptation Marketplace. Oxfam America: 2009. www.oxfamamerica.org

Shaping Climate Resilient Development: a framework for decision making. Economics of Climate Adaptation Working Group: 2009. www.mckinsey.com

Adaptation: An Issue Brief for Business. World Business Council for Sustainable Development: 2008. www.wbcsd.org

Adapting to Climate Change: A Business Approach. Pew Center on Global Climate Change: 2008. www.pewclimate.org

Climate Changes Your Business. KPMG: 2008. www.kpmg.com

Scenarios: An Explorer's Guide. Shell International: 2008. www.shell.com

Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets. International Finance Corporation: 2007. www.ifc.org

Companies that can meet these needs will build new revenue streams while building community resilience to climate change. Some markets, such as those for water-efficient technologies, are likely to grow as communities confront water scarcity challenges. There are also other basic community needs, such as access to sanitation, transportation or even education, which can represent new opportunities to create goods and services tailored to address these needs in the context of changing climate conditions. In addition, as consumer demand in developed markets shifts toward more climate-safe goods and services, companies that are prepared to meet this demand will capture more of the market share.

Insert climate change criteria into standard product design processes. Companies that design products and services without an eye on tomorrow's adaptation needs can miss important new opportunities. Your company may face the risk of becoming obsolete if other innovators step in with solutions to meet customer needs in a changing climate. By incorporating climate adaptation perspectives early in research and development and product design processes, your company can help ensure future goods and services meet customer needs.

How will your company engage partners to minimize risks and seize opportunities?

PRIORITY: Develop climate information platforms and communication channels.

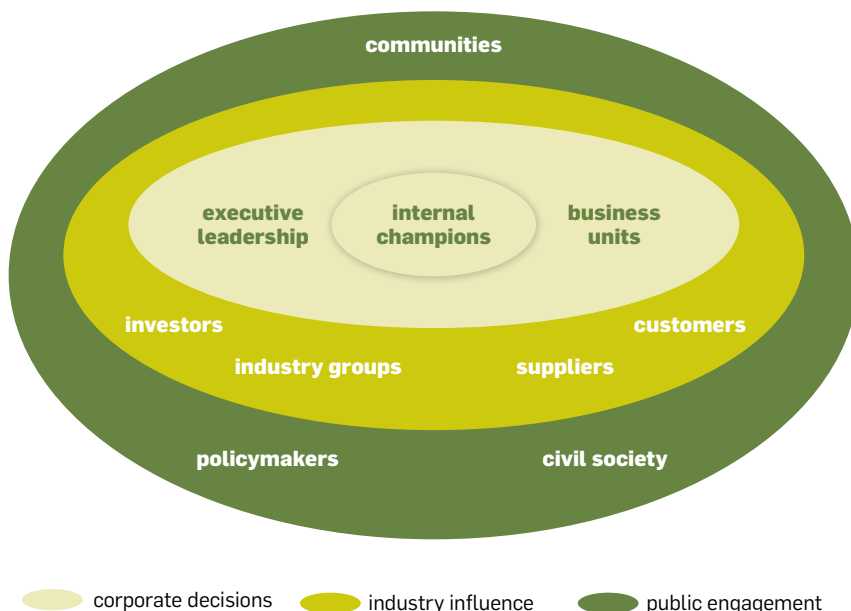
Provide regular updates and accessible information on company efforts. Transparency and accountability are essential components of any corporate strategy. Caring for Climate signatories are encouraged to report on progress made on their climate strategy on an annual basis in their Communication on Progress. It can be important to provide access to information on climate adaptation strategies for multiple stakeholders so they can understand how your company — and your markets and connections with vulnerable communities — can be best prepared to manage climate change impacts. Proactively providing information to local communities, including those most vulnerable to climate change impacts, may help your company build support for climate strategies and solutions.

Utilize new and existing communication channels to share and gather information about evolving climate impacts. Companies can use existing compliance and outreach activities, such as financial and sustainability reports, to share information on climate strategies. A business can also leverage already existing business networks — such as its board of directors, or industry group coalitions — to coordinate and share information and responsibilities related to corporate adaptation measures. Web-based platforms and other innovative communication strategies can help broaden the audiences engaged in adaptation strategies and keep your company aligned with evolving trends and needs. These platforms can also help reach vulnerable communities that may have access to communication tools, such as mobile networks, helping your company fill information gaps about customer needs.

PRIORITY: Actively engage, draw insights from, and encourage action among internal and external partners.

Internal champions often have to build their own capacity to understand climate impacts, while also engaging internal and external stakeholders. Figure 5 outlines some common, critical categories of partners in climate change adaptation efforts.

FIGURE 5. LAYERS OF PARTNERSHIPS FOR RESILIENCE



Inform and advance corporate decisions:

Sustainability or environmental health and safety personnel are usually the most engaged in corporate climate change strategies and are likely to be a receptive audience, if not the champions within the organization. Other audiences, however, need to be engaged to help lead or support your efforts to mainstream resilience within your company. Developing adaptation messages that make sense within the context of your company will help engage some of these key decision-makers.

HOW TO ENGAGE...

...executives and directors: build and highlight the business case for your company's resilience strategy. Describe the risks and opportunities with quantitative information or illustrative market examples where possible. Note growing interests and opportunities to collaborate with other industries or stakeholders, such as the insurance and financial industries.

...business units, middle managers and subsidiaries: communicate adaptation risks and opportunities in terms most relevant to their day-to-day priorities. Utilize goals and key performance indicators where possible.

Leverage industry influence:

Stakeholders in your sector, whether they are investors, suppliers or even competitors, can also help shape and achieve your company's climate adaptation strategies. Some of these audiences (particularly investors) are demanding more information on your company's response to climate change impacts. Others are critical sources of information and support.

HOW TO ENGAGE...

...investors: improve reporting processes to proactively engage investors with information and updates on climate adaptation progress and challenges. One of the most active voices calling for information about adaptation strategies, investors are likely to demand even more information as climate change impacts are felt more strongly over the coming years. Existing platforms, such as periodic financial reports or Carbon Disclosure Project surveys, are opportunities to highlight adaptation strategies.

...industry groups and best practice

networks: highlight key obstacles, shared interests and experiences to create tools, case studies and partnerships that can enhance your company's climate adaptation strategy. Businesses in the same sector will often confront similar challenges in building climate resilience. Your company may find support or collaboration opportunities with industry partners, for example, to engage suppliers or develop sector-specific adaptation performance metrics. There may be opportunities to share insights and build resilience across sectors through business networking and sharing experiences and best practices in adaptation.

...suppliers: approach with technical assistance and collaborative opportunities, highlighting shared interests in building resilience. Use existing initiatives⁹⁴ (for example, supplier meetings, training and toolkits) to help communicate and encourage adaptation efforts within the supply chain. More active partnerships with large or particularly vulnerable suppliers can also open new opportunities for joint strategies to manage climate impact risks in supply chains. If your company depends on agricultural supplies, for example, you can work to limit future price shocks and resource scarcity by proactively engaging vulnerable producers and helping them adapt to climate change.

...customers: understand interests and impacts among key customer segments; communicate "adaptation" in terms that provide direct links to buyers' needs. Customers may not express interest in "climate-resilient" products, but as they confront a changing climate there will be growing demand for goods and services designed to help them adapt to such conditions. Companies can engage communities through dialogues, surveys and other market studies to find the means of providing locally appropriate climate solutions in vulnerable countries. Even companies dealing primarily in business-to-business markets can find opportunities to meet climate adaptation needs among their customers and the downstream markets they serve.

Proactively engage public partners:

Decision-makers outside your industry will also have influence on your climate adaptation strategies. Civil society groups and governments that are advancing adaptation

ENGAGING WITH CIVIL SOCIETY

One important approach for integrating private sector growth with the adaptation needs of companies and communities is forming partnerships with civil society entities. Key organizations to partner with might include research institutions or non-governmental organizations with expertise in a particular area — such as ecosystems services, or emerging market adaptation needs — or even local colleges and universities that are educating people from the communities your company is interested in serving. Companies can also engage with local, state, national and international bodies (such as city planning agencies, or UNEP) on a variety of levels, including sponsoring on-the-ground research that can benefit both people and business, helping streamline local planning and zoning processes, or supporting the development of international climate policies that incentivize low-carbon growth and adaptation-focused products and services.

policies can be valuable partners. Together, private and public sector groups can analyze and provide information about climate risks, create adaptation plans for their jurisdictions, and provide public resources to meet the adaptation needs of vulnerable communities. Climate-vulnerable communities and civil society groups can provide first-hand information about local adaptation needs and help ensure that corporate adaptation efforts contribute to, rather than undermine, community resilience.

HOW TO ENGAGE...

...**policy makers**: inform and encourage policy frameworks that build resilience in local markets; highlight information gaps and other obstacles that public policy can help to address. Engaging policy makers, either directly or through industry coalitions, can help communicate the need for common frameworks and broader support for adaptation measures. Your company can be pivotal in highlighting the economic risks and opportunities you observe in your markets. Informing governments and dialogues, such as Rio+20 and national Low Emissions Development Strategies, can help create effective policy and financing platforms for climate-resilient economies (see Chapter 3). However, adaptation priorities will be highly localized,

and companies may also find it beneficial to engage at the municipal, state or provincial, and national levels. Urgent action is needed to create effective public-private partnerships and lay the foundation for an adaptation infrastructure that can enable systemic, organized adaptation efforts.⁹⁵

...**communities**: identify the social and public impact of your company's climate adaptation strategy; understand where your company's efforts can help build local resilience and where your company's actions may conflict with local adaptation needs. Inviting community participation and input through stakeholder dialogues will help your company gain new insights about local needs while building positive relationships and resilient local labour markets. Community engagement will also help mitigate the risk of developing climate change responses in conflict with or directly harmful to local communities' interests or livelihoods. Developing a new model of engagement, one that challenges and goes beyond the traditional ways that businesses have worked with communities in the past, can help ensure climate-compatible outcomes that create shared value.

...**civil society**: build relationships with organizations, including universities and research institutions, with insights for the public good and representing local perspectives. Strategic relationships with groups that are doing research or advocating on behalf of public interests are another means of aligning corporate climate change adaptation goals with local development priorities. It can be important to understand early (before conflicts arise) where your company and civil society have either mutual interests or potential disagreements in how to adapt in a changing climate.

Conclusion

Designing an effective corporate adaptation response requires innovative, holistic approaches. Business-as-usual approaches are insufficient. Companies typically develop operational and investment strategies that respond to perceived near-term consumer and business needs and that are projected to accrue returns on investment in the short term. Meanwhile, climate change impacts are expected over the long term, and as previously discussed, they can impact every facet of a business and the communities on which they rely.

Companies can develop new approaches to connect today's strategies with tomorrow's

markets. Companies that identify opportunities to enhance resilience in their operations can also develop new strategies for products and services that meet needs in markets adapting to a changing climate. They can engage actors across the company such as executives, product developers, financial decision-makers and business unit managers. Companies that develop strong relationships with customers and the local communities in which they operate can better respond to changing consumer needs and become more effective partners in building resilient communities.

COMPANY CASE STUDY: SEKEM

SEKEM Holdings Group — an Egyptian company offering products such as pharmaceuticals, organic foods and textiles — is incorporating adaptation priorities into a comprehensive sustainability strategy in order to reduce its vulnerability to climate change risks, while also working to provide products and services that increase resilience in local communities.

SEKEM has identified climate change adaptation as a key long-term business strategy, and has developed adaptation-oriented quality standards for products, services and solutions that also meet consumers' current and emerging needs. The company partners with farmers, producers, vendors and consumers to market and distribute products in the context of a changing climate. SEKEM has identified practical methods of incorporating adaptation into its enterprise management model, including employing organic methods of agricultural production and updating its water management practices with more efficient drip irrigation methods. Such methods help integrate climate change mitigation and adaptation priorities into core business practices, with important benefits for enhancing efficiency as well as increasing institutional climate change resilience.

SEKEM is integrating climate change risks and opportunities into each of its business units and key decision-making processes, with particular emphasis on addressing energy, food and water security issues. Its Sustainability Unit makes recommendations to key decision-makers across all business units and levels of management. In order to track the progress of climate-related strategies, SEKEM devised a set of indicators related to adaptation priorities and communicates those indicators through its Sustainability Balanced Scorecard system. The Scorecard tracks adaptation-focused

performance indicators, and is an effective way of tracking progress through comparisons to previous assessments and communicating progress (as well as areas for improvement) to internal and external stakeholders.

For its internal stakeholders, SEKEM discusses adaptation goals and progress indicators with groups of employees (most notably its Sustainability Units) in each SEKEM subsidiary. In addition, SEKEM's management team discusses and evaluates its annual sustainability report and invites the company's shareholders to quarterly board meetings to discuss issues relevant to sustainability, climate change and adaptation.

For its external stakeholders, SEKEM engages in strategic cooperation with key partners and consumers, and regularly discusses climate change goals and metrics with various media platforms. The company has established an extensive network of communications nationally and internationally — through proactive engagements on conferences, workshops, trade shows and other events — in order to ensure that climate change issues are highlighted on the national policy agenda.

SEKEM has also recognized that engaging with local communities is a central adaptation priority, and in conjunction with the SEKEM Development Foundation (which maintains a variety of programmes in social development, research, health care, education and vocational training) has developed various methods of communication and consultation with local stakeholders. For SEKEM, participation in these events and having consistent interactions with external partners are crucial to developing new ideas and methods for innovation.

**3. CATALYZING
STRATEGIC
PRIVATE SECTOR
ADAPTATION:
POLICY MEASURES
TO PROMOTE
EFFECTIVE
BUSINESS
INVESTMENT AND
ENGAGEMENT**

Introduction

Governments have a central role to play in catalyzing private sector provision of goods and services that support climate change adaptation and encourage climate-resilient business practices. Even those businesses, large and small, that already recognize the importance of adaptation face considerable obstacles — including information gaps, risk and uncertainty — that prevent them from adapting in ways that support sustainable development and long-term community resilience. Governments must take the lead to create an enabling environment for strategic private sector engagement. They can do this by sending strong signals to encourage businesses to take up the adaptation challenge.

The policy options presented in this chapter are designed to help government decision-makers at the national level — and in some cases, the subnational level — stimulate private sector investment in adaptation in ways that contribute to sustainable development and the green economy. A public sector focus on climate change adaptation within the broader framework of a green economy can help companies make important connections among long-term profitability, sustainable resource use and equitable development, and thus make required shifts in practices to support private sector and community vitality. As is the case for other green economy investments, climate change adaptation investments need to be catalyzed and incen-

tivized through targeted public commitment, expenditure, policies and regulations.⁹⁶ It is also hoped that this chapter will prove useful for participants in key intergovernmental processes — including members of the UN Secretary-General’s High-Level Panel on Global Sustainability and those involved in preparations for Rio+20 — as they develop blueprints for and facilitate international agreements on how to achieve green, resilient, equitable growth. While this chapter is focused on creating an enabling environment for private sector investment in adaptation, it may also provide policymakers with insights on challenges to stimulating green economic investment more broadly, as well as possible solutions.

This chapter provides an overview of the main adaptation-related barriers companies face that can be reasonably addressed through public policy. It describes the current policy environment for business engagement in adaptation, and then offers a range of policy measures — in the spirit of inspiring discussion and debate — that may prove effective in catalyzing private sector adaptation efforts for the public good. Policymakers at all levels must engage in in-depth consultation with the private sector and conduct further analysis to identify those policy instruments that will most effectively engage the private sector in building climate resilience and promoting sustainable economic development.

THIS CHAPTER HIGHLIGHTS POLICY MEASURES FOR GOVERNMENTS TO:

Build a foundation for private sector investments and action:	<ul style="list-style-type: none"> • Demonstrate policy and finance commitment to adaptation • Engage businesses as stakeholders in planning and implementation
Align public and private adaptation interests:	<ul style="list-style-type: none"> • Stimulate the market for adaptation through financial and risk reduction incentives • Develop policy and regulatory frameworks to guide corporate practices
Promote best practices and collaboration:	<ul style="list-style-type: none"> • Provide businesses with information and tools they need to make investments that support climate resilience in vulnerable communities • Consider new forms of public-private partnerships (PPPs) to tackle the most complex challenges to sustainable development and climate resilience

Barriers to Private Sector Engagement in Building Climate Resilience

In some cases, companies will respond to climate variability and weather extremes autonomously due to their need to manage risk, minimize costs and maximize profits. For example, companies will take action to reduce immediate, recognizable risks to their operations and supply chains. However, for a number of reasons, most businesses are unlikely to make investments with an eye toward increased medium-to-long-term climate resilience, particularly within vulnerable communities. It is worth noting that many of these barriers are not specific to action on climate change adaptation; they also represent challenges that companies face in addressing broader sustainability issues.

Information gaps. Many businesses — global and local, small and large — are just beginning to understand what climate change means for them, much less what it means for the communities linked to their operations and supply chains. Even if a company is aware of climate risks, it is difficult to integrate scientific information on long-term regional trends, aggregated at a high geographic level, into site-specific business decision-making in the short term.⁹⁷

Risk and uncertainty. Lack of information and the inherent uncertainty surrounding the nature, timing and variability of climate change impacts make it risky for companies to take action. Companies make investments that bear the greatest potential for return on those investments. Lacking solid information about the full scope of costs and benefits, companies may see climate change adaptation as a case of up-front financial outlays with uncertain payoff. In addition, insofar as adapting to climate change means a departure from business as usual and the implementation of new business models, new elements of risk are introduced that deter investment.

Short-term versus long-term time horizons. A related challenge is that many adaptation measures require investment now, but the benefits may not be realized until 20 or 30

years out. For many businesses — particularly smaller ones — short-term costs and impacts on cash flows may be more important considerations than long-term benefits.⁹⁸

Access to financing. Risk and uncertainty about climate impacts may hamper companies' ability to secure financing for adaptation investments that have a longer return horizon, or that involve pre-emptive risk management measures. Some of the most important adaptation investments must take place in vulnerable communities in developing countries, which may increase the perceived risk and make financing less affordable. Smaller-scale businesses, which already lack access to credit and collateral, may face particular challenges in securing financing for adaptation investments. Not only does climate change adaptation require companies to change how they do business, it requires banks and other financing institutions to rethink the criteria for a smart business loan or investment over the long term.

Private cost versus public benefit. A central challenge in trying to stimulate private sector adaptation investments that promote sustainable development (for example, investments in a healthy watershed, or a storm-resilient coastline) is that much of the benefit may accrue to other actors, including individuals and other firms, instead of rewarding only the party that made the investment. Companies do not yet have the tools to calculate the direct benefit they receive from operating in a more resilient community.

Undervaluing natural resource use and conservation. Ecosystem services are often referred to as the "life support systems" that enable all forms of economic activity,⁹⁹ but not all are accounted for within national economies and measures of a nation's wealth, nor accounted for by the private sector, even though this type of economic valuation information is becoming more prevalent and sophisticated. Companies are not accustomed to quantifying the contribution that ecosystems make to their businesses, or properly

accounting for the value or cost of preserving or degrading natural resources like rivers or mangrove forests as they make business decisions. This leads businesses to undervalue these resources and the ecosystem services they depend on and underinvest in their sustainable use, or extract and commodify natural capital for short-term economic gain that would have provided far greater public value if used more sustainably.

Policy and regulatory weaknesses. Private sector adaptation may be difficult if local-level regulations do not facilitate the implementation of projects designed to help people adapt, or if differing national policies across regions hamper replication of successful adaptation approaches from one country to another. Adaptation can also be hindered by policies that do not correctly allocate natural resources like water (a key input to many industrial processes) to ensure adequate access for all end-users, or do not incentivize companies to internalize the costs of their impacts on the environment. In the absence of appropriate policies and regulations governing resource use, companies may adapt to climate change by securing increasingly scarce resources for themselves, which directly contributes to local change vulnerability when communities also rely on these resources. More broadly, the quality of the overall investment environment will also affect adaptation. Private investment in adaptation will be limited in countries where companies are already facing significant operating constraints (for example, delays in licensing and registration, weak contract enforcement, lack of dispute resolution services, and murky regulations).

The latter half of this chapter offers public policy options geared toward addressing these challenges and gaps and creating an enabling environment for private sector contributions to long-term climate resilience.

Public policy is an essential tool for steering companies toward adopting adaptation strategies, and helping them to avoid maladaptation.

Climate Change Adaptation Policy and Business Engagement

THE IMPORTANCE OF PUBLIC POLICY

Eighty-two percent of Caring for Climate corporate signatories surveyed believe that public policy is of "high" or "very high" importance to their company's ability to adapt to climate change.

OUTCOME FROM CANCUN

The Conference of Parties "invites relevant multilateral, international, regional and national organizations, the public and private sectors, civil society, and other relevant stakeholders to undertake and support enhanced action on adaptation at all levels..."

Source: UNFCCC, 2010. The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on long-term Cooperative Action Under the Convention.

Caring for Climate corporate signatories recognize the importance of engaging with policymakers on the issue of climate change, and they are fully aware of the central role that public policy plays in fostering a supportive environment for climate change adaptation. The private sector is just beginning to engage in public policymaking and planning around the issue of adaptation, but such efforts will likely increase over time, since adaptation has become a clear priority at the international, national and, increasingly, local levels.

The international and national policy environment for adaptation

New policies to encourage and incentivize private sector investment in climate change adaptation and resilience must build upon existing and evolving policy frameworks to support adaptation in vulnerable countries, which form the broad context for private sector engagement.

Adaptation has emerged as a priority within international climate change dialogues, with emphasis on ensuring that the most vulnerable countries have the financial and technical resources they need to adapt and increase their resilience.¹⁰⁰ At the sixteenth meeting of the United Nations Framework Convention on Climate Change (UNFCCC) Conference of Parties (COP 16) in 2010 in Cancun, Mexico, the Parties (through the Outcome of the Work of the Ad Hoc Working Group on Long-Term Cooperative Action) reaffirmed that adaptation must be given the same priority as mitigation.¹⁰¹

As shown by the examples in Table 2, several multilateral and bilateral public financing mechanisms have been established to support adaptation in vulnerable countries. However, as noted in Chapter 1, current flows of adaptation financing fall far short of needs. Not only does this have a detrimental impact on communities' ability to manage risk and withstand climate impacts, it sends a weak signal to the private sector about the overall importance of adaptation.

At the national level, many developing countries have established plans and strategies to address climate change, and some

have started to integrate consideration of climate risks into their ongoing development and disaster risk reduction and risk management planning processes. Under the UNFCCC, nearly all of the Least Developed Country Parties have developed National Adaptation Programmes of Action (NAPAs) that analyze urgent, immediate climate risks and identify the most pressing adaptation needs.¹⁰² Some countries that have gone through decentralization processes have also begun to encourage or require local government bodies to integrate climate risks into local development and disaster risk reduction and management plans.¹⁰³ Several United Nations agencies, including UNEP and the United Nations Development Programme (UNDP), have provided technical assistance at the national and subnational levels for climate change and adaptation planning, and built developing countries' capacity to assess vulnerabilities, access adaptation funding, and implement adaptation measures.¹⁰⁴ National and local-level adaptation plans in developing countries provide a valuable starting point for discussions about how the private sector can best contribute to sustainable development through adaptation and resilience building.

Private sector engagement in adaptation policymaking and planning

The private sector has had a consistent and growing presence at UNFCCC sessions since the first Conference of Parties (COP) in 1995 in Berlin.¹⁰⁵ Private sector interests are aggregated and represented through numerous observer organizations, including the International Chamber of Commerce and World Business Council for Sustainable Development. Business organizations and associations also issue policy position papers and organize side meetings for their members during and around the COP proceedings. To date, businesses engagement at the UNFCCC has been primarily, but not exclusively, focused on issues related to mitigation (for example, agreements on reductions in GHG emissions, energy policy, technology transfer for low-carbon growth) and the overall international framework and financing for climate change, rather than on adaptation.¹⁰⁶

TABLE 2. EXAMPLES OF FUNDS FOR ADAPTATION

Name of Fund or Mechanism	Type	Administrative Body	Year Operational
Green Climate Fund	Multilateral	To be determined (established under the UNFCCC Cancun Outcome in late 2010)	To be determined
Least Developed Countries Fund	Multilateral	Global Environment Facility (GEF)	2002
Adaptation Fund	Multilateral	Adaptation Fund Board, with support from Global Environment Facility (GEF)	2009
Pilot Program for Climate Resilience	Multilateral	World Bank	2008
Global Climate Change Alliance	Multilateral	European Commission	2008
Hatoyama Initiative	Bilateral	Government of Japan	2008
International Climate Initiative	Bilateral	Government of Germany	2008
Indonesia Climate Change Trust Fund	Multilateral	Government of Indonesia	2010
Bangladesh Climate Change Resilience Fund	Multilateral	Government of Bangladesh	2010

Sources: *Climate Funds Update* (www.climatefundsupdate.org); *The Daily Star*, 2010. "Bangladesh gets \$110m climate fund."

This likely reflects the fact that while adaptation has recently emerged front and center in COP discussions, the private sector is only just now beginning to consider adaptation-related risks and opportunities and the associated policy implications.

Private sector engagement in NAPA development has been limited. The NAPA preparation guidelines recommend that national governments include the private sector as a key stakeholder in NAPA creation, review, education and awareness-raising, and implementation.¹⁰⁷ A 2010 review of the 45 existing NAPAs found at least one reference to the private sector in 38 of them,¹⁰⁸ which would seem promising. In practice, the participation and envisioned role of the private sector in NAPA consultation, formulation and implementation has been uneven. An evaluation by UNEP of their technical assistance efforts for NAPA preparation in 13 countries concluded, "While countries succeeded in gathering the main stakeholders around the NAPA objectives and process, the private sector continues to remain a secondary participant in projects of this type. Many countries would benefit from the development of a private-sector engagement strategy around adaptation and risk management."¹⁰⁹

If the private sector is expected to contribute to resilience-building and adaptation innovation in the countries that need it most, there needs to be increased business engagement in international and national-level adaptation

policymaking and planning. There are some good existing efforts that can be built on. However, new avenues must also be created.

PRODUCTIVE ENGAGEMENT ON ADAPTATION POLICY

Over the past several years, various businesses have raised their voices to shape US and international public policies related to climate change adaptation. Key partners in this endeavour include many members of Business for Innovative Climate & Energy Policy (BICEP), the United States Climate Action Partnership (USCAP), and other major companies and investors.

In the international arena, multiple members of USCAP, all BICEP members, and a dozen other major US companies signed a letter to President Obama at the global climate negotiations in Copenhagen in late 2009, calling for progress in the area of international climate finance. That letter helped prompt the breakthrough commitment by the United States and other developed countries on long-term finance to support both adaptation and mitigation in developing countries. More recently, in December 2010, 13 businesses signed a letter to President Obama calling on the US to demonstrate leadership in establishing a global Climate Fund at the international climate negotiations in Cancun. A Green Climate Fund was ultimately established in the Cancun decision text with support from the US.

In 2009 and 2010, a number of businesses participated in two high-level round tables organized by Oxfam in Washington, DC, which included Members of Congress, including those with jurisdiction over international climate change adaptation funding, and key Congressional staff. Both round tables featured new reports on adaptation and business, generated press articles on the subject, and engaged Members of Congress in the policy debate.

Source: *Oxfam*.

Fostering an Enabling Environment for Private Sector Adaptation: Policy Measures

There are a number of ways through which governments can create an enabling environment for private sector investment in adaptation, which can then complement crucial government-led, government-funded adaptation efforts. Some efforts to stimulate private sector contributions to adaptation must be developed and implemented through coordination and agreements at the international level. Engagement at the national and local levels, however, remains essential because adaptation challenges and solutions are specific to regions and subregions, and business barriers and opportunities are country-specific.

The public policy mechanisms outlined here are offered in response to the challenges companies face regarding climate change adaptation, as described at the beginning of this chapter. They bear high potential to help companies engage in smart, effective adaptation solutions, and will also help drive the transition to a green economy. This is new and exciting territory, and it will require both creativity and experimentation. To catalyze private sector adaptation, policymakers will need to:

- Build a foundation for private sector investments and action.
- Align public and private adaptation interests.
- Promote best practices and collaboration.

Build a foundation for private sector investments and action

PRIORITY: Demonstrate policy and finance commitment to adaptation.

Show long-term policy commitment. To secure private sector support, adaptation policy and implementation needs to remain a top policy priority within the UNFCCC process and other multilateral, bilateral and national-level processes, particularly as it relates to sustainable development. Strong public sector commitment to adaptation, in the form of public financing and planning, is a fundamental prerequisite to address the needs of vulnerable

communities. Governments can demonstrate long-term commitment in a number of ways, including through climate change legislation, budget allocations for adaptation, creating climate change commissions or bodies (whether executive or legislative), and formulating and implementing climate change action plans. Public sector commitment sends an important market signal to the private sector about climate change risks and opportunities, and provides businesses with some measure of reduced uncertainty and reassurance about the long-term level of return they can expect on certain types of adaptation investments.

Generate and allocate public funding and plan for adaptation at all levels. The Green Climate Fund must be made operational and capitalized without delay and at the level necessary to support priority adaptation needs in the most vulnerable countries, with a clearly balanced allocation between adaptation and mitigation funding. Other multilateral and bilateral donor funds must retain a strong focus on adaptation as well. Agreements on adaptation emerging from UNFCCC COP 16 in Cancun must be fully implemented, and with assistance from the international community, developing countries can stimulate private investment by rigorously assessing climate risks and vulnerabilities at the national and subnational levels; assessing adaptation costs; and developing and implementing comprehensive climate change plans that involve the private sector in adaptation and resilience-building. National governments can also consider ways that public funding might be used to incentivize private sector engagement on adaptation, which has potential to increase total financial flows into adaptation by at least an order of magnitude.

PRIORITY: Engage businesses as stakeholders in planning and implementation.

Develop a strategy for mobilizing private sector strengths and assets. Multi-stakeholder consultation on adaptation is important at all levels. Policymakers should convene broad-based,

inclusive, participatory consultation processes. Alongside civil society and vulnerable communities, the private sector should be included as a key partner. The private sector has much to contribute; private sector engagement can increase the likelihood of achieving successful, sustainable approaches to addressing climate change,¹¹⁰ and will give businesses a higher stake and buy-in to the approach. Effective adaptation requires engagement of all types of businesses, from global to local companies, including small and medium-sized enterprises and social entrepreneurs.¹¹¹ While on certain issues a sector-by-sector consultation approach will be appropriate because adaptation needs and solutions can be sector-specific, it will also be important to stimulate cross-sector discussions to identify broader adaptation needs and linkages between different parts of the economy and society.¹¹²

Because the private sector has had limited engagement in adaptation discussions to date, the UNFCCC and national governments may need to develop specific business engagement strategies that enable them to assess private sector needs and gain valuable inputs, and consult companies on practical implementation issues that directly affect them. Within multi-stakeholder processes, governments can bring businesses and communities together to identify shared adaptation challenges and solutions. Governments can help communities and civil society increase their understanding of the valuable role the private sector can play in advancing these shared goals, while building their capacity to participate in climate change dialogues and ensuring a “level playing field” so that community and civil society voices and views are not crowded out by their private sector counterparts.

Include private sector representation in key UNFCCC forums. Along with civil society, the private sector can be included in the Adaptation Committee that was created through the UNFCCC agreement at Cancun.¹¹³ The Adaptation Committee will have a broad role in providing technical support and guidance on adaptation, sharing of information and best practices, networking with outside institutions to enhance adaptation implementation, and advising on incentives for adaptation, among other functions.¹¹⁴ It may also be possible to involve the private sector in the

CARING FOR CLIMATE SURVEY RESPONDENTS SEE NUMEROUS BENEFITS FROM POLICY ENGAGEMENT ON ADAPTATION

- Better mutual understanding of climate change adaptation issues and challenges
- An opportunity to develop a clearer and more integrated strategic direction
- The confidence to plan ahead
- The ability to shape thinking and policy developments around adaptation
- New business opportunities
- New opportunities to develop public-private partnerships
- The ability to create value and maintain positive, respectful relationships with local communities in areas where the company operates or may operate in the future

Technology Mechanism described under the UNFCCC Cancun agreements.¹¹⁵ The private sector could provide insights on barriers to adaptation technology deployment and diffusion and appropriate technology options, and share expertise.¹¹⁶ Consultations can help determine the appropriate modalities for engagement — that is, whether private sector input is best sought through a more active observer role, an advisory role, or some other type of role.

Tap into private sector expertise in plans and projects for building climate resilience. In developing countries, at the national level and, increasingly, at the subnational level, climate change adaptation and disaster risk reduction and management planning processes are particularly important venues for private sector engagement. Businesses can contribute data and information on risks, exposure, and adaptation solutions and advise on policy and regulatory frameworks.¹¹⁷ Governments should seek to identify those business sectors or companies that can best support their climate change adaptation objectives, whether they are multinational companies with expertise in needed goods or services or local businesses that are well-positioned to serve their communities.¹¹⁸ This will require a full understanding of the needs and characteristics of the business sector in any given jurisdiction.¹¹⁹ National and local-level adaptation and disaster risk reduction and management plans can specify areas where private sector

COMPANY CASE STUDY: MUNICH RE INSURANCE GROUP

In 2005 Munich Re, a leading global reinsurance company, launched the Munich Climate Insurance Initiative (MCII) to support developing countries in adapting to climate change through innovative insurance-related risk management tools. MCII comprises insurers, climate change and adaptation experts, civil society groups and policy researchers intent on finding solutions to climate risks. Since its inception, MCII has been an active player in international policy dialogues around climate change.

As a contribution to the UNFCCC COP 16 meeting in Cancun in 2010, MCII, ClimateWise, the Geneva Association and the UNEP Finance Initiative launched a global insurance industry statement on adaptation to climate change in developing countries. The statement highlights the contributions the insurance industry can make to adaptation, including expertise in risk management, prioritizing adaptation measures, incentivizing loss reduction, developing new insurance products, and raising awareness among the many stakeholders of the insurance industry. It calls on governments to 1) implement risk reduction measures already agreed to at the 2005 World Conference on Disaster Reduction, 2) provide a suitable enabling environment, including economic and regulatory frameworks, for risk management and insurance to function at all levels of society, 3) invest in reliable risk exposure data and make it freely available to the public, and 4) act on lessons learned about the benefits of regional public-private partnerships and microinsurance schemes that reduce losses for climatic risks.

Building on agreements reached in Cancun, in 2011 MCII submitted a proposal to the UNFCCC Subsidiary Body for Implementation (SBI) that outlines the major possible elements and timing for an SBI work programme on loss and damage associated with climate change, including from extreme weather events and slow-onset events. MCII has offered to lend its expertise to the SBI through co-sponsoring thematic meetings and technical training workshops for delegates as part of this loss and damage workstream.

Munich Re also focuses on generating and disseminating high-quality data on climate trends and impacts. For example, the company has collaborated with the London School of Economics Centre for Climate Change Economics and Policy to review the current state of climate modelling and improve the production and extraction of valuable, relevant information from various models given inherent uncertainties.

Through policy-focused cooperation with MCII and other actors, Munich Re is operationalizing its corporate climate change strategy and helping the insurance industry and vulnerable societies better prepare for the consequences of climate change.

innovation is essential, and identify a clear role for the private sector in contributing to the building of a climate-resilient society and economy. It will also be fruitful for national and subnational governments to engage the private sector in discussions about adaptation financing. The private sector can provide insights into barriers to investment in adaptation, ideas on public-private financing structures, and recommendations on how to create an enabling policy environment.¹²⁰

Align public and private adaptation interests

PRIORITY: Stimulate the market for adaptation through financial and risk reduction incentives.

Recognize and address market failures in building climate resilience. If current markets are not attracting significant private sector adaptation investments, governments can intervene to address these market failures,¹²¹ in recognition of the public value of adaptation and resilience building. To stimulate business engagement in these areas, which are new and thus may be subject to additional costs and risks, it may be necessary to alter projects' risk-reward profile and to introduce schemes designed to "pay the innovator."¹²² Incentives that help demonstrate and build the commercial viability of private sector adaptation efforts can catalyze the inflow of such investments. Over the long term, such incentives may be phased out because perceived risks will be reduced and resilient businesses will be more profitable. However, to foster initial change, incentives can provide a relatively cost-effective means to reduce initial costs and encourage businesses to enter the market.

Use appropriate policy tools to fit country contexts and business sector needs. Financial and risk mitigation incentives have been used successfully by governments to stimulate private sector investments in other priority areas, including low-carbon technologies and sustainable development. The same level of creative thinking must now be applied to the issue of climate change adaptation. Some tools to consider include:¹²³

- Concessional loans or matching funds for companies to incentivize adaptation investments.

- Tax credits for strategic adaptation investments in operations and supply chains, or for investments in development of adaptation technologies.
- "Green bonds" to raise socially and environmentally responsible capital for private sector (or public-private) adaptation projects.
- Grants or subsidies for research and development of adaptation products and services.
- Extension of credit lines to commercial financial institutions and loan or credit guarantees to help businesses secure financing for investments in adaptation.
- Seed capital for adaptation-focused enterprises or venture capital/equity funds to support adaptation.
- Innovation competitions and prizes for development of new, adaptation-relevant technologies.
- Pricing guarantees or purchase agreements for infrastructure or services.

It is not possible to determine up front which of these tools will be the most effective in a particular country context, nor which types

POLICY DIALOGUES ON ADAPTATION FINANCING

There is an important international policy dialogue under way about the sources and scale of international climate finance for developing countries and the degree to which international financial commitments must be met through public finance. A 2010 report by the UN Secretary-General's High-Level Advisory Group on Climate Change Financing concluded that meeting the \$100 billion commitment agreed to in the Copenhagen Accord to support developing countries' needs is feasible but will require funds from a wide range of sources, including public funds, bilateral and multilateral funds, alternative sources of financing (including the carbon markets) and increased private flows.

However, many civil society organizations, including Oxfam, believe that all international commitments by developed countries to provide adaptation finance should be fulfilled through public, grant-based finance. Public finance is critical because it can be channelled to address the needs of those most vulnerable to climate change impacts, needs that the private sector is not guaranteed to invest in. Oxfam and others believe that investments by the private sector should therefore not be counted against developed country commitments to support adaptation in developing countries, and should be additional to such commitments. Also, private sector lending and similar mechanisms offered by developed country governments — while recognized as useful tools for stimulating adaptation — should not count toward these commitments.

Source: UN Secretary-General's High-Level Advisory Group on Climate Change Financing, 2010. Final Report; and Oxfam.

USING RISK MITIGATION INCENTIVES TO PROMOTE INVESTMENT IN SUSTAINABLE DEVELOPMENT

The United States Agency for International Development (USAID) Development Credit Authority (DCA), while not specifically related to climate change adaptation financing, is an example of how government incentives can be used to stimulate private sector investment in sustainable development more broadly. Small businesses in many developing countries are often not able to secure a bank loan, or face high collateral requirements for such loans, because banks view them as high risk. However, these businesses have great potential to contribute to development priorities in their countries. Through the DCA, USAID offers risk-sharing guarantees that generally cover up to 50 percent of loss on loans made by financial institutions and investors. In 2010 DCA guarantees were used to encourage lending for a range of business ventures, including poultry farming in Ethiopia, health-care provision in Nigeria, and microcredit and agricultural lending in multiple countries.

Source: USAID, 2010. Credit Guarantees: Promoting Private Investment in Development. 2010 Year in Review.

of businesses¹²⁴ and adaptation investments will need them most. To design appropriate incentives to leverage private financing, national governments will need to have detailed information about the specific impediments to private sector investment in adaptation in their country. This underscores the need for in-depth, sustained engagement with the private sector as a key stakeholder.

Focus on targeting and selection criteria. Careful consideration must be given to the criteria for the types of private sector adaptation projects and ventures targeted for public support. Governments can use public funding to leverage private investment in projects that have been identified as high priorities in national or local-level adaptation plans and that respond to vulnerable communities' needs. Incentives should be used to catalyze critically important private sector investments in adaptation that would not be made otherwise; the objective is to "crowd in" rather than "crowd out" private investment. Financial and risk mitigation incentives are most effective if complemented by supportive policy and regulatory frameworks designed to further stimulate corporate action on adaptation.¹²⁵

INFORMATION AND TECHNICAL ASSISTANCE NEEDS OF CARING FOR CLIMATE COMPANIES

Caring for Climate corporate signatories that responded to the survey are seeking tools for quantifying climate change risks and information on how to mitigate those risks. They would like more granular-level detail on projected climate change impacts in the areas where they and their supply chain partners are operating. They also face challenges as they try to assess the real-world business and market implications of scientific climate change data.

PRIORITY: Develop policy and regulatory frameworks to guide corporate practices.

Provide a level playing field and decrease risk and uncertainty. Policy and regulatory "carrots" and "sticks" can be powerful tools to stimulate private sector adaptation investments that contribute to sustainable development. Clear and coherent regulatory frameworks create a level playing field, on which companies must all play by the same rules and know what is expected of them, thus helping to reduce risk and uncertainty for those considering different types of adaptation investments. Regulations can also stimulate private sector innovation to develop new products and services that facilitate compliance (for example, limits on water usage can stimulate development of technologies that help farmers irrigate their crops more efficiently). Thus far, there has been a gap in the development of market and regulatory mechanisms that serve to scale up or enhance the efficiency of adaptation efforts.¹²⁶

Incentivize business decision-making that promotes the public good. Policy and regulatory mechanisms can catalyze the kind of long-term thinking — about costs and benefits of adaptation — that is required to meet the challenges of climate change. Effective policy and regulatory frameworks to promote private sector engagement in adaptation and discourage maladaptation will necessarily differ country-by-country, but policymakers might consider the following:

- Integrating explicit recognition of climate risks into government decision-making and existing processes, including project appraisal, environmental impact assessments, public procurement and government contracts.
- Mainstreaming analysis of climate risks and risk mitigation measures across sectoral policies, including water, forestry and coastal management; disaster preparedness; land use planning; industrial policy; building codes; and infrastructure development.
- Reviewing and revising policies that may encourage maladaptive economic behaviours (for example, certain types of subsidies).
- Developing technology policies that support innovation in climate change adapta-

tion, including promoting fluid technology transfer and diffusion (both within and across borders, including among developing countries themselves); building knowledge-sharing platforms; and building absorptive capacity within developing countries to ensure technology uptake.

- Requiring companies to account for ecosystem degradation within their operations and supply chains and to internalize these costs, particularly in the context of climate change-induced stresses; setting the “rules of the game” through which payments for ecosystem services can occur (for example, whereby a company might pay a community to conserve an important watershed upon which they both depend).
- Ensuring a supportive policy and regulatory environment for the development of financial services such as microinsurance and microfinance, which can be deployed to support pro-poor climate resilience; using public sector financial commitments and conducive tax regimes as necessary and appropriate.
- Encouraging companies to disclose climate risks (that is, the risks climate change poses to their operations and supply chains, as well as the risks their business activities may have on the climate resilience of vulnerable communities) in a standardized, comparable, disaggregated format to their stakeholders; and report on actions being taken to address those risks.

These types of policies and regulations can be enacted not only at the national level, but also by provincial governments and municipalities to reach smaller business that operate at the subnational level. Small and medium-sized enterprises can be critical partners in the provision of goods and services needed by poor communities and in contributing to local-level climate resilience.

Promote best practices and collaboration

PRIORITY: Provide businesses with information and tools they need to make investments that support climate resilience in vulnerable communities.

Consider climate risk information and awareness-raising a public good. Some corporations — for example, those in climate-vulnerable or adaptation-relevant industries, like insurance — are

already investing in their own climate change data generation to gain a competitive edge, and this type of information will understandably be proprietary.¹²⁷ However, not all businesses will have the resources to make such investments. Due to the far-reaching economic and social impacts of climate change and the uncertainty surrounding their timing and intensity, the development of climate change knowledge and awareness-raising should be viewed as a public task, serving both the public and private interest.¹²⁸ An example of such an intergovernmental effort is the World Meteorological Organization-led programme to disseminate climate information through the Global Framework for Climate Services.¹²⁹ Governments can help close information gaps that lead to private sector underinvestment in sustainable development-focused adaptation. Businesses need to be aware of the “state of knowledge” about climate change to be able to understand their exposure and address climate risks,¹³⁰ and also to be able to avoid maladaptation and instead adapt in ways that support community resilience.

Fill priority information gaps using business-friendly formats. Governments can play an important role in generating, aggregating and disseminating climate change information to the private sector. This may involve close collaboration with research institutes that undertake climate modelling and have the necessary data. Information should be tailored to the specific needs of businesses. Different types of companies may need data at varying levels of sophistication and scales. All businesses will need information at a sufficiently small geographic scale and short enough time horizon to be relevant to their decision-making processes, and at larger spatial and temporal scales to enable them to place their local situation in regional and global perspective. Information needs may include:

- Anticipated magnitude, frequency and range of variability of climate change impacts.
- Risks that climate change poses to companies’ operations and supply chains in various sectors, and potential effective solutions.¹³¹
- The adaptation needs of vulnerable communities, as articulated in national and local adaptation plans.
- The types of private sector adaptation solu-

GAPS IDENTIFIED BY CARING FOR CLIMATE SIGNATORIES IN THE SURVEY

Caring for Climate corporate signatories expressed concern about insufficient and unclear regulations and legislation related to climate change risk and adaptation, and the absence of incentives for investment in new technologies relevant to adaptation.

“We would like to accelerate the scaling of non-traditional models — for example, public-private partnerships to catalyze long-term supply resilience.”

— *Caring for Climate corporate signatory from the food and beverage sector*

tions that will benefit sustainable development.

- Maladaptation, and how companies can avoid it.
- Public financing options available to companies to support and leverage their strategic adaptation-related investments.

*Invest in analytical work on costs and benefits of adaptation and value of ecosystem services.*¹³² Governments should also consider supporting further analysis on the economics of climate change adaptation, particularly the costs and benefits of different adaptation options¹³³ (including co-benefits for the green economy) in specific locales at the subnational level, with full accounting for environmental costs and benefits. Ultimately, companies will use cost-benefit analysis to determine the return on their adaptation investments. Concurrently, it will be important to refine methodologies for identifying and valuing ecosystem services, which is an essential step in assessing the complete range of costs and benefits of adaptation measures. “Ecosystem-based adaption” — investing in natural systems to build resilience (for example, wetlands and forests to store and naturally filter water) — is often cheaper and offers higher and more permanent rates of return than hard infrastructure solutions.¹³⁴ Valuation of ecosystem services will be required for governments to introduce incentives for businesses to make decisions that reflect the environmental costs and benefits of their actions. Work is already under way in this area, but climate change adds urgency to these efforts.

Provide real-world evidence that adaptation can be a viable commercial investment. A process of social learning is required to help inform businesses about what works and what doesn’t. To date, the limited but growing on-the-ground experience of the private sector in climate change adaptation has not been consistently documented or articulated.¹³⁵ To support market development, governments can identify and make widely available case studies of private sector adaptation, perhaps through an online database or clearinghouse. “Success stories” that highlight how companies have adapted in ways that promote the public good and simultaneously gained public esteem and community support will inspire other companies and underscore the fact that adapters have a competitive advantage.¹³⁶ Examples of invest-

ments that did not pay off as expected may be even more useful. Rewarding excellence in this area with incentives (for example, prizes or competitions) may be an effective way to galvanize additional private sector interest and recognition.

Build private sector capacity to engage and act. Even if companies have more and better information about climate impacts and adaptation, skill and capacity constraints can limit their ability to engage and act.¹³⁷ This may be especially true for smaller businesses. Business associations will play an important role in building the climate change adaptation capacity of their members. However, governments may also need to provide businesses — particularly small and medium-sized enterprises and those in developing countries — with tools to enable them to participate effectively in climate change dialogues and planning, and to use climate change impact information to make business decisions. Businesses can be reached through a number of vehicles, including training, extension services, web-based resources, climate risk assessment and adaptation planning tools, and other resources. Successful models can be replicated.

PRIORITY: Consider new forms of public-private partnerships (PPPs) to tackle the most complex challenges to sustainable development and climate resilience.

Redefine PPPs for adaptation. Enhanced adaptation to climate change will require unprecedented levels of collaborative action to achieve the best outcomes.¹³⁸ In some cases, adaptation measures taken independently by individual actors (whether governments, companies or communities) may incur higher costs than would result from taking a collective approach, and crucial interdependencies may be missed.¹³⁹ Certain adaptation efforts will therefore require new, creative forms of partnership among public institutions, the private sector, and civil society. In other cases, it may also be possible to strengthen and build off existing PPPs to incorporate a strong focus on climate change adaptation. Those sectors in which the private sector is already heavily engaged — including microinsurance and microfinance, both of which can be powerful tools for building resilience in poor communities — may provide fertile ground

for experimentation and experience-building. (See the Swiss Re case study in Chapter 1 for an example of a microinsurance PPP).

The types of partnerships required to address climate change adaptation needs go far beyond a traditional, narrow definition of “public-private partnerships,” a term often used to describe government outsourcing or contracting of public functions, services or infrastructure development to private entities. What is envisioned is something more collaborative and transformative, in which government, business, civil society and community members jointly identify and develop a means to address a critical development challenge resulting from, or exacerbated by, a changing climate. PPPs can complement public sector-led and community-led adaptation initiatives aimed at addressing the priority needs of the poorest and most vulnerable.

Draw on assets of all parties, and carefully structure PPPs to advance shared goals. Public-private partnerships for climate change adaptation can combine the power, authority, social responsibility and accountability of the public sector, with the finance, technology, managerial efficiency and entrepreneurial abilities of the private sector and the informed voice, energy, drive and oversight responsibilities of civil society organizations.¹⁴⁰ Partners share project risks, but also the benefits. Ingredients for an effective public-private partnership include careful partner selection; a high level of political commitment and a solid statutory foundation; a detailed business plan that articulates the responsibilities of all parties; a guaranteed revenue stream; active engagement and monitoring by the public sector; and strong stakeholder support.¹⁴¹ Partnerships must be grounded in shared principles, including trust, transparency, equity and inclusivity.¹⁴² They must be built and implemented through participatory processes that include affected communities and the most vulnerable people within those communities — including women — as central stakeholders.

Use PPPs for a demonstration effect and to build capacity for further success. Public-private partnerships can be a valuable mechanism through which innovative approaches to addressing adaptation needs of vulnerable communities can be piloted, proven and scaled up. PPPs can demonstrate to both the public and private sectors that adaptation can be cost-effective and profitable. A positive by-product of effective public-private partnerships for climate change adaptation will be increased skills and capacity among all participants to engage in further pro-poor adaptation efforts.

Conclusion

The private sector has much to contribute to the development and implementation of adaptation solutions, including technical and sector-specific expertise, greater levels of financing, efficiency, and an entrepreneurial spirit. When a commitment to social and environmental responsibility is added to this mix, the private sector becomes an indispensable ally in efforts to address the risks and challenges posed by a changing climate. Public sector action must be at the core of adaptation and resilience building for the poorest and most vulnerable communities, where needs may not necessarily align with private sector interests. However, effective adaptation in many sectors requires deep and wide engagement of businesses, from smaller-scale entrepreneurs to large corporations. Private sector adaptation efforts will be a crucial complement to public finance in support of developing countries' adaptation needs.

Governments need to consider how best to promote, catalyze and channel private sector innovation and expertise to support green economy solutions to long-term climate resilience in the communities most vulnerable to climate impacts. The foundation for private sector engagement is a supportive public policy environment, from the international to local levels. By drawing on their respective strengths and collaborating in new ways, governments, the private sector and civil society will be able to help communities meet the challenges of a changing climate as they pursue sustainable development and growth.

Moving Forward

Drawing in large part on insights gained from Caring for Climate signatories, this report has provided a first look at the nexus among private sector adaptation to climate change, sustainable development, and the transition to a green economy. The effects of climate change are already being felt across the globe, and poor communities in developing countries are affected the most. Prosperity in communities around the world is linked to how quickly we reduce GHG emissions and adapt to current impacts and emerging risks.

While governments must take the lead, businesses have an important and complementary role to play. Companies that adapt in ways that support sustainable development can gain a competitive edge and become important players in the green economy. Most businesses — even those that are leaders on climate change — have only just begun to understand and integrate adaptation challenges. The time has come to accelerate and amplify these business responses.

This report encourages climate change champions to link adaptation to their company's core business, mobilizing colleagues inside and outside their company. In doing so, these champions can build internal support, highlight emerging risks and opportunities, and advance adaptation strategies and partnerships with shared value for the company and the community. It also calls on governments to demonstrate a financial commitment to adaptation, engage the private sector and civil society, use policy tools and incentives to align public and private adaptation interests, and promote best practices and collaboration.

There are clear examples — several of which are highlighted in this report — of ways that companies of all sizes are making strategic climate change adaptation investments that simultaneously build resilience in vulnerable communities. But this is just the beginning.

Businesses representing a diverse range of sectors have a unique opportunity to stand at the forefront of this urgent global imperative and to make adaptation a central element of a new, green economic model. As governments consider how best to stimulate green economic growth and invest in sustainable development in the run-up to Rio+20, companies must demonstrate that managing climate change risks and building resilience are core business priorities to ensure their long-term viability. The measures highlighted in this report provide a series of first steps for galvanizing business action on adaptation. Public and private sector leaders will take up this charge as climate change adaptation enhances business profitability while building stronger, more resilient communities.

Endnotes

1. In its Fourth Assessment Report, the Intergovernmental Panel on Climate Change (IPCC) concluded, "Warming of the climate system is unequivocal, as is now evident from observations in increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level." Intergovernmental Panel on Climate Change, 2007. *Climate Change 2007: Synthesis Report*.
2. The eight Millennium Development Goals (MDGs) flow from the United Nations Millennium Declaration, which was adopted at the 2000 Millennium Summit. Originally set to be achieved by 2015, the MDGs are designed to tackle extreme poverty in its many dimensions. The MDGs include: (1) Eradicate extreme poverty and hunger; (2) Achieve universal primary education; (3) Promote gender equality and empower women; (4) Reduce child mortality; (5) Improve maternal health; (6) Combat HIV/AIDS, malaria, and other diseases; (7) Ensure environmental stability; and (8) Develop a Global Partnership for Development. The MDGs break down into 21 quantifiable targets that are measured by 60 indicators. United Nations Development Programme. <http://www.undp.org/mdg/basics.shtml>.
3. PricewaterhouseCoopers, 2010. *Business Leadership on Climate Change Adaptation: Encouraging engagement and action*.
4. The World Resources Institute has put forward a continuum of adaptation options that shows the relationship between adaptation and sustainable development. See McGray et al., 2007. *Weathering the Storm. Options for Framing Adaptation and Development*.
5. United Nations Environment Programme, 2011. *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication — A Synthesis for Policymakers*.
6. Rio + 20, United Nations Conference on Sustainable Development. http://www.uncsd2012.org/index.php?option=com_content&view=category&layout=blog&id=35&Itemid=53.
7. United Nations Environment Programme, 2011. *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication — A Synthesis for Policymakers*.
8. Ibid.
9. Ibid.
10. Ibid.
11. Ibid.
12. For example, global average sea level rose at an average rate of 1.8 mm per year from 1961 to 2003, with a faster average rate of about 3.1 mm per year from 1993 to 2003. Mountain glaciers and snow cover are declining, and Arctic sea ice extent has shrunk by 2.7 percent per decade since 1978, with larger decreases in summer of 7.4 percent per decade. Evidence points to increases in intense tropical cyclone activity in the North Atlantic and some other regions since 1970. Approximately 20 to 30 percent of plant and animal species assessed to date are likely facing increased risk of extinction if global temperature increases exceed 1.5 to 2.5°C. Intergovernmental Panel on Climate Change, 2007. *Climate Change 2007: Synthesis Report*.
13. Working Group II of the Intergovernmental Panel on Climate Change has done some work on the impacts of climate change on the human population. See Parry et al., eds., 2007. *Climate Change 2007: Impacts, Adaptation, and Vulnerability*.
14. International Fund for Agricultural Development, 2011. *Rural Poverty Report 2011. New realities, new challenges: new opportunities for tomorrow's generation*.
15. World Bank et al., 2009. *Gender in Agriculture Sourcebook*.
16. Oxfam America, 2008/2009. *Fact Sheet: Climate Change and Women*.
17. United Nations General Assembly, 2010. Resolution adopted by the General Assembly. The human right to water and sanitation.
18. Renton, 2009. *Suffering the Science: Climate change, people, and poverty*.
19. According to the United Nations, 38 percent of people in Timor-Leste, 50 percent of people in Bangladesh, 68 percent of people in Madagascar, and 75 percent of people in Mozambique are living off less than \$1.25 per day. United Nations Development Programme, 2010. *Human Development Report 2010. The Real Wealth of Nations: Pathways to Human Development*.
20. Jennings and Magrath, 2009. *What Happened to the Seasons?*
21. For a good overview of current trends in disaster

risk by region, see the United Nations Global Assessment Report on Disaster Risk Reduction 2011. Available online at <http://www.preventionweb.net/english/hyogo/gar/2011/en/home/index.html>.

22. The average rate of increase from countries that first reported a disaster in 1990 is 4.9 percent per year, due in most part to weather-related disasters. Jennings, 2011. *Time's Bitter Flood: Trends in the number of reported disasters*.
23. Intergovernmental Panel on Climate Change, 2007. *Climate Change 2007: Synthesis Report*.
24. Ibid.
25. Global Humanitarian Forum, 2009. *Human Impact Report: Climate Change – The Anatomy of a Silent Crisis*.
26. Intergovernmental Panel on Climate Change, 2007. *Climate Change 2007: Synthesis Report*.
27. Food and Agricultural Organization. <http://www.fao.org/getinvolved/worldfoodday/worldfoodday-dgsmessage/en/>
28. Ibid.
29. Intergovernmental Panel on Climate Change, 2007. *Climate Change 2007: Synthesis Report*.
30. Schistosomiasis is a severe parasitic disease caused when freshwater snail-borne worms penetrate the skin, leading to inflammation and long-term damage of vital organs.
31. Renton, 2009. *Suffering the Science: Climate change, people, and poverty*.
32. Lynn et.al., 2009. "Introducing a 'Hot System' Approach to Tipping Points in Humanitarian Crisis."
33. Prowitt, 2010. *Climate change conflict and migration: second order impacts of climate change on business*.
34. Annan, 2001. Nobel Lecture.
35. Dyer, 2009. *Climate Change and Security: Risks and Opportunities for Business*.
36. A recent study that examined the vulnerability of the United States Gulf Coast to climate risks found that oil and gas assets (particularly offshore installations) are particularly vulnerable to damage, with a replacement value of \$499 billion in 2010 dollars. Entergy Corporation, 2010. *Building a Resilient Energy Gulf Coast: Executive Report*.
37. For additional insights on the impact of climate change on the energy sector, see Ebinger and Vergara, 2011, *Climate Impacts on Energy Systems: Key Issues for Energy Sector Adaptation*.
38. Stern, 2007. *The Economics of Climate Change: The Stern Review*.
39. Economics of Climate Adaptation Working Group, 2009. *Shaping Climate-Resilient Development: a framework for decision making*.
40. Asian Development Bank, 2009. *The Economics of Climate Change in Southeast Asia: A Regional Review*. For consistency with the Stern Review, this study used the PAGE2002 integrated assessment model to determine economy-wide impacts.
41. Center for Integrative Environmental Research, University of Maryland, 2007. *The U.S. Economic Impacts of Climate Change and the Costs of Inaction*.
42. Tamirisa, 2008. "Climate Change and the Economy."
43. United States Department of Defense, 2010. *Quadrennial Defense Review Report*.
44. The CNA Corporation, 2007. *National Security and the Threat of Climate Change*.
45. Waskow, 2009. Testimony before the Subcommittee on Energy and Environment, House Energy and Commerce Committee, United States House of Representatives.
46. Dyer, 2009. *Climate Change and Security: Risks and Opportunities for Business*. This report also highlights three additional risk scenarios: food security-related conflict between China and Russia, multi-country confrontations over energy exploitation in the Arctic, and an increase in "climate migrants" from Mexico to the United States.
47. Schuemer-Cross and Heaven Taylor, 2009. *The Right to Survive: The humanitarian challenge for the twenty-first century*.
48. World Bank, 2010. *The Economics of Adaptation to Climate Change*. Figures are stated in 2005 prices.
49. Climate Funds Update posted these figures in December 2010 and updates them on a regular basis. <http://www.climatefundsupdate.org/graphs-statistics>.
50. Waskow, 2009. Testimony before the Subcommittee on Energy and Environment, House Energy and Commerce Committee, United States House of Representatives.
51. Ibid.
52. Ibid.

53. Economics of Climate Adaptation Working Group, 2009. Shaping Climate-Resilient Development: a framework for decision making.
54. PricewaterhouseCoopers 2009. Carbon Disclosure Project 2010, Global 500 Report.
55. The World Resources Institute has developed a useful typology of climate change-related risks facing businesses, drawing on an existing tool they developed in partnership with the Meridian Institute and the World Business Council for Social Development that enables companies to analyze their dependence and influence on ecosystems. The risk typology used in this section, as well as the examples for each category of risk, draws heavily on Withey et al., 2009. Making Climate Your Business: Private Sector Adaptation in Southeast Asia. It has also been informed by good discussions of climate risks in two additional publications: Sussman and Freed, 2008. Adapting to Climate Change: A Business Approach; and World Business Council for Sustainable Development, 2008. Adaptation: An Issue Brief for Business.
56. In April 2011, GLOBE International released a study of climate legislation in 16 countries. The study shows that several developing countries with sizeable economies — including Brazil, China, India, Indonesia, Mexico, and South Africa — have passed “flagship” (i.e., key) pieces of legislation on climate change in recent years, as well as other forms of supportive legislation. While mitigation features prominently, adaptation is also a focus. Townshend et al., 2011. GLOBE Climate Legislation Study.
57. This section draws in part on a comprehensive articulation of the case for new business partnerships on climate change adaptation in developing countries by Jane Nelson, Director of the Harvard Kennedy School’s Corporate Social Responsibility Initiative. Nelson, 2009, “Corporate Action on Climate Adaptation and Development: Mobilizing New Partnerships to Build Climate Change Resilience in Developing Countries and Communities.”
58. Oxfam America, 2009. The New Adaptation Marketplace: Climate change and opportunities for green economic growth.
59. Soloman, et al., 2009. “Irreversible climate change due to carbon dioxide emissions.”
60. United Nations Global Compact & Goldman Sachs, 2009. Change is Coming: A Framework for Climate Change — a Defining Issue of the 21st Century.
61. PricewaterhouseCoopers, 2010. Business Leadership on Climate Change Adaptation: Encouraging engagement and action.
62. Forstater et al., 2009. The Business of Adaptation. Briefing paper.
63. Nitkin et al., 2009. A Systematic Review of the Literature on Business Adaptation to Climate Change, Case studies and tools (3 of 4). This comprehensive review found only 39 examples where case studies, lessons learned, and best practices in business adaptation to climate change were described or mentioned. On further inspection, the researchers found that most of the examples exemplified business responses to climate change through GHG mitigation and reduction of companies’ carbon footprints.
64. PricewaterhouseCoopers, 2010. Business Leadership on Climate Change Adaptation: Encouraging engagement and action.
65. Ibid.
66. Withey, et al., 2009. Making Climate Your Business: Private Sector Adaptation in Southeast Asia.
67. Field, 2009. “Perils of Climate Change.”
68. Ibid.
69. Forstater et al., 2009. The Business of Adaptation. Briefing paper.
70. United Kingdom Department for International Development, 2010. The Private Sector in Adaptation: The Case for Action.
71. United Nations Global Compact and Goldman Sachs, 2009. Change is Coming: A Framework for Climate Change—a Defining Issue of the 21st Century.
72. Stenek, et al., 2010. Climate Risk and Business: Practical Methods for Assessing Risk.
73. Ibid.
74. Ibid.
75. Withey et al., 2009. Making Climate Your Business: Private Sector Adaptation in Southeast Asia.
76. The World Bank. <http://climatechange.worldbank.org/climatechange/content/adaptation-guidance-notes-key-words-and-definitions>
77. Porter, M, & Kramer, M, 2011. “Creating Shared Value.” Harvard Business Review.
78. Oxfam America, 2010. A Fresh Look at the Green Economy. Jobs that Build Resilience to Climate Change.

79. Ibid.
80. Ibid.
81. World Business Council for Sustainable Development, 2008. *Adaptation: An Issue Brief for Business*.
82. Wong and Schuchard, 2011. *Adapting to Climate Change: A guide for food, beverage and agriculture companies*.
83. Acclimatise and Synergy, 2008. *Climate Finance, Business and Community: The Benefits of Cooperation on Adaptation*.
84. United Kingdom Department for International Development, 2010. *The Private Sector in Adaptation: The Case for Action*.
85. PricewaterhouseCoopers, 2010. *Business Leadership on Climate Change and Adaptation: Encouraging engagement and action*.
86. Ibid.
87. Committee on America's Climate Choices, National Research Council, 2011. *America's Climate Choices*.
88. Coca-Cola, for example, has invested in a partnership with over 50,000 small farmers in Uganda and Kenya in order to create a network of local suppliers for their fruit juices. This grants communities access to market opportunities and diversified incomes, while at the same time creating a more robust and productive local supply chain for Coca-Cola. Butler, 2010. "Kenya, Uganda fruit farmers to supply Coca-Cola." <http://www.africanagricultureblog.com/2010/01/kenya-uganda-fruit-farmers-to-supply.html>
89. Forstater et al., 2009. *The Business of Adaptation*. Briefing paper.
90. McKinsey Quarterly (McKinsey and Company), 2007. *How Companies Think about Climate Change: A McKinsey Global Survey*.
91. For an example of a successful community and stakeholder engagement strategy, see BC Hydro's ecosystems services case study in World Resources Institute, et al., 2008. *The Corporate Ecosystem Services Review. Guidelines for Identifying Business Risks and Opportunities Arising from Ecosystem Change*.
92. World Business Council for Sustainable Development, 2008. *Adaptation: An Issue Brief for Business*.
93. Useful tools and resources for conducting a corporate ecosystem services review can be found on the WRI website. World Resources Institute. <http://www.wri.org/project/ecosystem-services-review/tools>.
94. See UNEP's Sustainable Buildings and Climate Initiative (UNEP-SBCI), a partnership between the United Nations and stakeholders in the buildings sector worldwide. <http://www.unep.org/sbci/>.
95. Withey, et al., 2009. *Making Climate Your Business: Private Sector Adaptation in Southeast Asia*.
96. United Nations Environment Programme, 2011. *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication – A Synthesis for Policymakers*.
97. For example, a 2010 survey conducted by UNEP and the Sustainable Business Institute of 60 financial service providers — including insurers, reinsurers, lenders, and asset managers — found that more than half felt that current information on historical weather data and climate change predictions is insufficient. Only one-third of survey respondents felt "sufficiently informed" on climate change. Respondents expressed particularly strong interest in more "interpretation and evaluation of the quality and confidence of statements and predictions" and "concrete statements about expected changes for a certain location and a defined 5-10 year time horizon." These findings dovetail with a multisector study of over 40 companies by PricewaterhouseCoopers, in collaboration with the UNFCCC. Businesses interviewed for that study "expressed a critical need to improve knowledge and information sharing processes. This includes climate impacts and vulnerabilities as a minimum, but also mechanisms and processes to incorporate this information into decision-making processes, and potential adaptation options and solutions." Clements-Hunt et al., 2011. *Advancing adaptation through climate information services. Results of a global survey on the information requirements of the financial sector*. PricewaterhouseCoopers, 2010. *Business Leadership and Climate Change Adaptation: Encouraging engagement and action*.
98. PricewaterhouseCoopers, 2010. *Business Leadership and Climate Change Adaptation: Encouraging engagement and action*.
99. Examples of ecosystem services include their supporting roles that enable the provision of food, supplying and filtering freshwater, climate regulation (i.e., storing carbon, oceanic heat sinks, and circulation), preventing erosion, reducing floods, and offering places for recreation. See

World Resources Institute, <http://www.wri.org/project/mainstreaming-ecosystem-services>; The Economics of Ecosystems and Biodiversity, <http://www.teebweb.org/>; and United Nations Environment Programme, <http://www.unep.org/ecosystemmanagement/>.

- 100.** Adaptation is identified as a priority in the original text of the United Nations Framework Convention on Climate Change, and several Articles (including 4.4, 4.8, and 4.9) recognize the need to assist developing countries to adapt through funding, technology transfer, and capacity building. In 2005, the Parties adopted the five-year “Nairobi work programme on impacts, vulnerability, and adaptation to climate change” (NWP). The objective of the NWP is to assist all Parties, in particular developing countries, including the least developed countries and small island developing States to: improve their understanding and assessment of impacts, vulnerability and adaptation to climate change; and make informed decisions on practical adaptation actions and measures to respond to climate change on a sound scientific, technical and socio-economic basis, taking into account current and future climate change and variability. The NWP second phase ended in December 2010 and its work is currently under review, after which a decision will be made regarding a possible extension. United Nations Framework Convention on Climate Change, 2010. Action on the Ground: a synthesis of activities in the areas of education, training and awareness-raising for adaptation. See also United Nations Framework Convention on Climate Change, http://unfccc.int/essential_background/convention/background/items/1362.php.
- 101.** The Long-term Cooperative Action (LCA) Cancun Outcome is the result of three years of negotiation on the issue of adaptation that followed the adoption of the Bali Action Plan, agreed to by the Parties at COP 13 in Bali, Indonesia. According to the UNFCCC, the objective of the Outcome is “to enhance action on adaptation, including through international cooperation and coherent consideration of matters relating to adaptation under the Convention. Ultimately enhanced action on adaptation seeks to reduce vulnerability and build resilience in developing country Parties, taking into account the urgent and immediate needs of those developing countries that are particularly vulnerable.” http://unfccc.int/adaptation/cancun_adaptation_framework/items/5852.php
- 102.** According to the UNFCCC, “The NAPA takes into account existing coping strategies at the grass-roots level, and builds upon that to identify priority activities, rather than focusing on scenario-based modelling to assess future vulnerability and long-term policy at state level.” NAPAs are prepared through a multi-stakeholder consultation process, and they result in a set of priority activities that respond to urgent and immediate adaptation needs (i.e., those for which further delay could increase vulnerability or lead to increased costs at a later stage.) Once submitted, NAPAs enable LDC Parties to start the process of implementation through the Least-Developed Countries Fund. United Nations Framework Convention on Climate Change. http://unfccc.int/cooperation_support/least_developed_countries_portal/ldc_work_programme_and_napa/items/4722.php
- 103.** For example, the Philippine province of Albay is highly vulnerable to typhoons. The Albay provincial government has established a provincial Disaster Coordinating Council, Disaster Management Office, and Disaster Operations Center, along with Local Disaster Coordinating Councils throughout the province. Provincial officials are implementing a prototype for local climate change adaptation called “Albay in Action on Climate Change” (A2C2) that covers the 720 barangays (lowest-level government administrative units) in Albay. The provincial legislative board has passed resolutions and ordinances to mainstream climate change into all local government decision-making processes (including land use planning), and A2C2 receives a budget allocation. Albay province has launched a climate change information, education, and communication effort in schools, colleges and universities in the province. The provincial government also established the Center for Research and Initiatives on Climate Adaptation to support knowledge generation and project implementation in sustainable agriculture, forestry, fisheries, energy and eco-cultural tourism in the context of climate change in Albay province. Lasco et al., undated. The Role of Local Government Units in Mainstreaming Climate Change Adaptation in the Philippines.
- 104.** United Nations System Chief Executives Board for Coordination, 2008. Acting on Climate Change: The UN System Delivering as One.
- 105.** World Business Council for Sustainable Development et al., 2010. Private Sector and the UNFCCC: Options for Institutional Engagement.
- 106.** For example, out of the full list of 34 “Environment and Energy” position statements and papers on the ICC website, only two are focused on

adaptation, two on agriculture, and one on water. International Chamber of Commerce. <http://www.iccwbo.org/policy/environment/display7/folder42/index.html>

107. United Nations Framework Convention on Climate Change Least Developed Countries Expert Group, 2002. Annotated guidelines for the preparation of national adaptation programmes of action.
108. PricewaterhouseCoopers, 2010. Business Leadership on Climate Change Adaptation: Encouraging engagement and action.
109. United Nations Environment Programme, 2008. Terminal Evaluation of the UNEP GEF Projects “Enabling Activities for the Preparation of National Adaptation Programme of Action (NAPA)”.
110. World Business Council for Sustainable Development et al., 2010. Private Sector and the UNFCCC: Options for Institutional Engagement.
111. PricewaterhouseCoopers, 2010. Business Leadership on Climate Change Adaptation: Encouraging engagement and action.
112. Ibid.
113. Article 20 of the agreement establishes the Adaptation Committee. United Nations Framework Convention, on Climate Change, 2010. The Cancun Agreements: Outcome of the work of the Ad-Hoc Working Group on long-term Cooperative Action under the Convention.
114. Ibid.
115. Ibid. Article 117 of the agreement establishes the Technology Mechanism.
116. World Business Council for Sustainable Development et al. 2010. Options for private sector engagement: illustrative examples.
117. PricewaterhouseCoopers, 2010. Business Leadership on Climate Change Adaptation: Encouraging engagement and action.
118. Putt del Pino et al., 2011. “Making Climate Companies’ Business.”
119. Ibid.
120. World Business Council for Sustainable Development et al., 2010. Options for private sector engagement: illustrative examples.
121. United Nations Framework Convention on Climate Change, 2009. Fact Sheet: Financing Climate Change Action. Investment and financial flows for a strengthened response to climate change.
122. Ibid.
123. There is a growing body of experience using public finance mechanisms and incentives to catalyze private sector investment in climate change mitigation. Some of these same mechanisms may also be useful to stimulate investments in adaptation. For an in-depth discussion of various tools to incentivize investments in low-carbon technologies, see Maclean, 2008. Public Finance Mechanisms to Mobilize Private Investment in Mitigation. An overview of mechanisms being used today to scale up the climate mitigation markets, with a particular focus on the clean energy sector.
124. For example, a 2010 report by Asian Tiger Capital Partners, a Bangladesh-based financial services and consulting firm, to advise the International Finance Corporation on how best to engage the private sector in climate change adaptation found strong interest among Bangladeshi business owners in concessional loans, grants and shared research and development expenditures. Asian Tiger Capital Partners, 2010. A Strategy to Engage the Private Sector in Climate Change Adaptation in Bangladesh.
125. UNEP makes this point regarding the use of public finance for mitigation, and it is equally true in the context of adaptation. Maclean, 2008. Public Finance Mechanisms to Mobilize Private Investment in Mitigation. An overview of mechanisms being used today to scale up the climate mitigation markets, with a particular focus on the clean energy sector.
126. Organization for Economic Co-operation and Development, 2008. Economic Aspects of Adaptation to Climate Change. Costs, Benefits, and Policy Instruments.
127. Clements-Hunt, 2011. Advancing adaptation through climate information services. Results of a global survey on the information requirements of the financial sector.
128. Ibid.
129. World Meteorological Organization, 2009. Working Together towards a Global Framework for Climate Service.
130. Business and Industry Advisory Committee to the Organization for Economic Co-operation and Development, 2009. Adaptation to Climate Change. Key Considerations for Business.
131. The private sector is not always willing to share information, particularly if it is commercially sensitive. It could be useful (and more acceptable

- to companies) to aggregate information from value chain mapping into an international database of companies facing similar climate change impacts. This would build a “bigger picture” and could encourage partnerships and collaborative action to address impacts through adaptation, as well as the creation of networks for additional information sharing. PricewaterhouseCoopers, 2010. Business Leadership on Climate Change Adaptation: Encouraging engagement and action.
- 132.** This is an essential component of the UNEP Green Economy Initiative (GEI), which seeks to engage with the private and public sectors to facilitate a low-carbon economy, poverty alleviation, and sustainability. A key aspect of the GEI is to conduct robust economic research and poverty analysis. United Nations Environment Programme, 2011. *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication — A Synthesis for Policymakers*.
- 133.** The importance of cost benefit analysis and the need for adaptation investments to rest on a sound economic basis were underscored by the Business and Industry Advisory Committee to the Organization for Economic Co-operation and Development, 2009. *Adaptation to Climate Change. Key Considerations for Business*.
- 134.** Nellemann and Corcoran, eds., 2010. *Dead Planet, Living Planet — Biodiversity and Ecosystem Restoration for Sustainable Development. A rapid response assessment.*; Sukhdev et. al., 2010. *The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A Synthesis of the approach, Conclusions, and Recommendations of TEEB*.
- 135.** PricewaterhouseCoopers, 2010. *Business Leadership on Climate Change Adaptation: Encouraging engagement and action*.
- 136.** For example, conversations with Bangladeshi business owners revealed the value of regional and global success stories about commercially viable private sector adaptation as a tool to motivate the private sector. Information about how Indian corporations are adapting to climate change could give greater confidence to Bangladeshi companies and provide a template or business model for moving forward in Bangladesh. Asian Tiger Capital Partners, 2010. *A Strategy to Engage the Private Sector in Climate Change Adaptation in Bangladesh*.
- 137.** PricewaterhouseCoopers, 2010. *Business Leadership on Climate Change Adaptation: Encouraging engagement and action*.
- 138.** Ibid.
- 139.** Ibid.
- 140.** United Nations Development Programme. <http://www.undp.org/pppsd/whatareppps.html>.
- 141.** National Council for Public-Private Partnerships. <http://www.ncppp.org/howpart/index.shtml#define>.
- 142.** USAID’s Global Development Alliance, an initiative to promote public-private partnerships for development, has identified seven key principles for effective alliances: trust, equity, building on partners’ respective competencies, inclusivity, partners’ alignment around shared interests and agendas, mutual benefit, and transparency. United States Agency for International Development. http://www.usaid.gov/our_work/global_partnerships/gda/faq.html.

Bibliography

REPORTS

Acclimatise and Synergy (2008) *Climate Finance, Business, and Community: The Benefits of Co-operation on Adaptation*. Discussion paper. Oxford, UK.

Asian Development Bank (2009) *The Economics of Climate Change in Southeast Asia: A Regional Review*. ADB: Manila.

Asian Tiger Capital Partners (2010) *A Strategy to Engage the Private Sector in Climate Change Adaptation in Bangladesh*. A report prepared for the International Finance Corporation. IFC: Washington, DC.

Brooks, N. 2003. *Vulnerability, Risk and Adaptation: A Conceptual Framework*. Working Paper: 38. Tyndall Center for Climate Research. Centre for Social and Economic Research on the Global Environment (CSERGE) School of Environmental Sciences University of East Anglia: Norwich, UK.

Business and Industry Advisory Committee to the Organization for Economic Co-operation and Development (2009) *Adaptation to Climate Change. Key Considerations for Business*. BIAC: Paris.

Center for Integrative Environmental Research (2007) *The US Economic Impacts of Climate Change and the Costs of Inaction*. CIER, University of Maryland: College Park.

Clements-Hunt, P. et al. (2011) *Advancing adaptation through climate information services. Results of a global survey on the information requirements of the financial sector*. UNEP and the Sustainable Business Institute (SBI): Nairobi and Oestrich-Winkel, Germany.

The CNA Corporation (2007) *National Security and the Threat of Climate Change*. The CNA Corporation: Alexandria, Virginia.

Committee on America's Climate Choices, National Research Council (2011). *America's Climate Choices*. National Academy of Sciences: Washington, D.C.

Dyer, G. (2009) *Climate Change and Security: Risks and Opportunities for Business*. Lloyd's and the International Institute for Strategic Studies (IISS): London.

Ebinger, J. and W. Vergara (2011) *Climate Impacts on Energy Systems. Key Issues for Energy Sector Adaptation*. Energy Sector Management and Assistance Program (ESMAP) and the World Bank: Washington, DC.

Economics of Climate Adaptation Working Group (2009) *Shaping Climate-Resilient Development: a framework for decision-making*. The Economics of Climate Adaptation Working Group includes ClimateWorks Foundation, Global Environment Facility, European Commission, McKinsey and Company, The Rockefeller Foundation, Standard Charter Bank, and Swiss Re.

Entergy Corporation (2010) *Building a Resilient Energy Gulf Coast: Executive Report*. Entergy Corporation: New Orleans.

Forstater, M. et al. (2009) *The Business of Adaptation. Briefing paper*. AccountAbility and the International Institute for Environment and Development (IED): London.

Global Humanitarian Forum (2009) *Human Impact Report: Climate Change — The Anatomy of a Silent Crisis*. Global Humanitarian Forum: Geneva.

International Fund for Agricultural Development (2011) *Rural Poverty Report 2011*. New realities, new challenges: new opportunities for tomorrow's generation. IFAD: Rome.

Intergovernmental Panel on Climate Change (2007) *Climate Change 2007: Synthesis Report*. IPCC: Geneva.

Jennings, S. and J. Magrath (2009) *What Happened to the Seasons? Oxfam Research Report*. Oxfam Great Britain: Oxford.

Lasco, R.D. et al. (undated) *The Role of Local Government Units in Mainstreaming Climate Adaptation in the Philippines*. World Agroforestry Center (IGRAF) and Center for Initiatives and Research on Climate Adaptation (CIRCA): Los Banos and Legazpi City, Philippines.

Lynn, S. et al. (2009) "Introducing a 'Hot System' Approach to Tipping Points in Humanitarian Crisis" in Shen, X. et al, eds. *Tipping Points in Humanitarian Crisis: From Hot Spots to Hot Systems*. Publication Series of United Nations University Institute for Environment and Human Security No. 13/2010. UNU-EHS: Bonn.

- Maclean, J. et al. (2008)** *Public Finance Mechanisms to Mobilise Investment in Climate Change Mitigation. An overview of mechanisms being used today to scale up the climate mitigation markets, with a particular focus on the clean energy sector.* Advance draft. UNEP: Paris.
- Magrath, J. et al. (2007)** *From Weather Alert to Climate Alarm.* Oxfam Briefing Paper. Oxfam International: Oxford.
- McCarthy, J. et al. (eds.) (2001)** *Climate change 2001: Impacts, Adaptation, and Vulnerability, Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge University Press: Cambridge, UK.
- McGray, H. et al. (2007)** *Weathering the Storm. Options for Framing Adaptation and Development.* World Resources Institute (WRI): Washington, DC.
- McKinsey Quarterly (2007)** *How Companies Think about Climate Change: A McKinsey Global Survey.* McKinsey and Company.
- Nellemann, C. and E. Corcoran (eds.) (2010)** *Dead Planet, Living Planet – Biodiversity and Ecosystem Restoration for Sustainable Development. A rapid response assessment.* UNEP, GRID-Arendal: Nairobi and Arendal, Norway.
- Nelson, J. (2009)** “Corporate Action on Climate Adaptation and Development: Mobilizing New Partnerships to Build Climate Change Resilience in Developing Countries and Communities” in Brainerd, L. et al., eds., *Climate Change and Global Poverty: A Billion Lives in the Balance?* The Brookings Institution Press: Washington, DC.
- Nitkin, D. et al. (2009)** *A Systematic Review of the Literature on Business Adaptation to Climate Change: Case studies and tools (3 of 4).* Network for Business Sustainability: Ontario.
- Organization for Economic Co-operation and Development (2008)** *Economic Aspects of Adaptation to Climate Change. Costs, Benefits, and Policy Instruments.* OECD: Paris.
- Oxfam America (2008/2009)** *Fact Sheet: Climate Change and Women. Winter 2008/2009.* Oxfam America: Boston.
- Oxfam America (2010)** *Fact Sheet: Pakistan Floods.* Oxfam America: Boston.
- Oxfam America (2010)** *A Fresh Look at the Green Economy. Jobs that Build Resilience to Climate Change.* Oxfam America: Boston.
- Oxfam America (2009)** *The New Adaptation Marketplace: Climate change and opportunities for green economic growth.* Oxfam America: Boston.
- Parry et al. (eds.) (2007)** *Climate Change 2007: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge University Press: Cambridge, UK.
- Porter, M. & Kramer, M 2011,** ‘CREATING SHARED VALUE’, *Harvard Business Review*, 89, 1/2, pp. 62-77, Business Source Complete, EBSCOhost, viewed 1 May 2011.
- PricewaterhouseCoopers (2010)** *Business Leadership on Climate Change Adaptation: Encouraging engagement and action.* PwC in collaboration with the UNFCCC: London.
- PricewaterhouseCoopers (2010)** *Carbon Disclosure Project 2010: Global 500 Report.* Carbon Disclosure Project (CDP): London and New York.
- Prowitt, S. (2010)** *Climate change conflict and migration: second order impacts of climate change on business.* MSc Thesis. Imperial College, London.
- Putt del Pino, S. et al. (2011)** “Making Climate Companies’ Business,” in *World Resources Report, Key Question Eight, “How can national-level governments learn from the private sector and encourage investment and decision making to promote the public good in a changing climate?”* WRI, UNEP, UNDP, World Bank: Washington, DC.
- Renton, A. (2009)** *Suffering the Science: Climate change, people, and poverty.* Oxfam briefing paper #130. Oxfam International: Oxford.
- Schuemmer-Cross, T. and B. Heaven Taylor (2009)** *The Right to Survive: The humanitarian challenge for the twenty-first century.* Oxfam International: Oxford.
- Stenek, V. et al. (2010)** *Climate Risk and Business: Practical Methods for Assessing Risk.* International Finance Corporation (IFC): Washington, DC.
- Stern, N. (2007)** *The Economics of Climate Change: The Stern Review.* Cambridge University Press: Cambridge, UK.
- Sukhdev, P. et al. (2010).** *The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB.*

Sussman, F. and J.R. Freed (2008) *Adapting to Climate Change: A Business Approach*. Pew Center on Global Climate Change: Arlington, Virginia.

Townshend, T. et al. (2011) *GLOBE Climate Legislation Study*. Globe Legislators Organization (GLOBE): London.

United Kingdom Department for International Development (2010) *The Private Sector in Adaptation: The Case for Action*. Factsheet. A DFID practice paper. DFID: London.

United Nations Development Programme (2010) *Human Development Report 2010. The Real Wealth of Nations: Pathways to Human Development*. UNDP: New York.

United Nations Environment Programme (2008) *Terminal Evaluation of the UNEP GEF Projects "Enabling Activities for the Preparation of National Adaptation Programmes of Action (NAPA)"*. UNEP: Nairobi.

United Nations Environment Programme (2011) *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication — A Synthesis for Policymakers*. UNEP: Nairobi.

United Nations Environment Programme (2011) *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication — Full Report*. UNEP: Nairobi.

United Nations Framework Convention on Climate Change (2010) *Action on the Ground: a synthesis of activities in the areas of education, training, and awareness-raising for adaptation*. UNFCCC: Bonn.

United Nations Framework Convention on Climate Change (2010) *The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention*. December 10, 2010. UNFCCC/CP/2010/7/Add.1.

United Nations Framework Convention on Climate Change (2009) *Fact Sheet: Financing Climate Change Action. Investment and financial flows for a strengthened response to climate change*. UNFCCC: Bonn.

United Nations Framework Convention on Climate Change, Least Developed Countries Expert Group (2002) *Annotated guidelines for the preparation of national adaptation programmes of action*. UNFCCC: Bonn.

United Nations General Assembly (2010) *Resolution adopted by the General Assembly. The human right to water and sanitation*. August 3, 2010. A/RES/64/292.

United Nations Global Compact and Goldman

Sachs (2009) *Change is Coming: A Framework for Climate Change — a Defining Issue of the 21st Century*. UN Global Compact: New York.

United Nations Secretary-General's High-Level Advisory Group on Climate Change Financing (2010) *Report of the Secretary-General's High-Level Advisory Group on Climate Change Financing*. The United Nations: New York.

United Nations System Chief Executives Board for Coordination (2008) *Acting on Climate Change: The UN System Delivering as One*. The United Nations: New York.

United States Agency for International Development (2010) *Credit Guarantees: Promoting Private Investment in Development. 2010 Year in Review*. USAID: Washington, DC.

United States Department of Defense (2010) *Quadrennial Defense Review Report*. Department of Defense: Washington, DC.

Withey, L. et al. (2009) *Making Climate Your Business: Private Sector Adaptation in Southeast Asia*. Swedish International Development Agency in cooperation with the World Resources Institute (WRI) and CSR Asia: Stockholm.

Wong, J. and Schuchard, R. (2011) *Adapting to Climate Change: A guide for food, beverage, and agriculture companies*. Business for Social Responsibility (BSR): San Francisco.

World Bank (2010) *The Economics of Adaptation to Climate Change. A Synthesis Report. Final consultation draft*. The World Bank Group: Washington, DC.

World Bank et al. (2009) *Gender in Agriculture Sourcebook*. The World Bank Group: Washington, DC.

World Business Council for Sustainable Development (2008) *Adaptation: An Issue Brief for Business*. WBCSD: Geneva and Washington, DC.

World Business Council for Sustainable Development et al. (2010) *Options for private sector engagement: illustrative examples*. WBCSD, Ecofys, and Climate Focus: Geneva, Utrecht, and Amsterdam.

World Business Council for Sustainable Development et al. (2010) *Private Sector and the UNFCCC: Options for Institutional Engagement*. Final report prepared for the Competitiveness and Innovation Framework Programme of the European Commission. WBCSD, Ecofys, and Climate Focus: Geneva, Utrecht, and Amsterdam.

World Meteorological Organization (2009) *Working Together towards a Global Framework for Climate Service*. Report of the World Climate Conference – 3, “Better climate information for a better future,” No. 1048. WMO: Geneva.

World Resources Institute, et al. (2008) *The Corporate Ecosystem Services Review. Guidelines for Identifying Business Risks and Opportunities Arising from Ecosystem Change*. Version 1.0. WRI, Meridian Institute, and WBCSD: Washington, DC.

ARTICLES

Ahmed, S. (2010) “Pakistan flood damage at \$9.5 billion.” *Reuters*, October 13, 2010. Available at <http://af.reuters.com/article/worldNews/idAFT-RE69C18P20101013>.

Butler, B. (2010) “Kenya, Uganda fruit farmers to supply Coca-Cola.” *African Agriculture. News, views about agriculture in Africa and beyond*, January 30, 2010. Available at <http://www.africanagricultureblog.com/2010/01/kenya-uganda-fruit-farmers-to-supply.html>

The Daily Star (2010) “Bangladesh gets \$110m climate fund.” *The Daily Star*, June 2, 2010. Available at <http://www.thedailystar.net/newDesign/news-details.php?nid=141068>

Field, A. (2009) “Perils of Climate Change.” *Treasury and Risk*, July/August 2009. Available at <http://www.treasuryandrisk.com/Issues/2009/JulyAugust%202009/Pages/Perils-of-Climate-Change.aspx>.

Soloman, S. et al. (2009) “Irreversible climate change due to carbon dioxide emissions.” *Proceedings of the National Academy of Sciences*, February 10, 2009, 106 (6):1704–1709. Available at <http://www.pnas.org/content/early/2009/01/28/0812721106.full.pdf>

Tamirisa, N. (2008) “Climate Change and the Economy.” *Finance and Development*, March 2008, Volume 45, Number 1. Available at <http://www.imf.org/external/pubs/ft/fandd/2008/03/tamirisa.htm>.

PRESENTATIONS

Annan, K. (2001) Nobel Lecture. December 10, 2001. Oslo, Norway. Available at http://nobelprize.org/nobel_prizes/peace/laureates/2001/annan-lecture.html.

Waskow, D. (2009) *Testimony before the Subcommittee on Energy and Environment, House Energy and Commerce Committee, United States Congress*. Delivered by Climate Change Program Director, Oxfam America. March 25, 2009.

LINKS AND WEBSITES

Climate Funds Update.

Climate Funds. <http://www.climatefundsupdate.org/listing>

Graphs and statistics. <http://www.climatefundsupdate.org/graphs-statistics>

The Economics of Ecosystems and Biodiversity.

<http://www.teebweb.org/>

Food and Agriculture Organization.

Director-General’s Message on World Food Day 2010. <http://www.fao.org/getinvolved/worldfoodday/worldfoodday-dgsmmessage/en/>

International Chamber of Commerce.

Environment and Energy. <http://www.iccwbo.org/policy/environment/display7/folder42/index.html>

Investor Network on Climate Risk.

Climate Resolutions Toolkit 2010. Climate Resolution Tracker. <http://www.incr.com/Page.aspx?pid=874>

National Council for Public Private Partnerships.

How PPPs work. <http://www.ncppp.org/howpart/index.shtml#define>

Rio+20, United Nations Conference on Sustainable Development. http://www.uncsd2012.org/index.php?option=com_content&view=category&layout=blog&id=35&Itemid=53.

United Nations Development Programme.

Adaptation to Climate Change. Adaptation definitions and levels. <http://www.undp.org/climatechange/adapt/definitions.html>

Millennium Development Goals. <http://www.undp.org/mdg/basics.shtml>

Public-Private Partnerships for Service Delivery.

<http://www.undp.org/pppsd/whatareppps.html>

United Nations Environment Programme.

Ecosystem Management. <http://www.unep.org/ecosystemmanagement/>

UNEP-Sustainable Buildings and Climate Initiative (SBCI). <http://www.unep.org/sbci/>

United Nations Framework Convention on Climate Change.

Cancun Adaptation Framework.

http://unfccc.int/adaptation/cancun_adaptation_framework/items/5852.php

Chronological Evolution of LDC Work Programme and Concept of NAPAs.

http://unfccc.int/cooperation_support/least_developed_countries_portal/ldc_work_programme_and_napa/items/4722.php

Full text of the Convention.

http://unfccc.int/essential_background/convention/background/items/1362.php

United Nations Global Assessment Report on Disaster Risk Reduction 2011.

<http://www.preventionweb.net/english/hyogo/gar/2011/en/home/index.html>

United Nations Global Compact.

Caring for Climate. http://unglobalcompact.org/docs/issues_doc/Environment/climate/CARING_FOR_CLIMATE_STATEMENT_2010.pdf.

United States Agency for International Development.

Global Partnerships, Frequently Asked Questions.

http://www.usaid.gov/our_work/global_partnerships/gda/faq.html

The World Bank.

Adaptation Guidance Notes — Key Words and Definitions.

<http://climatechange.worldbank.org/climatechange/content/adaptation-guidance-notes-key-words-and-definitions>

World Resources Institute.

Corporate Ecosystem Services Review: Tools.

<http://www.wri.org/project/ecosystem-services-review/tools>

Mainstreaming Ecosystem Services Initiative.

<http://www.wri.org/project/mainstreaming-ecosystem-services>

Annex A

KEY TERMS AND CONCEPTS

Climate adaptation: Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects. Various types of adaptation exist, e.g. anticipatory and reactive, private and public, and autonomous and planned (Adapted from IPCC 2001). The private sector's adaptive response to climate change can be defined by efforts to adjust business models and take appropriate measures to both minimize vulnerabilities and risks to climate hazards and explore new opportunities.

Climate change and development: Refers to the impacts of climate change that are already happening and that have important consequences on global development priorities such as water sustainability, energy and food security, poverty reduction, biodiversity and ecosystem protection, and market stability.

Community-based adaptation: Focused at the community level on assisting the poor in developing countries to adapt to climate change, building their adaptive capacity and resilience to create sustainable livelihoods and strategies for coping with climate change (Adapted from IPCC, Oxfam).

Ecosystem-based adaptation: Use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people and communities adapt to the negative effects of climate change at local, national, regional and global levels (Adapted from UNEP).

Ecosystem Services: Ecological processes or functions having monetary or non-monetary value to individuals or society at large. There are supporting services such as productivity or biodiversity maintenance; provisioning services such as food, fiber or fish; regulating services such as climate regulation or carbon sequestration; and cultural services such as tourism. (Adapted from IPCC 2007).

Green Economy: One that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities (UNEP 2011).

Maladaptation: An action or process that increases vulnerability to climate change-related hazards. Maladaptive actions and processes often include planned development policies and measures that deliver

short-term gains or economic benefits but lead to exacerbated vulnerability in the medium to long-term (UNDP 2009).

Mitigation: Technological change and substitution that reduce resource inputs and emissions per unit of output. Although several social, economic and technological policies would produce an emission reduction, with respect to climate change, mitigation means implementing projects to reduce GHG emissions and enhance sinks (Adapted from IPCC 2007).

Mitigation vs. Adaptation: Mitigation aims to slow the rate of climate change whereas adaptation deals with the consequences of climate change that are already happening or are projected to happen. There are synergies between mitigation and adaptation. Both are required to achieve a low-carbon, climate resilient economy.

Resilience: The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organization, and the capacity to adapt to stress and change (Adapted from IPCC 2007).

Risk: Defined by the nature of the climate hazard itself and the probability of the hazard's occurrence (Tyndall Center for Climate Research 2003).

Vulnerability: The degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude and rate of climate change and variation to which a system is exposed, its sensitivity and its adaptive capacity (IPCC 2007).

Annex B

CARING FOR CLIMATE COMPANY EXAMPLES

Caring for Climate companies are beginning to develop strategies that respond to climate change impacts by building resilience within their operations and value chains and through the development of climate-resilient goods and services. The following are select examples where Caring for Climate signatories showcase their activities and practices to address risks and opportunities posed by climate adaptation.¹

Agbar (Spain, Gas, Water & Multiutilities) invests in adaptive measures through its Water Technology Center (CETAqua), where the company researches and develops methods and tools for managing flood risk. This includes evaluations of the medium- and long-term impacts of global change more broadly. The company is also working on a research project related to the assessment of the climate resilience of water resources and water supply infrastructure. The objective is to estimate the capacity of current infrastructure to adapt to climate change, and to define how to advance infrastructure that takes climate change into account.²

Banco do Brasil (Brazil, Financial) focuses on analyzing impacts of climate change on its financial processes through its Sustainability Forum framework. The Sustainability Forum is an update to the company's Agenda 21 (2008-2012), bringing together executives from various boards and the Banco do Brasil Foundation to support the dissemination of the environmental principles and practices and related risks and opportunities. Senior Management including the chief executive officer is responsible for the Sustainable Development Directory and the water programme.³

CEMEX (Mexico, Construction & Materials) invests in research to develop products, services and operations that have mutual mitigation and adaptation benefits. This includes efforts to develop and adopt equipment that reduces both energy and water resource demand. CEMEX is also actively working to develop more resilient and affordable housing for low-income communities, which are often the most vulnerable to climate change.⁴

China Mobile Communications (China, ICT/Mobile Telecommunications) has developed various information-based applications, which help the company advance mitigation and adaptation priorities. The

applications include monitoring of agricultural greenhouse gas emissions; wireless automatic water-saving drip irrigation; wireless water quality monitoring of freshwater aquaculture; water conservancy and hydrographical data; and animals and plants sourcing. In Guangdong, the company launched the Rural Information Access value-added services — expert guidance and market price analysis, new farming and animal husbandry techniques, and seed selection — to help farmers learn new agricultural technologies and increase their income.

Coca-Cola Company (Global, Beverages) focuses on addressing several climate risks with its Replenish Africa Initiative (RAIN), including: water scarcity and deterioration of water quality; changes in weather patterns and extreme weather conditions; frequency and severity of natural disasters; decreased agricultural productivity; and energy, transportation and raw material costs. RAIN is a six-year, \$30 million commitment to provide access to safe drinking water to communities throughout Africa. The Initiative also seeks to empower 5 million women entrepreneurs throughout Coca-Cola's global business system by 2020, capitalizing on its operations in 200 countries as well as its business model, which relies on millions of small-scale distributors and retailers.

EDF (France, Electricity) launched its climate adaptation strategy comprising 10 key priorities implemented through its climate action plan within its Group business lines. Examples of these priorities include producing and exchanging climate-related data to launch a joint project of databases for its businesses; boosting resilience to extreme climate events through direct application of its Climate Hazard Plan; and actively participating in national debates devoted to the development of national climate adaptation strategy.

Eskom (South Africa, Electricity) integrated adaptation into its six-point plan on climate change to ensure reliability and continuity of its energy supply. The company completed a scoping exercise to develop an adaptation strategy focused on addressing risks related to availability of water for power generation; extreme weather events impacting on the ability to supply; and infrastructure damage and relocation of people. In addition, Eskom works with other institutions to look at opportunities to draw more information from climate models to better inform this strategy.

Newmont (United States, Mining) collaborates with communities surrounding its mines to help them evaluate their climate change risks and integrate risk mitigation plans into sustainability programs, with an emphasis on water security. Newmont also incorporates climate adaptation and development priorities into efforts to offset carbon emissions, giving preference to projects in locations where it operates to support local communities, including their capacity to build resilience to climate change, and protecting ecosystems and biodiversity.

Unilever (Global, Consumer Goods) uses EIGER, a web-based tool that identifies themes related to global change, to evaluate and monitor risks and opportunities related to impacts of climate change, including water vulnerability and irrigation water demand for its crops. The tool is presented as searchable maps that give detailed information about agricultural raw materials, biodiversity, water and other socio-economic trends. Unilever uses this tool to assess climate risks, such as water scarcity, around factory sites and to develop sustainable solutions to ensure long-term supply of its raw materials.

1. The list of companies presented in this piece is intended to be illustrative and is not comprehensive. The examples were chosen based on companies that participated in the Caring for Climate survey and/or the UN Global Compact Communication on Progress (CoP). The information provided here came from the companies themselves.

2. UN Global Compact Case Study Interview. Agbar, S.A. 15 April 2011.

3. Banco do Brasil. 2009 Sustainability Report. <http://www.bb.com.br/docs/pub/instr/dwn/english.pdf>

4. CEMEX. "About Sustainable Development", <http://www.cemex.com/SustainableDevelopment.aspx> (accessed April 2011).

5. China Mobile Communications. 2010 Sustainability Report. March 2011. <http://www.chinamobiletd.com/images/pdf/2011/sr/en/EW00941.pdf>

6. The Coca-Cola Company. "Coca-Cola Helps Improve Lives of African Women and Girls". March 2011. http://www.thecoca-colacompany.com/dynamic/press_center/2011/03/improving-lives-of-african-women-and-girls.html

7. EDF. "Leading the Energy Change". *Presentation*. December 2010.

8. Eskom. "Eskom's Climate Change Commitment – The 6 Point Plan". February 2009. http://www.eskom.co.za/content/GI0004_6_POINT_PLAN~2.pdf

9. Newmont. "About Environment Features". <http://www.newmont.com/features/our-business-features/Newmont-ICMM-Tackle-Climate-Change> (accessed April 2011).

10. UN Global Compact Case Study Interview. Unilever. 1 April 2011.



United Nations Global Compact

About the United Nations Global Compact

Launched in 2000, the United Nations Global Compact is both a policy platform and a practical framework for companies that are committed to sustainability and responsible business practices. As a multi-stakeholder leadership initiative, it seeks to align business operations and strategies with ten universally accepted principles in the areas of human rights, labour, environment and anti-corruption and to catalyze actions in support of broader UN goals. With more than 8,000 participants in over 135 countries, it is the world's largest voluntary corporate responsibility initiative. <http://www.unglobalcompact.org>



About the United Nations Environment Programme

The United Nations Environment Programme (UNEP), established in 1972, is the voice for the environment within the United Nations system. UNEP acts as a catalyst, advocate, educator and facilitator to promote the wise use and sustainable development of the global environment. To accomplish this, UNEP works with a wide range of partners, including United Nations entities, international organizations, national governments, non-governmental organizations, the private sector and civil society. <http://www.unep.org>



About Oxfam

Oxfam is an international confederation of fifteen organizations working together to find lasting solutions to poverty and injustice. Together with individuals and local groups in more than 90 countries, Oxfam saves lives, helps people overcome poverty, and fights for social justice. <http://www.oxfam.org/>



WORLD
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About the World Resources Institute

The World Resources Institute (WRI) is an environmental think tank that goes beyond research to create practical ways to protect the Earth and improve people's lives. <http://www.wri.org/>



Caring for Climate

About Caring for Climate

Launched by the UN Secretary-General Ban Ki-moon in 2007, "Caring for Climate" is the UN Global Compact and UN Environment Programme's initiative aimed at advancing the role of business in addressing climate change. It provides a framework for business leaders to advance practical solutions and help shape public policy as well as public attitudes. Chief executive officers who support the statement are prepared to set goals, develop and expand strategies and practices, and to publicly disclose emissions as part of their existing disclosure commitment within the UN Global Compact framework, that is, the Communication on Progress. Caring for Climate is endorsed by nearly 400 companies from 65 countries. http://www.unglobalcompact.org/Issues/Environment/Climate_Change/

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Companies

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ACCIONA	Dow Chemical	Munich Re
Agbar	DuPont	Natura
Airbus	EADS France	Newmont Mining
Alcatel-Lucent Bell	EDF	Newton Investment Management
Allergan	Endesa	Nokia
Anglo American	ENI	Novartis
Aramex	Eskom	Novo Nordisk
Arcelor Mittal	Essilor	Novozymes
Areva	Euskaltel	Pax World Funds
Arla Foods	Fuji Xerox	PepsiCo
ARM	Gamesa	Pfizer
Asia Pacific Resources International	Gas Natural Mexico	Publicis
Aviva	GDF Suez	Pulmuone Holdings
AXA	Hewlett Packard Company	Rathbone Greenbank Investments
Banco do Brasil	Hilti	Repsol YPF
Bayer	Hitachi	RICOH
Broedrene Hartmann	ICA	Saint-Gobain
Cadbury	Infosys Technologies	Sasol
Cargemini	Johnson Controls	SEKEM
CEMEX	Kikkoman	SOMPO Japan Insurance
China Minmetals Corporation	Lafarge	Swiss Re
China National Offshore Oil Corporation (CNOOC)	LG Electronics	Tata
Cisco	Li & Fung Group	Telvent
Coca-Cola Company	Macondo Media Group	TIMA
Coca-Cola Hellenic	Mansour	Unilever
	Martha Tilaar Group	Vattenfall
	MAS Holdings	Veolia Environment
	Metso Corporation	Westpac

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The Ten Principles of the United Nations Global Compact

HUMAN RIGHTS

- Principle 1 Businesses should support and respect the protection of internationally proclaimed human rights; and
- Principle 2 make sure that they are not complicit in human rights abuses.

LABOUR

- Principle 3 Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
- Principle 4 the elimination of all forms of forced and compulsory labour;
- Principle 5 the effective abolition of child labour; and
- Principle 6 the elimination of discrimination in respect of employment and occupation.

ENVIRONMENT

- Principle 7 Businesses should support a precautionary approach to environmental challenges;
- Principle 8 undertake initiatives to promote greater environmental responsibility; and
- Principle 9 encourage the development and diffusion of environmentally friendly technologies.

ANTI-CORRUPTION

- Principle 10 Businesses should work against corruption in all its forms, including extortion and bribery.

