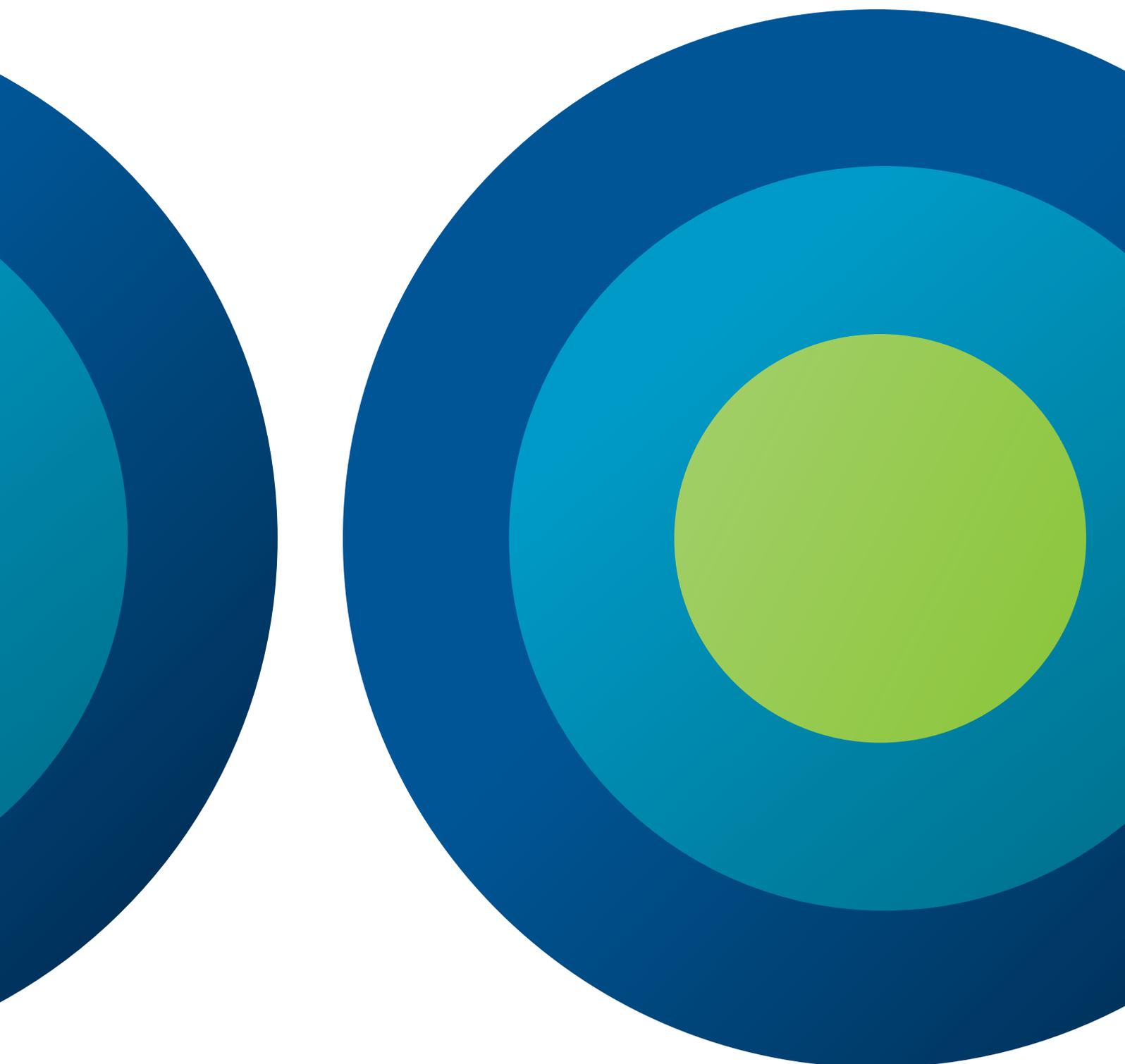


THIS DISCUSSION PAPER IS THE RESULT  
OF A COLLABORATION BETWEEN DFID,  
BARCLAYS, HSBC, FORUM FOR THE  
FUTURE, ACCLIMATISE AND SYNERGY

**CLIMATE FINANCE, BUSINESS AND COMMUNITY:**  
**THE BENEFITS OF CO-OPERATION ON ADAPTATION**  
**A DISCUSSION PAPER**



## BACKGROUND

To encourage debate around the potential roles of the private sector in helping to address the physical risks of climate change in developing countries, the UK Department for International Development (DFID) together with representatives of the financial services sector established a Financial Sector Task Force on Climate Change Adaptation.

This paper is the result of discussions of members of the 'Climate Resilient Investment' Workstream of the Task Force including DFID, Barclays, HSBC, the European Bank for Reconstruction and Development and Forum for the Future. It was prepared by the risk management consultants Acclimatise and Synergy.

The aim of this paper is to stimulate discussion about why it is so critical for businesses to take climate change adaptation seriously, to identify key actions that businesses can take, and to highlight how these actions can be designed in collaboration with local communities, so as to improve their adaptive capacity.

This work builds on an earlier report written by Barclays and Acclimatise entitled 'Credit risk impacts of a changing climate'<sup>1</sup>, as part of the London Accord project<sup>2</sup>. 'Credit risk impacts of a changing climate' focused on five diverse sectors known to be vulnerable to climate change: long-lived, fixed assets generally; chemicals and pharmaceuticals; fossil fuel power generation, supply and distribution; renewable power generation, supply and distribution; and tourism.

Climate change risks and opportunities will also affect a number of other sectors of significant economic importance in developing countries, which equally deserve further analysis, including: mining and minerals; transport; agribusiness and forestry; and primary processing of agricultural and forestry products. These additional sectors could be included in a second phase of work.

The authors would welcome feedback on this discussion paper and on the merits of undertaking a second phase that would consider other sectors.

This study has received funding from DFID, although the views expressed within do not necessarily reflect official policy. This paper represents the views of the authors and does not necessarily reflect those of DFID, Barclays, HSBC and Forum for the Future.

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

To provide feedback on this report and for more information, please contact Dr Richenda Connell, [r.connell@acclimatise.uk.com](mailto:r.connell@acclimatise.uk.com)

## FOREWORD

Tackling climate change is the challenge of our generation. The urgency of this challenge has become extremely clear. We must act now to reverse emissions and limit the impacts of climate change. Only then can we safeguard our way of life, secure the wellbeing of future generations and avoid condemning the world's poorest people to poverty.

But we can only do this if we act together. All countries will need to participate in a global deal. And all parts of society will need to play their part. Governments can agree global targets, put in place new mechanisms, set standards, provide incentives and provide public financing. But people must demand that their leaders rise to this challenge and respond to the need for new ways of living. The private sector will be the engine of change, addressing its carbon footprint, investing in clean and climate resilient technologies and ensuring its investments are robust in the face of climate impacts.

This report suggests reasons and tools for the private sector to act, particularly in developing countries, to limit the impact of climate change. Reasons to act are clear. Mining and drinks companies will face more erratic water supplies. Food companies will see increasingly drought and flood affecting crops. Infrastructure will be threatened by sea-level rise and floods. But there will also be opportunities to develop new ideas, whether for drought resistant crops or improved ways of saving water. This report shows how the private sector can plan ahead for these problems and seize such opportunities. And it illustrates that businesses will be most successful if they do this in partnership with developing country governments and people.

Confronting climate change is our shared challenge. Tackling it must be our shared achievement. I welcome this report as one step further forward in this endeavour.



Gareth Thomas,

Minister of State for Trade and Development

*Public and political debate around climate change is highly focused on mitigating the effects through controlling CO<sub>2</sub> emissions. However, despite this essential activity, some climate change impacts are already inevitable and will continue to be experienced over coming decades. The potential environmental, economic and social consequences will be material for communities and businesses, particularly in vulnerable regions. Therefore it is important to also focus on building adaptive capacity among individual businesses, sectors and communities so that significant risks and opportunities can be identified and managed effectively. As a commercial bank, Barclays acknowledges that addressing these risks and opportunities is relevant to our assessments of business relationships and transactions, and to our role as a global corporate citizen. We are pleased to contribute to this discussion paper and the project it represents, which outlines actions businesses, governments and communities can take to help developing countries manage their response to the impacts caused by changing weather conditions.*

**Christine Farnish, Director Public Policy and Sustainability, Barclays PLC**

*In key regions, the impacts of climate change are set to increasingly bear down on financial performance. As business grapples with the risks this poses, co-operation with local communities will become an important strategy to develop robust responses.*

**Nick Robins, Head of the HSBC Climate Change Centre of Excellence**

*Climate change is our number one challenge. The leading companies and investors are beginning to adapt their business models in response. More need to follow suit and we hope that this note will generate discussion, increase awareness and inform action.*

**Peter Madden, CEO, Forum for the Future.**



# VALUE AT RISK FROM CLIMATE CHANGE

There is a growing realisation that the necessity for adaptation to climate change has significant implications for businesses and the institutions providing finance to them. Climate change is not only an environmental issue, but also poses both business risks and opportunities, with implications for many aspects of business performance.

Climate change is increasingly putting at risk the value of many existing and future investments, as well as generating demand for new adaptation-specific investments. For instance, the estimated amount of investment and financial flows for adaptation is projected to represent between 0.2% and 0.8% of global investment flows by 2030 in five key sectors – water, human health, agriculture, forestry and fisheries, coastal resources, and infrastructure<sup>3</sup>. In developing countries alone the necessary adaptation finance for those same sectors is estimated at between US\$28 and US\$67 billion by 2030.

Given the scale of private investment in these sectors it is critical that the private sector addresses these risks. According to the World Development Indicators report<sup>4</sup>, investment in transport, water and sanitation projects with private participation in low and middle income countries was over US\$33 billion in 2007 (in US\$ current terms).

In turn, how companies manage these risks and respond to these opportunities could enable or undermine the adaptive capacity of local key stakeholders they interact with, such as workers, consumers and neighbours<sup>5</sup>. This in itself can generate a second set of business risks and opportunities.

Some geographic locations are more vulnerable than others to climatic hazards (see page 13). It is at these locations where the benefits of proactive climate risk management, and the opportunities for investment in climate-adapted goods and services, will be greatest. However, because of the interconnections of global trade and finance, climate change is likely to affect other businesses in many other areas.

All of the climate-related risks outlined below could affect business financial performance. Additional capital expenditure may be needed to address climate change – for instance, to develop new water resources, improve flood defences or relocate assets. Operating costs may increase, along with maintenance, repair and decommissioning costs.

Assets may depreciate faster than anticipated in financial projections and asset operating lives may be shortened, with implications for company value. Community tensions and conflicts may lead to project delays and loss of output. Costly litigation may ensue. Revenues may decline, as market demand changes.

However, from every business risk arises an opportunity: while increased pressures and market contractions might negatively impact on business performance, new markets for products and services will evolve.

### LOCAL COMMUNITIES

- ▼ Tensions and conflicts because of increased competition for scarcer resources
- ▼ Loss of social licence to operate
- ▼ Damage to reputation
- ▲ Collaborate to improve community adaptive capacity

### SUPPLY CHAIN

- ▼ Degraded health, safety and productivity of contractors and suppliers
- ▼ Climate-triggered interruptions
- ▲ Increase resilience of supply chains

### DESIGN & PLANNING

- ▼ Delays to start up
- ▼ Increased land, energy and water scarcity
- ▲ Design of new climate-resilient infrastructure, products and services

### OPERATIONS

- ▼ Damage to physical assets
- ▼ Reduced asset operating life
- ▼ Interruptions from more extreme weather events
- ▼ Loss of efficiency and output
- ▲ Retrofit for increased resilience

### WORKFORCE

- ▼ Deteriorating health and safety
- ▼ Increased absenteeism
- ▼ Decreased productivity
- ▲ Invest in climate-resilient health & safety programmes

### MARKET CONDITIONS

- ▼ Contraction of some markets
- ▼ Damage to reputation
- ▲ Expanded markets for products and services
- ▲ New markets for climate-resilient infrastructure, products and services

### FINANCE

- ▲ Demonstrating robust risk management can ease access to capital

### INSURANCE & LITIGATION

- ▼ Increased litigation risk
- ▼ Increased insurance premiums and exclusion clauses
- ▼ Exclusion of some locations at risk
- ▲ Better insurance terms for climate-resilient customers

### POLICY & REGULATION

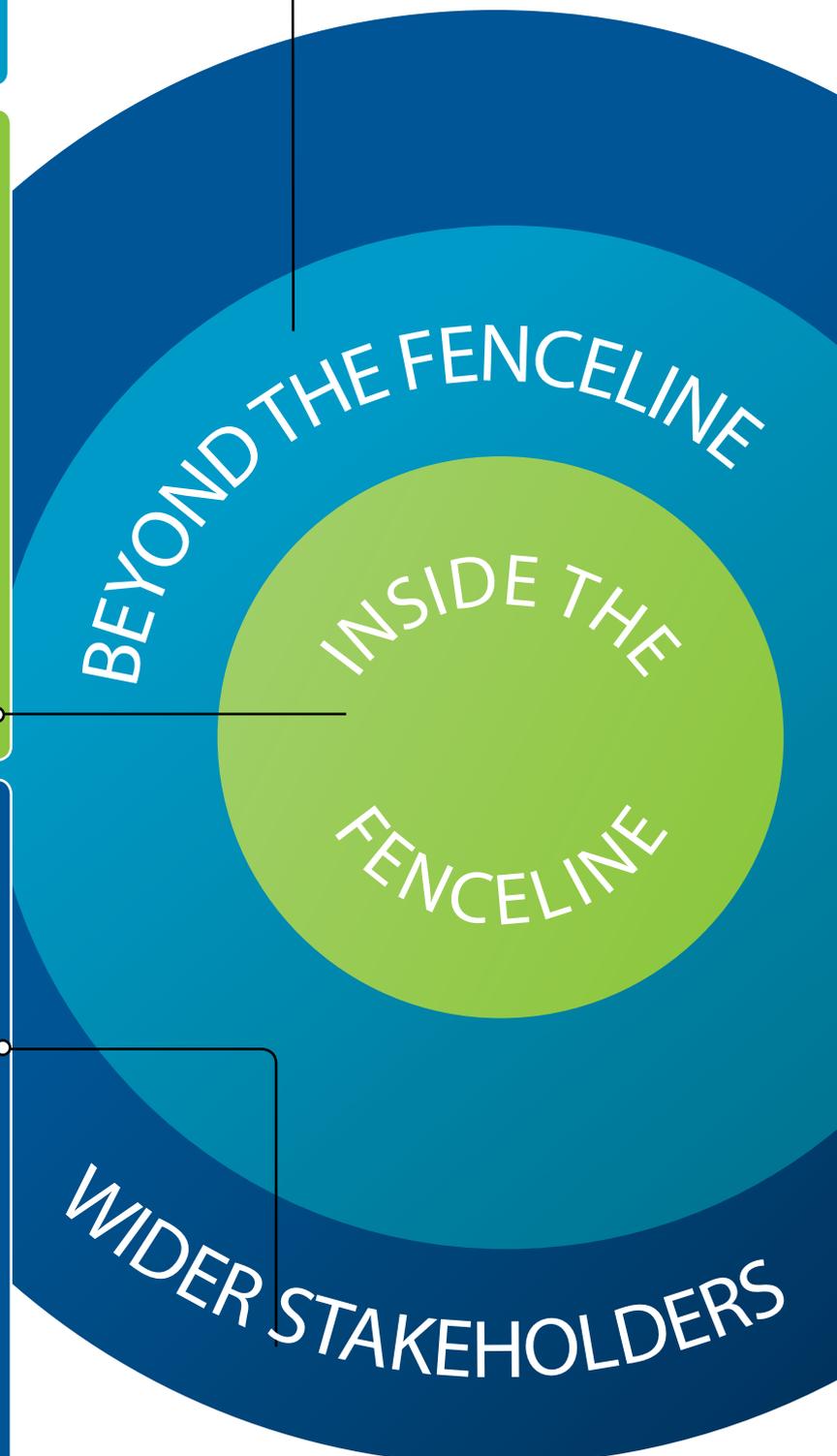
- ▼ Increased regulatory pressure
- ▲ Collaborate with governments to prepare for climate change

## KEY BUSINESS RISKS AND OPPORTUNITIES FROM CLIMATE CHANGE

[adapted from: World Business Council for Sustainable Development (2008). *Adaptation: An issue brief for business*]

▼ RISKS

▲ OPPORTUNITIES



# KEY BUSINESS RISKS

## Project planning risks

For large, long-term projects, resources such as land, energy and water supplies need to be secured.

Best practice among financial institutions requires project-affected communities to be consulted during project design and compensated adequately for loss of access to these resources.

Vulnerability of resources to climate change and extreme climatic events, as well as increased demand from local communities as a result of changing climatic conditions, may lead to conflicts over resource use.

## Operating risks

Climate change can affect site conditions through increased flood risk, changing groundwater levels, increased risks of subsidence, heave, landslip, contamination and soil erosion, as well as thawing permafrost.

Assets designed on the basis of historic climate data may no longer be fit for purpose. Moreover, any damaging impact on local communities and their resources stemming from businesses' operations could create friction.

Complex operations and production networks can also be sensitive to changes in average weather conditions and interruptions from extreme climatic events, with consequent impacts on product or service performance, quality and timeliness.

## Supply chain risks

Employees, contractors and suppliers are vital business assets. Climate change and extreme events may negatively affect their health, safety and productivity, particularly for those who are poorer and more vulnerable.

Some pests and diseases, such as malaria, are spreading to new areas because of climate change.

These growing risks may create a business case for investing in community health and safety programmes.

Climate-triggered interruptions to supply chains and distribution systems will affect business performance. Companies with a global outreach are particularly vulnerable.

## Shifts in demand for goods and services

Some markets will contract as climate changes, but there will undoubtedly be new opportunities. New infrastructure will be needed to help manage climate risks, such as flood defences, reservoirs and agricultural processing facilities for new crops.

Climate change will influence some of the most fundamental determinants of health and the distribution of some diseases. As a result, the pharmaceutical sector will need to find new solutions to new challenges. The tourism sector will also experience changes in seasonality of demand and attractiveness of tourist destinations.

As local communities are businesses' customers too, providing them with climate-adapted products and services can not only improve their resilience in the face of a changing climate, but can also create new business opportunities.

## Loss of social license to operate and damage to reputation

Climate change can make it more difficult to obtain and maintain social licence to operate, particularly by exacerbating existing tensions over access to land, water and energy resources.

Communities are able to disrupt business operations through complaints, disputes and protests, which can damage a company's reputation. Moreover, experience has shown that the reputations of financial institutions may also suffer through their association with companies with poor risk management systems.

## Insurance and litigation risks

As climate change amplifies existing risks and introduces new ones, insurance premiums and exclusion clauses are becoming more onerous. Some insurers refuse to offer insurance in locations they now consider too vulnerable.

Climate change is now considered to be reasonably foreseeable. Failure to assess and manage risks, including the cumulative impact of business activities on communities, will potentially create liabilities for companies, either through claims from investors challenging the fiduciary duty of trustees<sup>6</sup>, or through legal actions from harmed community groups.

## Accessing capital

Businesses often rely on external financing to develop new projects. Commercial financing is increasingly contingent on borrowers demonstrating effective environmental and social risk management in their operations, and this may extend to managing potential climate change impacts.

The credit crisis may lead to greater emphasis being placed on more robust risk management practices.

Moreover, the Equator Principles, adopted by many leading financial institutions, require high standards of management of environmental and social issues in project financing. Demonstration of effective systems for climate change adaptation can ease access to project finance.

### CASE STUDY

#### POWER SHORTAGES IN GHANA PROMPT A BUSINESS ADAPTIVE RESPONSE



In Ghana, power cuts began in August 2006 when low water levels were registered at Lake Volta, as the country relies on hydropower facilities for about 60% of its power. The Volta River Authority (VRA) was forced to ration power supplies on a scale not seen since 1983.

The crisis damaged the revenues of many of Ghana's small and medium businesses. It also threatened mine closures due to electricity outages and led to increases in operating costs. New mines have had to be redesigned. Four mining companies have collaborated to build a new 80MW dual fuel thermal power plant at an estimated cost of \$45.5 million.

Climate change in Africa will increasingly impact water resources and consequently electricity production, strengthening the case for increasing the resilience of water and energy infrastructures. However, it is important that adaptation actions do not hamper mitigation efforts by increasing carbon emissions – the new dual fuel thermal power plant, which decreases the reliance of the mining companies on hydropower, will be fired by diesel and natural gas.

Sources: Newmont Ghana, <http://tiny.cc/PPb1J>; New African, <http://tiny.cc/S1NUO> [last accessed 20/11/2008].

The range of business risks and opportunities establish a strong business case for effective climate risk management. This is often best done in co-operation with local communities and governments as discussed in the next section.

## CASE STUDY

### COCA-COLA WORKING WITH COMMUNITIES TO MANAGE WATER SCARCITY

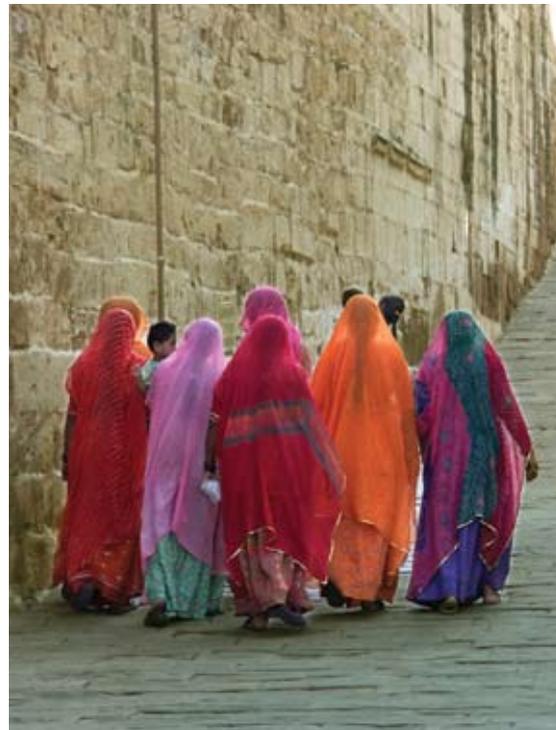
The Energy and Resources Institute, a leading Delhi-based environmental research group, published a report in early 2008 calling on Coca Cola to consider shutting down one of its bottling plants in drought-stricken Rajasthan, India, saying the plant was depleting already scarce water supplies for nearby villages.

The report looked at 6 of Coca Cola's 49 bottling plants in India, and highlighted specific conditions at the Kaladera plant in Rajasthan. The plant's presence in this area would "continue to be one of the contributors to a worsening water situation and a source of stress to the communities around," it said. The company should find alternative water supplies, relocate or shut down the plant, the report concluded.

The chief executive of Coke's India division, Atul Singh, said the company would not close down the plant. "The easiest thing would be to shut down, but the solution is not to run away. If we shut down, Rajasthan is still going to have a water problem... We want to work with farming communities and industries to reduce the amount of water used."

The report is among the latest in a series of controversies around Coca Cola's use of water in its operations. All over India problems of water shortages and community conflict emerged around many of Coca Cola's bottling plants. Discontented communities have networked with regional, national and international organisations fighting for human rights to water. As a result, universities in the US and UK cancelled their contracts to sell exclusively Coke brand products.

In a pledge to regain its social licence to operate, Coca Cola has engaged in various activities around water conservation in India. In partnership with the Central Ground Water Authority (CGWA), local governments and communities, Coca Cola helps combat water scarcity and depleting groundwater by setting up rainwater harvesting partnerships in critical areas. Moreover, at all its Indian bottling plants, Coca Cola implemented



rooftop rain harvesting. The Coca-Cola India Foundation was launched in 2007 with a focus on water stewardship and other sustainability initiatives. Worldwide, Coca-Cola is engaged in watershed protection activities.

Community issues and water resources depletion influenced the company to strengthen its plant siting requirements, its water monitoring capabilities, as well as its guidelines for source protection in areas of scarcity. Coca Cola could also aim at making its water policy climate change resilient by taking into account the future impacts of climate change on water availability and demand.

*Sources: Drew, G. (2008). From the Groundwater Up: Asserting water rights in India. Development, 51, (37–41); International Herald Tribune, <http://tiny.cc/fHz0f>; Coca-Cola, <http://tiny.cc/wPh3k> and <http://tiny.cc/JkGZE> [last accessed 20/11/2008].*

# INTEGRATED BUSINESS, COMMUNITY AND GOVERNMENT CLIMATE RISK MANAGEMENT

Climate change is like many other risks and uncertainties that businesses deal with every day

- be it changes in interest rates or foreign exchange rates, or fluctuations in the prices of raw materials.

Because they are so inter-related, the management of the risks and opportunities from climate change should be integrated into mainstream business risk management.

In this context, taking account of local community needs when identifying business risk management actions for climate change will help deliver on key business objectives – for instance by helping to ensure a stable investment climate and a healthy workforce. Failure to do so can make communities more vulnerable and can translate into loss of reputation and profitability.

Moreover, addressing adaptation in collaboration with communities and public authorities can bring added value. They may hold more information on local climate exposures and vulnerabilities than the company itself and will be of help in co-designing robust adaptive strategies.

Building adaptive capacity will improve the ability of a community to adapt on its own to climate change, by improving economic resources, technology, information and skills, infrastructure, institutions and equity<sup>7</sup>. No company is an island, and ensuring a healthy environment is key to business performance.

The following actions can be taken by businesses to adapt their strategies and projects, while building community adaptive capacity to inevitable climate change.



# KEY RISK MANAGEMENT ACTIONS

## Identify opportunities

Identify the opportunities that climate change presents such as changes in markets for products and services due to climate change – so as to gain an ‘early mover’ advantage. Increasingly, businesses need to anticipate shifting market demand for products and services because of the changing weather. For example, the energy sector is experiencing an increased demand for cooling in hotter summers and lower demand for heating in warmer winters.

## Develop adaptive strategies together

Work with communities, governments and regulators and engage proactively with insurers, investors, lenders and suppliers to develop adaptive strategies together. Partnerships help create consensus and identify the best solutions, as well as manage reputational risks. For example, by creating a shared understanding of the robustness of power and water supplies, effective stakeholder engagement can help to ensure that business activities do not make local communities more vulnerable to climate change. Moreover, businesses’ adaptation actions may be more effective when they are an integral part of wider community programmes.

## Make new facilities climate-resilient

Make new facilities climate-resilient by taking account of climate change as part of design and site selection. Seek opportunities to work together with local communities and public authorities to understand their vulnerabilities and coping strategies.

## Address risks in ESIA

Address climate risks and risk management measures as part of Environmental and Social Impact Assessments (ESIAs). If an ESIA does not take account of climate change, the project may not perform as intended over its operating life.

## Adapt existing facilities

Identify priorities for adapting existing facilities, working with local communities to understand their adaptation needs.

## Amend corporate policies

Amend corporate policies, standards and codes of practice to make them climate-resilient, considering the vulnerabilities and changing needs of local communities. While most regulations may not yet reflect climate change, forward-thinking businesses are already reviewing and upgrading their policies, standards and codes of practice to take account of projected changes. Standards based on historic climate data are no longer a good guide to the future.

## CASE STUDY

### KHIMTI KHOLA HYDROPOWER PLANT IN NEPAL BUILDS COMMUNITY ADAPTIVE CAPACITY

Nepal has an acute shortfall in electricity supply that, together with political instability, restricts economic and social development in both urban and rural areas. Yet the country has the world’s second largest hydropower potential. Khimti Khola was the first private hydropower scheme in Nepal and is owned by Himal Power Limited (HPL). It is a ‘run of the river’ plant on the Khimti river, supplying 60 MW of electricity to the national grid. The plant is located in a region where climate change will have significant impacts on water resources. Positive community relations and local development were recognised as critical success factors for the project and as necessary actions for maintaining the project’s social licence to operate by reducing the risk of Maoist disruptions.

HPL invested in various community development programmes including rural electrification, building irrigation channels for farmers, health improvement, education and skills development, and sustainable forestry. These actions have contributed towards more sustainable and climate-resilient farming livelihoods in the face of climate change and also promoted economic development, which helps communities to move into less climate-sensitive sectors.

Sources: International Financial Corporation (IFC) and Acclimatise.



### Use financial risk management mechanisms

Use financial risk management mechanisms such as insurance, weather derivatives and forward trading in commodities to manage climate risks. Support the development of risk

transfer mechanisms for SMEs at risk from climate change. Insurers are looking at ways that they can encourage and promote adaptive actions by their customers<sup>8</sup>.

#### CASE STUDY

### SHELL AND WETLANDS INTERNATIONAL PROTECT ECOSYSTEMS AND COMMUNITY LIVELIHOODS



Coastal wetlands such as mangrove forests, coral reefs and coastal floodplains are natural physical buffers which reduce damages from storm surges and rising sea levels. They are also particularly vulnerable to the impacts of energy industry policies and practices.

Shell and Wetlands International have established a five-year partnership to enhance the conservation and sustainable use of wetlands by Shell and its affiliates.

The partnership is in recognition of the disproportionately high global significance of wetland ecosystems in terms of biodiversity, water provision, local communities' livelihoods and traditions, and climate change. Through protecting wetlands, Shell is aiming to minimise the impacts of its activities on vulnerable ecosystems and livelihoods.

The activities under the partnership will promote the efficient use of wetlands in river basins and along flyways of migratory birds, develop and demonstrate innovative mechanisms to address environmental poverty in wetlands and address climate change mitigation and adaptation in collaboration with local communities.

Sources: Wetland International, <http://tiny.cc/rtCGp>; Shell, <http://tiny.cc/15L1L> and <http://tiny.cc/HdGoW> [last accessed 20/11/2008].

A company may adopt a number of these strategies to adapt to climate change. As outlined above, in many cases, building community adaptive capacity makes business sense, as it helps to manage risk and develop opportunities.

## PARTNERSHIPS WITH GOVERNMENT

In most cases, building community adaptive capacity makes business sense. In this context, collaboration with public or civil authorities can bring benefits for local stakeholders, for example reliable access to energy for SMEs.

Sometimes, cooperation between business and public or civil authorities on adaptation to climate change will be more effective than working alone (see the BHP Billiton case study).

Moreover, in cases where contributing to community adaptive capacity cannot be justified in pure economic terms, business and government co-operation on adaptation can be vital to securing ancillary benefits which may not be achievable by business alone. This in turn can

create reputational benefits for business (see the Shell case study).

There are also many opportunities for governments to help drive private sector adaptation efforts and deliver benefits for local stakeholders in terms of increased adaptive capacity. Governments can set the wider economic development context and appropriate enabling environment within which businesses operate, promote good governance, create incentives for adaptive actions by businesses, require community consultation, provide funding for and access to research on climate change impacts, and ensure equitable distribution of revenues<sup>a</sup>.

### CASE STUDY

#### BHP BILLITON FIGHTING MALARIA WITH COMMUNITIES AND GOVERNMENTS

BHP Billiton's Mozal aluminium smelter operation in Southern Mozambique was threatened by endemic malaria. The disease affected the facility's performance through absenteeism and low staff morale. Moreover, Mozal became an un-attractive destination for skilled employees. The company realised that limiting malaria programmes to the Mozal site itself – by spraying its facilities and controlling nearby breeding areas – would have little effect. Hence, it became a partner in the Lubombo Spatial Development Initiative (LSDI) – a tripartite governmental programme to develop the Lubombo region and decrease malaria prevalence. Within the LSDI, BHP Billiton was more capable of implementing an effective malaria control programme in the area around its Mozal operations. As a result of climate change, shifts in areas at risk of malaria are predicted. Companies working in areas outside the current disease distribution will need to monitor and assess their risks, so as to implement early actions to build the resilience of their workforce and communities.

*Source: BHP Billiton, <http://tiny.cc/CEPHU> [last accessed 20/11/2008].*



## FINAL REMARKS

The need for businesses to assess and address the risks derived from climate change is driven not by philanthropy, but by the need to avoid unforeseen costs and delays in their commercial operations.

It is clear that a changing climate represents a source of significant risk with the potential to impact adversely upon a range of business and commercial activities, as well as on local, vulnerable communities.

Efforts to manage these adverse impacts will often be complemented by establishing and maintaining

collaborative relationships with affected local stakeholders including communities, suppliers and local governments.

Those companies which successfully integrate climate risk considerations into their business and stakeholder engagement strategies seem more likely to establish a competitive advantage over their peers – not only through better management of potentially material business risks but also through the earlier identification of business opportunities for the development of climate-resilient products and services.

## GEOGRAPHIC LOCATIONS VULNERABLE TO CLIMATE CHANGE AND INCREASED CLIMATIC VARIABILITY

Changing climate hazard	Particularly vulnerable locations
 <p>Average temperature rise and increased risk of heat waves</p>	<p>Regions where average temperatures are already high,</p> <p>Regions where temperature thresholds may be crossed (e.g. permafrost zones, mountainous regions),</p> <p>Urban centres, where the Urban Heat Island effect (the localised pool of warm air that frequently builds up over towns and cities) will exacerbate high temperatures.</p>
 <p>Mean sea level rise, increased storms surge heights, wave heights, coastal flooding and erosion</p>	<p>Coastal zones and islands,</p> <p>Offshore locations,</p> <p>Countries with weak governance, prone to political destabilisation.</p>
 <p>Decreased seasonal precipitation, increased risks of drought, subsidence and wildfire</p>	<p>Regions where rainfall is already scarce,</p> <p>Countries with weak governance, prone to political destabilisation,</p> <p>Locations where current demand for water almost matches or outstrips supply,</p> <p>Locations where water quality is poor,</p> <p>Water resources dependent on glaciers (those areas dependent on glacier melt are probably observing increases in water resources in the short term, as glaciers melt faster, but over time, the loss of glaciers will lead to decreases in water resource availability),</p> <p>Subsidence-prone soils,</p> <p>Regions prone to wildfire,</p> <p>Interboundary river basins where tensions already exist over water use.</p>
 <p>Increased seasonal precipitation and more rapid snow melt, leading to increased risk of river flooding</p> <p>Increases in heavy precipitation events leading to increased risk of flash floods and soil erosion</p>	<p>Regions with high rainfall,</p> <p>Estuaries, deltas and river floodplains,</p> <p>Mountainous and glacial regions,</p> <p>Locations prone to landslip,</p> <p>Urban centres with stormwater systems that are not designed to manage short duration intense rainstorms,</p> <p>Contaminated environments (land, water).</p>
 <p>Possible increased storm intensity and frequency</p>	<p>Areas at risk from tropical storms (including hurricanes, typhoons, cyclones) and extra-tropical storm events particularly in urban areas.</p>

<sup>a</sup> For instance, the Extractive Industries Transparency Initiative (EITI) aims to strengthen governance by improving transparency and accountability in the extractive sector. It supports improved governance in resource-rich countries through the verification and full publication of company payments and government revenues from oil, gas and mining.



*DFID, the Department for International Development, is the part of the UK Government that manages Britain's aid to poor countries and working to get rid of extreme poverty. DFID works toward achieve the Millennium Development Goals - a set of targets agreed by the United Nations to halve global poverty by 2015.*



*Barclays is a major global financial services provider engaged in retail and commercial banking, credit cards, investment banking, wealth management and investment management services, with an extensive international presence in Europe, the USA, Africa and Asia. With over 300 years of history and expertise in banking, Barclays operates in over 50 countries and employs over 150,000 people. Barclays moves, lends, invests and protects money for over 42 million customers and clients worldwide.*



*The HSBC Climate Change Centre of Excellence analyses the commercial implications of climate change for HSBC Group businesses and clients.*



*Forum for the Future is a sustainable development charity, working in partnership with 130 leading organisations in business and the public sector. Its vision is of business and communities thriving in a future that is environmentally viable and socially just, and it seeks innovative, practical ways to make this happen.*



*Acclimatise is a specialist risk management company providing expertise on climate change adaptation. We offer a unique portfolio of tools, risk assessment services and risk intelligence products. We bridge the gap between the latest scientific developments and decision-making, helping our clients to understand and manage the physical risks of climate change and variability. By reviewing legislation, regulation, government policy and stakeholder positions, we guide our clients on the threats and opportunities of climate change.*



*Synergy helps organisations improve the way they understand and manage their interactions with society. We work with companies, governments and NGOs to improve their performance and create positive social change. Our work in over 40 countries focuses on social issues surrounding large-scale projects in emerging markets.*

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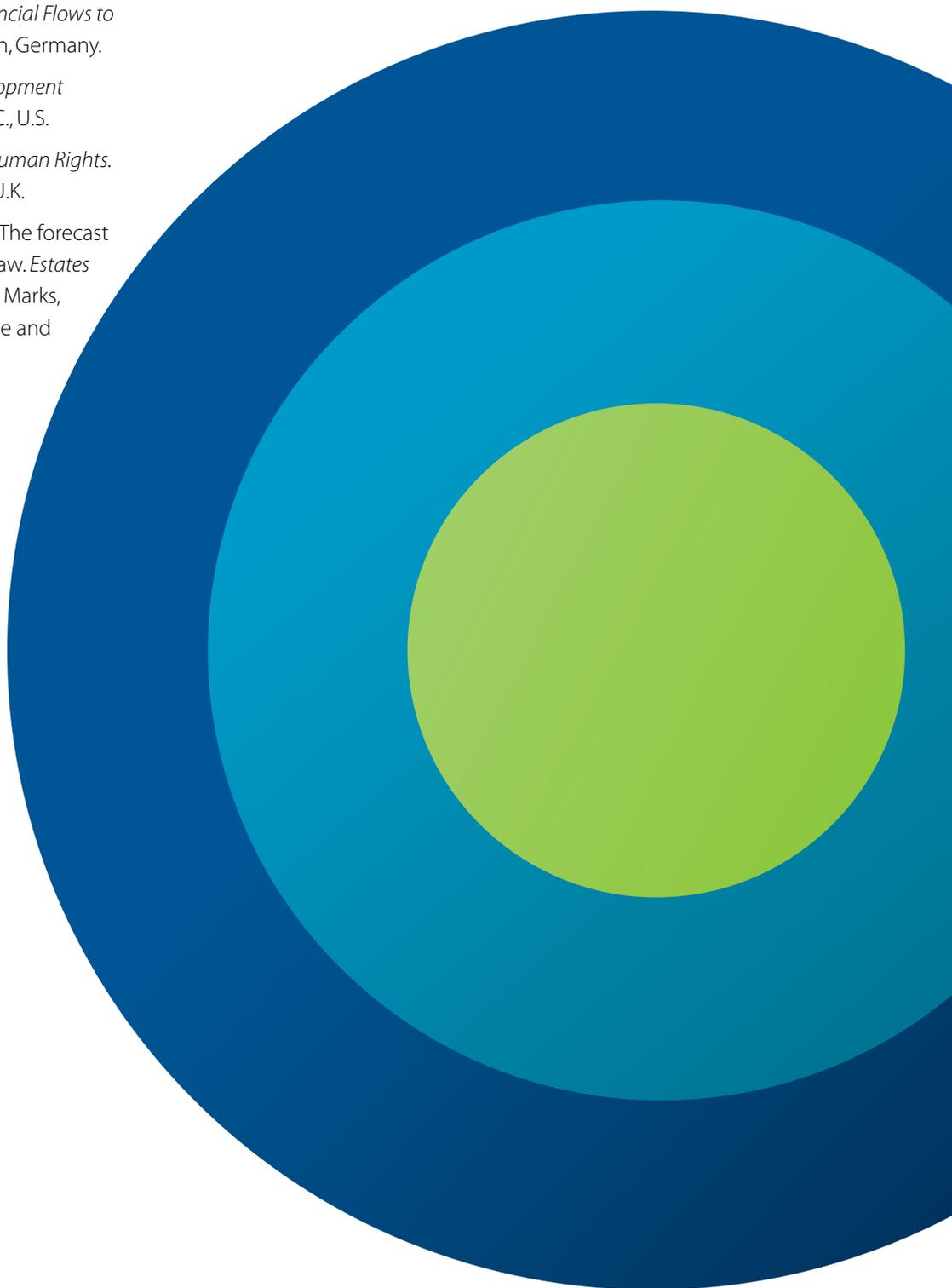
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The development of this discussion paper was overseen by a steering group including the UK Department for International Development (DFID), Barclays, HSBC, the European Bank for Reconstruction and Development and Forum for the Future, and delivered by the risk management consultants, Acclimatise and Synergy.

