# CARBON DOWN PROFITS UP
## THIRD EDITION

THE CLIMATE GROUP

# CONTENTS



COVER IMAGE
THE REICHSTAG, BERLIN – HOME OF THE GERMAN PARLIAMENT AND ONE OF MANY BUILDINGS IN THE CITY EQUIPPED WITH SOLAR CELLS. BERLIN HAS MADE SIGNIFICANT PROGRESS IN CUTTING GHG EMISSIONS – THE CITY HAD ALREADY MADE A 14% REDUCTION IN EMISSIONS BY 2002.

# FOREWORD

The Climate Group publishes this, the third edition of Carbon Down Profits Up, at a time when climate change and energy security have become priorities for government and business alike. Over the last 12 months, we have observed an unprecedented expansion in the number of corporations and governments reporting action to reduce greenhouse gas (GHG) emissions. We see front runners across a diversity of sectors, from public to private, oil and gas to hi-tech, retail to real estate, continue to achieve cuts beyond those mandated by policy, reaching over 25% in many cases. More importantly, we continue to see these organisations realising significant financial and economic returns from their actions.

The fundamental message of this report is clearer than ever – GHG emissions reduction is a straight business proposition for those that pursue it.

So what lies behind the growth in activity reflected in successive editions of this report? Only recently, we saw carbon management in many firms filed firmly under "compliance risk," or a nice-to-have component of corporate social responsibility, perhaps. Now, it is clear to us that advances in science, media-driven breakthroughs in public awareness and a growing acceptance of the inevitability of stronger policy frameworks are altering the arena. The old adage that in every threat lies opportunity holds true, and carbon strategy is fast becoming a competitive issue amongst corporate boardrooms and political parties.

Transparency is also undoubtedly a factor in the reporting boom. Pushed by investor demands and pulled by availability of new reporting methodologies, more companies are turning the spotlight on their own performance. Much still remains to be done, however, to improve standards of carbon disclosure such that better comparisons can be drawn. Nevertheless as the reporters grow in number, so we tighten the criteria for their inclusion. Of over 1,500 organisations surveyed, only the 137 most impressive results in carbon reduction are selected here.

The Climate Group is privileged to work with some of the leaders in this field, assisting as best we can those pushing the envelope on carbon reduction, as well as those driving new markets in climate solutions. Whilst much more needs to be done if the worst impacts of climate change are to be avoided, we believe policymakers in particular should see real cause for optimism in the experiences of the leading companies, cities and regional governments. We hope that by drawing attention to the successes of these role models, we can inspire others to rise to the challenge.

**STEVE HOWARD**
**CEO, THE CLIMATE GROUP**

DISTRICT DHC PLANT, TOKYO, JAPAN – THE IMPERATIVE FOR REDUCING EMISSIONS IS BECOMING INCREASINGLY CLEAR AS MORE COMPANIES AND SUB-NATIONAL GOVERNMENTS ARE TAKING ACTION.

# OVERVIEW
# CARBON PROFITABILITY

**RIGHT**
**DISTRICT CHP PLANT, TOKYO, JAPAN – 15 KEY MEASURES TO ACHIEVE EMISSIONS REDUCTIONS HAVE BEEN IDENTIFIED IN THIS REPORT – INCLUDING ENERGY EFFICIENCY, FUEL SWITCHING AND PROCESS CHANGES.**

With the science of dangerous climate change now widely accepted by governments, companies and the general public, 2006 has seen a shift away from the debate over the role of GHGs in shaping our planet's future to one about how to make the deep emissions reductions necessary to avoid the worst climate impacts. As in previous years, this third edition of Carbon Down Profits Up highlights leadership in this area and points to the action, innovation and concrete results that have done most to cut emissions. In particular, the report shows that there is an ever-growing cohort of companies, cities and regional governments that, for a variety of reasons and with a range of different strategies, have managed to reduce their carbon footprints in a way that is consistent with strengthened operational performance and in many cases, making significant cost savings. Understanding how economic development and deep emission reductions can be mutually reinforcing is the key to a successful transition to a low carbon economy.

**IN THIS EDITION:**

- **137 ORGANISATIONS FROM 20 COUNTRIES HAVE REPORTED GHG EMISSIONS REDUCTIONS**
- **27 CORPORATIONS REPORTED BOTH EMISSIONS REDUCTIONS AND COST SAVINGS. CUMULATIVELY, THESE EMISSION REDUCTIONS TOTALLED 89.5 MILLION TONNES $CO_2E$ – AN AVERAGE REDUCTION OF APPROXIMATELY 18%**
- **CATALYST PAPER, DUPONT, ASTRAZENECA, AND THE GOVERNMENTS OF SEATTLE (US) AND WOKING (UK) HAVE CUT OPERATIONAL EMISSIONS OVER 60%**
- **ENERGY EFFICIENCY, RENEWABLE ENERGY AND WASTE MANAGEMENT ARE THE MOST FREQUENTLY IMPLEMENTED MITIGATION MEASURES ACROSS ALL SECTORS, PUBLIC AND PRIVATE**

This compatibility between economic growth and climate protection was one of the key findings of the recently published Stern Review on the economics of climate change. Two of the review's major conclusions were that:

- the cost of cutting GHG emissions is likely to be significantly lower than the costs associated with the impacts of climate change; and
- at a macro level there is considerable potential for there to be economic benefits associated with GHG emission reductions.

The findings of this report strengthen this argument at the micro-level. Without pretending that mitigating climate change will be achieved without cost, the 84 corporations, 36 city and 17 regional governments profiled here demonstrate that there is considerable scope to cut emissions and reap significant financial benefits.

These organisations are collectively responsible for over 3.5 billion tonnes of $CO_2e$ (equivalent) emissions – nearly 8% of the global total. While there may be some overlap between sectors, the corporations listed account for 1.8 billion tonnes $CO_2e$, the cities for 336 million tonnes $CO_2e$ and the regions for 1.3 billion tonnes $CO_2e$. Together, the 137 organisations have reduced their emissions by over 497 million tonnes $CO_2e$, an average cut of over 14%; nearly half of these have been achieved by corporations. Among the most impressive achievements are the 71%, 63% and 60% reductions by Catalyst Paper, AstraZeneca and DuPont respectively. Local governments have made similarly impressive reductions in operational (corporate) GHG emissions and as in previous editions of this report, Woking's 79% and Seattle's 60% cuts since 1990 stand out as beacons to other cities.

The ways these cuts have been achieved also supports the conventional wisdom that: a) there is significant potential for energy efficiency improvements – 126 organisations (92%) used energy efficiency as part of their emissions reductions strategy – and b) that no single approach will be sufficient to reduce global emissions to the levels that science suggests are necessary. Almost all the organisations in this report employed more than one measure, with over 100 (73%) using some form of renewable energy, 77 (56%) improving waste management and 102 (74%) organisations using five or more different measures.

Together these measures have enabled organisations to make impressive cost savings and returns on investment, in particular from energy efficiency improvements that, in many cases, have payback periods of less than one year. Dow Chemicals, for example, managed to save US$4 billion between 1994 and 2005 from reduced energy use, while DuPont saved US$3 billon between 1990 and 2005. City and regional governments too have managed to make significant cuts to energy bills: Austin (Texas) has saved US$200 million over the last 14 years, with Minneapolis and Toronto achieving similar paybacks on their energy conservation investments. California, for its part, estimates that improvements in energy efficiency in the industrial and commercial sectors between 1975 and 1995 provided economic net benefits of US$875-$1300 per capita and that existing building and appliance standards saved Californians US$56 billion through 2003 and will save an additional US$43 billion in utility costs between 2001 and 2013. In total, over US$64 billion in savings to consumers and residents have been reported by cities and regions.

All in all, while efforts to cut emissions are still far from commensurate with the scale of the problem, the evidence presented here clearly points to the fact that cutting emissions can make economic sense. For businesses a proactive approach to tackling climate change can enhance performance by improving reputation and brand value, cutting operational costs and offering new business opportunities.

Our hopes for future editions of this report are threefold:

– We can report on the significant growth of businesses, cities and regions demonstrating reductions in GHG emissions;
– We can point to a range of smart policies, initiatives and campaigns that encourage behaviour changes in support of a low carbon economy; and
– We can provide more robust data – based on use of rigorous and consistent measuring and reporting methodologies – that enables effective benchmarking and further analysis of the financial benefits associated with reduced GHG emissions.

**RIGHT**
**LOW CARBON URBAN BUILDINGS, NEW YORK, USA – SUSTAINABLE BUILDINGS – AND ENERGY EFFICIENCY ARE EFFECTIVE MEASURES WHICH HAVE BEEN IMPLEMENTED BY A LARGE NUMBER OF ORGANISATIONS IN THIS REPORT. LOW CARBON INITIATIVES AT GOVERNMENTAL AND CORPORATE HEADQUARTERS ALIKE ARE KEEPING ENERGY COSTS DOWN AND REDUCING GHG EMISSIONS AT THE SAME TIME.**

We are optimistic these hopes will be realised and look forward to continuing to showcase companies, cities and regions that are embracing the challenges and reaping the rewards of a lower carbon economy in 2007.

## METHODOLOGICAL ISSUES

This report is designed to provide an accessible set of tables detailing the GHG emissions reductions achieved by leading companies and sub-national governments around the world, the measures they have taken and the benefits they have received. The tables are, of course, by no means exhaustive but give an overview of the scale of emissions reductions and cost savings that are possible and of the strategies that have been most widely employed.

This report is based almost exclusively on secondary research, using 2006 responses to the Carbon Disclosure Project (CDP) for the corporate section, alongside company annual/CSR/environmental reports, government publications, websites and independent reports and surveys. In addition, for the cities/regions sections, we devised and distributed our own questionnaire requesting information on emission reductions to all of the cities and regions included in the previous edition. We then looked at a variety of city/regional websites, recently announced climate action plans and news stories and collated the information. Wherever possible, The Climate Group has used data that has been independently verified and carried out checks where information is unclear or appears unsubstantiated. Where significant doubts about data quality remained, we excluded organisations from the tables.

The research highlighted that, despite the numerous efforts to improve reporting, in terms of methodologies (e.g. the GHG Protocol and ISO 14064), formats (e.g. the Global Reporting Initiative) and demands (e.g. CDP, the Global Framework for Climate Risk Disclosure and national regulations), there is still no internationally accepted procedure for assessing and reporting GHG emissions and emissions reductions. Indeed, of the 84 companies included, only 34 have had their emissions independently verified.

**OPPOSITE PAGE**
**SOLAR PV INSTALLATION, CALIFORNIA, USA – OVER 100 OF THE ORGANISATIONS PROFILED IN THIS REPORT HAVE INVESTED IN RENEWABLE ENERGY, MAKING IT THE SECOND-MOST POPULAR MITIGATION MEASURE FOR BOTH PUBLIC AND PRIVATE SECTOR INSTITUTIONS.**

Until there is greater reporting consistency, it will remain difficult to draw meaningful comparisons between organisations or sectors on actual emissions reductions or cost savings. Therefore, although we have done our utmost to verify and harmonise the data presented, not all the figures on savings and increased revenues are directly comparable.

### 3.5 BILLION TONNES $CO_2e$ – TOTAL EMISSIONS COVERED BY THIS REPORT

In spite of the variety of reporting formats and metrics, we chose to concentrate on a number of key indicators. Most importantly, the report focuses on absolute emission reductions, reflecting the widespread recognition that, in order to avoid dangerous climate change, the world needs to reduce the absolute level of GHG emissions released to the atmosphere. Emissions intensity targets and reductions (e.g. $CO_2$ produced per unit of sales, revenue or market value) can doubtless be challenging, especially in sectors with rapid expansion, but do not guarantee real reductions. Where possible, therefore, we have calculated an absolute reduction equivalent for organisations reporting emissions intensity reductions and have excluded those for which intensity reductions do not equate to an absolute reduction.

Similarly, where sufficient information is available, we have tried to convert other actions which indicate that emissions reductions have resulted, e.g. increases in energy efficiency and reductions in energy use. Where this has not been possible, measures are included where they either clarify the data provided or appear to be associated with major emissions reductions. The emphasis of this report is also on at-source reductions. Other approaches, such as carbon neutrality through the purchase of offsets (see Focus: Carbon Neutrality) or purchased renewable energy (see Focus: Renewable Energy) are without doubt important but are dealt with as secondary measures. In the latter case, where emissions reductions associated with renewable energy purchases cannot be unequivocally attributed to the purchaser, they have not been included.

### 497 MILLION TONNES $CO_2e$ – TOTAL EMISSION REDUCTIONS COVERED BY THIS REPORT

All emissions reductions are expressed in metric tonnes of $CO_2e$ and the most recent carbon footprints available are listed for all entries. The series of measures/targets have, as far as possible, been standardised and details of these are listed in the glossary section (see page 28). Where possible we have focused on long-term reductions rather than year-on-year achievements, both because these are consistent with what is needed globally and because they tend to indicate a strategic commitment to cutting an organisation's carbon footprint. However, there are some examples of innovative short-term action worthy of note and these too have been included.

Problems in estimating real reductions are exacerbated by mergers and acquisitions, divestitures of subsidiaries or plants or, in the case of governments, changes in jurisdiction or coverage, especially where these represent significant emission sources. Where extraordinary cuts have been made in a single year, we have tried to check their cause to ensure that they are not due to one of the above. However, it is possible that not all such cases have been excluded. In the same way that we concentrate

## CLIMATE DEVELOPMENTS IN 2006

### JANUARY
» Asia-Pacific Partnership on Clean Development and Climate launches in Australia

### FEBRUARY
» The European wind energy industry meets 40,000MW target five years early
» 15 major Mexican companies voluntarily report emissions through the Mexico GHG Programme

### MARCH
» STMicroelectronics vows to cut its US GHG emissions by 50% by 2010
– Science magazine study shows Antarctic ice sheet is melting rapidly

### APRIL
» China sets emission reduction goal to 2020
– UK Chief Scientist David King warns that global warming could cause 400 million to starve

### MAY
» The European cities of the Climate Alliance agree to slash GHG emissions 50% by 2030

### JUNE
» CDM project pipeline passes the one billion tonne $CO_2e$ mark

### JULY
» California and UK Government agree to collaborate on energy and climate change

### AUGUST
» World cities partner with Clinton Climate Initiative, ICLEI, The Climate Group and others to combat climate change

### SEPTEMBER
» Governor Schwarzenegger signs groundbreaking bill AB 32; first in US to legally limit statewide emissions

### OCTOBER
» Virgin founder Branson pledges to invest US$3 billion in renewables and outlines plan to cut aviation emissions by 25%
– NSIDC confirms 2006 Arctic sea ice coverage lowest ever

### NOVEMBER
– The Stern Review suggests that climate change could shrink the global economy by 20%. But taking action now would cost just 1% of global GDP

### DECEMBER
» New York City commits to reduce community GHG emissions 30% on 2006 levels by 2030

on absolute emissions reductions made at source, so we do not consider net footprint reductions where these have been achieved through purchases of allowances in emission trading schemes. Similarly, we have tried to discount emissions reductions where these have been sold on to third parties. This is an element of the report which we hope to re-evaluate next year as we are aware that it is not a true reflection of carbon ownership or emission reduction. As with past editions, we welcome comments from readers that will help us improve data quality in the future.

## FOCUS: RENEWABLE ENERGY

As part of their attempts to reduce their carbon footprint, many organisations have chosen to switch from fossil fuel- to renewables-based or "green" electricity. In most cases, they have then sought to claim the associated carbon saving as their own. However, due to legislation affecting both the ownership of GHG emission allowances and green electricity, this claim is not always straightforward. While switching to green electricity is undoubtedly a key part of the shift to a low carbon economy, in countries or regions where emissions trading or other allowance-based schemes confer ownership of emissions on grid suppliers/generators, any carbon saving resulting from the displacement of fossil fuel-derived electricity will normally accrue to the supplier/generator rather than the customer. For the purposes of this report we have applied the following guidelines:

1. If an organisation has invested in onsite renewables-based generation and this displaces onsite fossil fuel-based generation, the emissions reduction is treated as belonging to the investing organisation.
2. If an organisation has invested in onsite renewables-based generation and this displaces electricity supplied through the grid in a country or region with no emissions trading or other scheme in which emissions allowances – and hence reductions – are owned by the grid generator/supplier, the onsite generator can claim the carbon saving. This is reflected as an emissions reduction in this report.
3. If an organisation has invested in onsite renewables-based generation and this displaces electricity supplied through the grid in a country or region in which emissions allowances and reductions are owned by the grid generator/supplier, the onsite generator cannot claim the carbon saving and this is not counted as an emissions reduction in this report.
4. Where green electricity is purchased from a grid supplier and this leads to additional renewables-based capacity being brought online and emissions are not covered by an emissions trading or similar scheme the carbon saving can be claimed by the customer and is shown as an emissions reduction in this report.
5. In other cases, the right to claim the carbon saving will belong to the electricity supplier and it would be incorrect for the customer to make the claim. Such green electricity purchases are not shown as an emissions reduction in this report.
6. This situation in (2) and (5) only changes if the supplier retires the corresponding number of carbon allowances from the system as part of the sale of green electricity.

## FOCUS: CARBON NEUTRALITY

Carbon neutral products, services, organisations and events are those whose net emissions have effectively been reduced to zero through energy efficiency and other at-source reductions, the purchase of renewable energy and investment in and/or purchase of credits from GHG offset projects. In order to become carbon neutral the 'footprint' of the entity, product or event involved must first be measured and then steps to reduce emissions to zero identified. While in principle this is a fairly straightforward process, there are a number of issues which arise that can affect both the credibility of carbon neutrality and its contribution to the transition to a low carbon economy. Of particular importance are: the scope of emissions included in the footprint to be neutralised (e.g. the extent to which both upstream and downstream emissions are covered); how much action an entity should take at source before making use of offsets; and the quality of the offsets used. Companies leading the way include HSBC, which became the first carbon neutral bank in 2005, and companies such as Interface and BP who offer carbon neutral products to their customers. Over the medium and long-term, significant behavioural change and deep emissions reductions at source are critical if we are to stand a realistic chance of avoiding dangerous climate change. Right now, however, offsetting as part of a climate mitigation strategy, is a solid first step. Furthermore, companies which offer the opportunity to offset products and services are empowering their customers to take action as well as strengthening their own brand proposition. These customers will increasingly seek assurance that when they are offered carbon neutral or climate-friendly products and services, these truly make a contribution to cutting emissions. Looking to the future, standardisation around what it means to go carbon neutral will provide those companies wanting to make a voluntary commitment to reduce their climate impact, either at the corporate or the product level with much needed clarity and confidence.

SWISS RE OFFICES, LONDON, UK – LONDON IS HOME TO MANY CORPORATIONS STRIVING TO COMBAT CLIMATE CHANGE. WHILST BT ENCOURAGES ITS ENGINEERS TO USE PUBLIC TRANSPORT AND WALK TO REDUCE CONGESTION AND TRANSPORT EMISSIONS, SWISS RE'S LONDON OFFICE IS AN EXAMPLE OF SUSTAINABLE BUILDING ALMOST UNRIVALLED IN THE CITY.

# CORPORATES
## LEADING IN A COMPETITIVE CLIMATE

| TOP 3 REDUCERS | REDUCTION |
|---|---|
| CATALYST PAPER CORP. | 71% |
| ASTRAZENECA | 63% |
| DUPONT | 60% |

In 2001, upon launching the GHG Protocol for accounting and reporting corporate emissions, WBCSD/WRI stated that:

"Increasingly, companies will need to understand and manage their GHG risks in order to maintain their license to operate, to ensure long-term success in a competitive business environment, and to comply with national or regional policies aimed at reducing corporate GHG emissions".

**RIGHT**
TOYOTA PRIUS, TOKYO, JAPAN – COMPANIES SUCH AS TOYOTA HAVE NOT ONLY INVESTED IN REDUCING THEIR OPERATIONAL GHG EMISSIONS THROUGH ENERGY EFFICIENCY AND WASTE MANAGEMENT, BUT PRODUCTS SUCH AS THE PRIUS ALSO PLAY A SIGNIFICANT ROLE IN THE CORPORATE CONTRIBUTION TO CLIMATE CHANGE MITIGATION.

Five years on, progress is clear. Monitoring and reporting of corporate GHG emissions is now far more widespread. Empirical evidence of this comes from the fourth CDP report: 72% of all FT500 companies asked to disclose information on their GHG emissions did so in 2006, up from just 47% in 2003.

Monitoring and reporting accurately, however, is just the first step, with real change being a move to more effective management of emissions so as to seize the opportunities that the shift to a low-carbon economy can bring. While no-one would pretend that all the emissions reductions necessary to avoid dangerous climate change will come at zero cost, there are nevertheless abundant economically attractive actions that can be taken. This is borne out by the experience of the firms covered in this report.

Not only does this report highlight the array of businesses successfully achieving absolute reductions totalling billions of tonnes of $CO_2$, it shows that in none of the companies listed has the economic impact of this action been negative. The data also demonstrates that opportunities to cut emissions exist across a wide range of industries, from developed and emerging economies alike. In the last 12 months corporate action on climate change has been much publicised, not because it is novel or extraordinary, but because it is becoming constant, successful and genuine. With HSBC becoming the first carbon neutral bank in November 2005, three months ahead of schedule, and BP committing to doubling its investment in alternative energies in December 2005, the gauntlet was laid down. Other large companies were expected to follow suit or raise the bar in 2006, and many have done so. In this report, more than 20 of the companies listed achieved emission reductions of over 25%, including Alcoa, Asahi Glass, Dow Chemical, Entergy, and Westpac (see Case Study: Westpac). Total emissions reductions recorded in this report are in excess of 1.8 billion tonnes $CO_2e$, equivalent to nearly 7% of the global total.

Alongside the companies cutting their own emissions, some have shown leadership in other ways. BSkyB became the first carbon neutral media company while Bank of America started offering cash incentives to employees to support the purchase of hybrid vehicles. Announcements from major brand names have included Wal-Mart's new strategy of influencing its 60,000 suppliers to produce lower carbon products, and Virgin's decision to invest all profits over the next three years from its rail and aviation divisions – up to US$400 million – in biofuel development.

Business is beginning to accept that emission reductions are required and possible. Furthermore, these actions are now issues of strategy, competitiveness and market advantage – rather than obligation, operational necessity and compliance. General Electric (GE) launched Ecomagination in May 2005 and in May 2006, reported revenues for this range of high tech, low carbon products and services in excess of US$10 billion. GE's Ecomagination is a strong example of the flipside of at-source emissions reductions: the development of the low carbon economy. This new area of economic growth will be featured in a sister Climate Group publication, due for release in early 2007.

**CASE STUDY: WESTPAC**
WESTPAC, AUSTRALIA'S OLDEST COMPANY, IS USED TO BEING A CORPORATE LEADER. SINCE 1996 REDUCTIONS IN TRAVEL, PAPER AND ELECTRICITY USE HAVE CUT THE COMPANY'S GHG EMISSIONS BY 45% ON 1996 LEVELS. IN 2005-06 ALONE, WESTPAC REALIZED A 12% REDUCTION BY PURCHASING GREEN POWER AND INTEGRATING ENERGY, WATER AND EMISSION PERFORMANCE INDICATORS INTO FACILITY MANAGERS' CONTRACTS. WESTPAC STRIVES TOWARDS AN ULTIMATE GOAL OF ZERO NET EMISSIONS. SINCE 1993, WESTPAC HAS SAVED OVER US$7 MILLION IN ENERGY COSTS AND RECENTLY INVESTED US$500 MILLION IN A NEW HEADQUARTERS DESIGNED TO ACHIEVE OPTIMAL ENERGY EFFICIENCY AND MINIMAL GHG EMISSIONS. AS WELL AS REDUCING ITS OWN CARBON FOOTPRINT, WESTPAC HELPS ITS CUSTOMERS REDUCE THEIRS – FOR EXAMPLE, THROUGH ITS GREEN MORTGAGE SCHEME. ITS ENVIRONMENTAL CREDENTIALS ARE ALSO ATTRACTING NEW BUSINESS AND EMPLOYEES – 50% OF GRADUATES CHOSE WESTPAC OVER OTHER AUSTRALIAN BANKS EXPLICITLY BECAUSE OF ITS CSR APPROACH. LINKING PROACTIVE CLIMATE CHANGE MANAGEMENT AND CORPORATE SUCCESS, WESTPAC PROVIDES LEADERSHIP FOR OTHERS TO FOLLOW.

Profits from new product lines aside, the associated economic benefits of emissions reduction are also documented here. Thirty three companies in the report have demonstrated financial gains from emission reductions, which in total amount to approximately US$9.3 billion. The most substantial of these was recorded by Dow Chemical, which saved approximately US$4 billion between 1994 and 2005 through energy efficiency, contributing to a 32% reduction in $CO_2e$ emissions. Arguments that GHG abatement is necessarily bad for business are unfounded; this report again provides a wealth of evidence to demonstrate the positive impacts on the bottom line.

An indication of the level of future commitment to mitigating climate change comes from the emergence of several sectoral efforts to reduce emissions. Initially moves driven by new regulatory requirements, a number of industries are increasingly benefiting from 'competitive collaboration': sharing best practice on emission reduction strategies, discussing feasible solutions and setting realistic targets while at the same time vying to outplay each other on results. Two thirds of the cement industry, for example, have worked together to advance emission reductions within the sector. In 2000, three companies – Lafarge, Holcim and Cimpor – established the Cement Sustainability Initiative (CSI), responsible for creating a sector-wide emissions accounting method and target regime. Today 17 cement companies have all voluntarily agreed to use this methodology to compute GHG emissions and committed to set their own reduction target. Similarly, the pulp and paper industry (PPI), whilst not working directly in collaboration at company level, has collectively as a sector achieved impressive emissions reductions (see Feature: Pulp and Paper Industry).

**RIGHT**
**CATALYST PAPER MILL, CANADA – BY UTILISING ITS OWN BY-PRODUCTS (BIOMASS) TO POWER OPERATIONS, THE PULP AND PAPER INDUSTRY IS EFFECTIVELY REDUCING ITS GHG EMISSIONS.**

**CASE STUDY: BT**

**BT SET ITS FIRST GHG REDUCTION TARGET IN 1992 AND BY 2006 THE COMPANY HAD REDUCED ITS EMISSIONS BY 35% FROM 1996 LEVELS. THIS HAS BEEN ACHIEVED VIA ENERGY EFFICIENCY AND THE SUCCESSFUL INTEGRATION OF CLIMATE CHANGE CONSIDERATIONS INTO BUSINESS ACTIVITIES. BT HAS ALSO MADE THE LARGEST GLOBAL CORPORATE GREEN ELECTRICITY PURCHASE TO DATE – THIS PURCHASE IS EQUIVALENT TO A 25% EMISSIONS REDUCTION, EVEN IF THE SAVING DOES NOT ACCRUE DIRECTLY TO THE COMPANY (SEE FOCUS: RENEWABLE ENERGY). BT HAS INTRODUCED DIGITAL TECHNOLOGY INTO ITS NETWORKS, ENCOURAGES FLEXI- AND HOME-WORKING BY EMPLOYEES, USES FRESH AIR INSTEAD OF REFRIGERATED AIR CONDITIONING TO COOL EQUIPMENT, AND HAS SWITCHED ITS VEHICLE FLEET FROM PETROL TO DIESEL – ALL OF WHICH HAVE LED TO SIGNIFICANT SAVINGS IN ENERGY CONSUMPTION COSTS – £1.5 BILLION SINCE 2002, AND £400 MILLION IN 2005/2006 ALONE.**

A number of lessons can be learned from the data in this report. Perhaps the most important is that emissions reductions are possible for a wide range of businesses, but that the successful measures vary from company to company. Fifteen key measures are listed in the tables, useful starting points from which a framework of solutions can emerge. Some are clearly commonly used and effective: 97% of the companies have implemented energy efficiency improvements to reduce emissions, 85% have utilised more than three of the measures and over a third have used more than eight – with BP investing in 13. Successful low carbon corporate leaders view emissions reductions as business opportunities – to save money, reduce risks and open new markets. Firms adopting such a strategic approach will not only be at the forefront of efforts to avoid dangerous climate change, they are also likely to be sector leaders and provide solid returns to shareholders.

**CASE STUDY: PHILIPS**

**PHILIPS HAS BEEN LEADING INNOVATION IN ENERGY EFFICIENT LIGHTING FOR OVER TWO DECADES, INVESTING €400 MILLION IN ITS DEVELOPMENT SINCE 2000 ALONE. AS LIGHTING CONSUMES 19% OF GLOBAL ELECTRICITY, ESTIMATES SUGGEST THAT A SWITCH TO ENERGY EFFICIENT LIGHTING COULD REDUCE $CO_2$ EMISSIONS BY UP TO 300 MILLION TONNES, RESULTING IN COST SAVINGS OF UP TO €50 BILLION. YET PHILIPS HAS ALSO IMPLEMENTED INTERNAL MEASURES TO REDUCE CORPORATE EMISSIONS, SUCH AS REPLACING GLASS FURNACES WITH OXY-FUEL FURNACES AT ITS FACTORIES. BETWEEN 2001 AND 2005 THESE MEASURES CUT ENERGY USE BY 25% AND GHG EMISSIONS BY 18,000 TONNES. THE COMPANY HAS FOUND THAT THESE ACTIONS HAVE BEEN A KEY MARKETING TOOL AND ADDRESSING CLIMATE CHANGE HAS BECOME AN IMPORTANT BUSINESS DRIVER.**

## FEATURE: PULP AND PAPER INDUSTRY

The PPI is a sector with great potential to aid climate change mitigation. By utilising its own by-products to power operations, the industry is able to reduce its fossil fuel consumption by switching to biomass while at the same time cutting waste. This action is not limited to one corporate innovator; many of the industry's leaders are acting and indeed benefiting. Catalyst, International Paper (IP), Stora Enso and Weyerhaeuser have all reduced their GHG emissions, expanded the biomass industry and generated profits in the process. Catalyst has reduced its GHG emissions by 71% and overall energy use by 21%, since 1990. In 2005-06 alone, the company saved US$4.4 million through a 2% reduction in fuel consumption. Since 1998, IP has reduced its emissions by 20% through waste management, reducing transportation use, planting trees and utilising renewable energy. Weyerhaeuser set itself a target to reduce emissions 40% below 2000 levels by 2020 through energy efficiency and the substitution of biomass for fossil fuels. To date, the company has achieved reductions of 13% below 2000 levels. Stora Enso sources 63% of its energy from renewables and reduced its emissions by 7% in 2004 alone by retrofitting plant boilers, turbine and steam systems. Beyond its own direct carbon footprint, the PPI impacts significantly on all the corporate carbon footprints within its value chain. By reducing their own emissions and providing lower carbon products, pulp and paper companies reduce the indirect carbon footprint of their customers. In addition, the PPI is central to carbon neutrality as extensive forest holdings provide offsetting opportunities, in turn generating a valuable revenue stream for the sector. The achievements of the PPI demonstrate that making incremental changes to business practice throughout the value chain can not only help to limit climate impacts, but also support the bottom line.

| COMPANY/SECTOR/CARBON FOOTPRINT | REDUCTIONS AND ACHIEVEMENTS | MEASURES | FINANCIAL BENEFIT/INVESTMENT |
|---|---|---|---|
| **ABITIBI CONSOLIDATED, INC.**<br>– Industrial Manufacturing<br>» 1,956,600 scope 1 (2005).[(1)] | 38% reduction in global (unknown scope) $CO_2e$ emissions 1990-2005.[(1)] | EE, ET, FS, MS, SC, T&I, WM | – US$403,262 projected annual savings.[*(1)] |
| **ABN AMRO HOLDING**<br>– Banking<br>» 276,857[*] scope 1 and 2 (2005).<br>269,602[**] scope 3 (2005).[(1)] | 15% reduction in global (unknown scope) $CO_2e$ emissions 2004-05.[(1)] | C, EE, ET, MS, PF, RE, SC | – €3,500,000 projected savings 2004-08 through energy efficiency measures.[(1)] |
| **ALCOA**<br>– Industrial Manufacturing<br>» 34,400,000[*] scope 1 (2004).[(1)] | 37% reduction in scope 1 $CO_2e$ emissions 1990-2004.[(1)] | C, EE, FS, MS, PC, RE, WM | – US$20,000,000 annual net savings due to energy efficiency measures 2002-04.[(1,2)] |
| **ALLERGAN**<br>– Pharmaceuticals<br>» 100,346[*] scope 1, 2 and 3 (2005).[(1)] | 6% reduction in scope 1 $CO_2e$ emissions 2000-05.[(1)] 9% reduction in scope 2 energy use 2000-05.[(2)] | C, EE, FS, MS, PF, RE, S, WM | – US$2,300,000 cumulative net saving 2001-05 through energy efficiency and installation of cogeneration system.[(1)] |
| **AMCOR LIMITED**<br>– Industrial Manufacturing<br>» 1,500,000[*] scope 1 and 2.[(1)] | 8% annual reduction in (unknown scope) $CO_2e$ emissions 2000-05.[(1,2)] | EE, FS, P, WM | – US$3,756,500 annual net savings due to energy efficiency measures 2000-05.[(1)] |
| **AMERICAN ELECTRIC POWER**<br>– Energy and Utilities<br>» 146,418,710[*] scope 1 (2005).[(1)] | 15% reduction in (unknown scope) $CO_2e$ emissions 2000-05.[*(1)] | C, EE, ET, MS, O&CN, PF, RE, S, SC, WM | Not documented |
| **ARCELOR**<br>– Industrial Manufacturing<br>» 74,700,000[*] scope 1 and 2 (2005).[(1)] | 23% reduction in scope 1 and 2 $CO_2e$ emissions 1990-2005.[**(1)] | EE, ET, FS, PC, RE, T&I | Not documented |
| **ASAHI GLASS**<br>– Industrial Manufacturing<br>» 2,220,000[*] (unknown scope) (2005).[(1)] | 25% reduction in (unknown scope) $CO_2e$ emissions 1990-2005.[**(1)] | EE, FS, PC | » US$10,428 investment 2004-05. US$32,228 cost 2004-05.[(1)] |
| **ASSOCIATED BRITISH PORTS**<br>– Transportation Services<br>» 92,921 scope 1 and 2 (2005).[(1)] | 8% reduction in scope 1 and 2 $CO_2e$ emissions 2004-05.[(1)] | EE, T&I | – £16,000 annual saving following boat speed/fuel efficiency research.[*(1)] |
| **ASTRAZENECA**<br>– Pharmaceuticals<br>» 270,000 scope 1 (2005).<br>289,000 scope 2 (2005).<br>354,000[*] scope 3 (2005).<br>496,000[**] scope 3 (2005).<br>35,400[†] scope 3 (2005).[(1)] | 63% reduction in scope 1, 2 and 3 $CO_2e$ emissions 1990-2005.[(2)] | EE, ET, FS, P, PC, PF, RE, SC, T&I | – €1,500,000 anticipated revenue from emissions trading.[(1)] |
| **BANCO ITAU**<br>– Banking<br>» 156,000 scope 1 (2005).[(1)] | 8% reduction in scope 1 $CO_2e$ emissions 2003-05.[(1)] 5% reduction in energy use 2001-05.[*(1)] | C, EE, ET, MS, P, PF | – US$4,081,635 'turned around' 2003-05 due to replacement of air conditioning unit.[(1)] |
| **BAYER**<br>– Chemicals<br>» 3,900,000[*] scope 1 (2005).[(1)] | 5,500,000 tonne reduction in scope 1 $CO_2e$ emissions 1990-2005.[**(1)] | C, EE, ET, FS, MS, P, PC, RE, WM | » €700,000,000 investment in GHG reduction measures 1990-2005.[(1)] |
| **BP**<br>– Energy and Utilities<br>» 78,000,000[*] scope 1 (2005).<br>13,900,000[**] scope 2 (2005).<br>570,000,000[†] scope 3 (2005).[(1)] | 10% reduction in (unknown scope) $CO_2e$ emissions 1998-2001.[(2)] 44,000,000 tonne reduction in scope 3 $CO_2e$ emissions 2003-05.[(3)] | C, EE, ET, FS, MS, P, PC, PF, RE, S, SC, T&I, WM | – US$1,000,000,000 cumulative net savings 2003-05.[††]<br>» US$8,000,000,000[#] investment in alternative energy 2005-15.[(1)] |
| **BRITISH AMERICAN TOBACCO**<br>– Consumer Products Manufacturing<br>» 369,250 scope 1 (2005).<br>364,633 scope 2 (2005).<br>3,275,415 scope 3 (2005).[(1)] | 34% reduction in (unknown scope) $CO_2e$ emissions 2000-05, 8% reduction energy use 2003-04.[*(2)] | C, EE, MS, RE, S, SC, T&I, WM | Not documented |
| **BRITISH SKY BROADCASTING**<br>– Consumer Services<br>» 29,056 scope 1 and 2 (2005-06).[(1)] | 20% reduction in (unknown scope) $CO_2e$ emissions 2003-04 – 2005-06.[(1)] | C, EE, MS, O&CN, P, RE, SC, T&I, WM | Not documented |
| **BT GROUP**<br>– Telecommunications Services<br>» 235,235[*] scope 1 (2005).<br>420,153 scope 2 (2005).<br>89,284[**] scope 3 (2005).[(1)] | 35% reduction in (unknown scope) $CO_2e$ emissions 1996-2006.[†(1)] | C, EE, ET, MS, RE, T&I | – £1,500,000,000 cumulative energy cost savings 2002-05.[(2)] |
| **CANADIAN IMPERIAL BANK OF COMMERCE**<br>– Banking<br>» 11,292[*] scope 1 (2005).[(2)]<br>37,679 scope 2 (2005).[(1)]<br>18,557[*] scope 3 (2005).[(2)] | 11% reduction in (unknown scope) $CO_2e$ emissions 2004-05.[(2)] | C, EE, MS, PF, RE, SB, SC, WM | – US$1,881,890 estimated saving in 2005 due to reusing office furniture.[(2)] |

## USING THESE TABLES

These tables present the reported GHG reduction activities of leading companies in alphabetical order. All GHG emissions data is in metric tonnes $CO_2$ equivalent. Carbon footprint data is broken down by scope where possible, based on the definitions set by the GHG Protocol. Measures undertaken by each company are abbreviated and listed in full in the key (below). For a fuller explanation of scope and measures, please refer to the Glossary (page 28). Supplementary details, indicated by symbols, can be found in the corresponding source information for each entry (pages 24-27).

## MEASURES KEY

C: Communications
EE: Energy Efficiency
ET: Emissions Trading
FS: Fuel Switching
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P: Products
PC: Process Changes
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RE: Renewable Energy
S: Sequestration
SB: Sustainable Buildings
SC: Supply Chain
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WM: Waste Management

| COMPANY/SECTOR/CARBON FOOTPRINT | REDUCTIONS AND ACHIEVEMENTS | MEASURES | FINANCIAL BENEFIT/INVESTMENT |
|---|---|---|---|
| **CATALYST PAPER CORP.**<br>– Industrial Manufacturing<br>» 565,667 scope 1 and 2 (2005).[1] | 71% reduction in (unknown scope) $CO_2e$ emissions 1990-2005. 21% reduction in energy use 1990-2005.[1] | EE, FS, MS, RE, WM | – US$4,480,690 annual savings 2005-06 through reducing fuel consumption by 2%.[1] |
| **CATERPILLAR, INC.**<br>– Industrial Manufacturing<br>» 2,151,857* scope 1 and 2 (2005).[1] | 450,000 tonne reduction in (unknown scope) $CO_2e$ emissions 1990-2001.[2] | C, EE, ET, FS, MS, P, PC, PF, T&I, WM | – US$2,880,000 annual net savings in 2004 through engine centre fuel savings Mossville, IL, USA. US$70,000 annual net savings in 2005 through recycling steel in Mapleton, IL, USA.[1] |
| **CHUGOKU**<br>– Energy and Utilities<br>» 39,340,000* scope 1 (2004).[1] | 800,000 tonne reduction in (unknown scope) $CO_2e$ emissions 1990-2004. 40% improvement in energy efficiency in 2004.[1] | EE, ET, FS, PC, PF, RE, S, WM | – US$50,000,000 cumulative annual savings 1990-2004 due to increased thermal efficiency.<br>» US$7,500,000 total spend for environmental R&D. US$10,000,000 total investment in project finance.**[1] |
| **CISCO**<br>– Computer Hardware<br>» 323,119 scope 1 and 2 (2005).[1] | 28,700 tonne annual reduction in (unknown scope) $CO_2e$ emissions.[1] | C, EE, MS, P, RE, SB, SC, T&I, WM | – US$5,600,000 annual net savings through energy efficient building design, construction and operation; electrical energy costs savings.*[1] |
| **CLP HOLDINGS**<br>– Real Estate<br>» 41,507,590* scope 1 and 2 (2005).[1] | 200,000 tonne annual reduction in (unknown scope) $CO_2e$ emissions 2005.** Saved 39 GWh in 2005 through energy efficiency improvement at Hong Kong facilities.[1] | EE, RE | Not documented |
| **DEUTSCHE BANK**<br>– Banking<br>» 380,912* scope 2 and 3 (2005).[1] | 13% reduction in (unknown scope) $CO_2e$ emissions 2001-05.** 10% reduction in energy use 2001-05.** 21% reduction in business travel 2001-05.[1] | C, EE, ET, MS, O&CN, P, PC, PF, RE, T&I | » US$5,000,000 investment in World Bank Prototype Carbon Fund 2000.[1] |
| **DEUTSCHE TELEKOM**<br>– Telecommunications Services<br>» 2,769,083 scope 2 (2005).[1] | 129,500 tonne reduction in scope 2 $CO_2e$ emissions 2001-05.* 30% reduction in scope 2 $CO_2e$ emissions through renewal of GSM transmission technology. 38% energy from renewables.[1] | C, EE, ET, FS, MS, O&CN, P, PC, RE, SC, T&I, WM | – €35,300,000 cumulative savings 2001-05 through energy reduction.[1] €3,000,000 annual savings 2004 through retrofitting 2,800 buildings in Germany.[2]<br>» €196,000,000 investment 2005-06 in optimisation of the system portfolio.[1] |
| **E. I. DU PONT DE NEMOURS (DUPONT)**<br>– Chemicals<br>» 13,550,000* scope 1 and 2 (2005).[1] | 60% reduction in (unknown scope) $CO_2e$ emissions 1990-2005.**[2] 6% reduction in energy use 1990-2005.[1] | EE, ET, FS, MS, P, PC, PF, RE | – US$3,000,000,000 savings through energy efficiency 1990-2005.[1]<br>» US$50,000,000 investment in process and powerhouse efficiency improvements from product and process mix changes 1990-2004. |
| **DOW CHEMICAL**<br>– Chemicals<br>» 25,900,000 scope 1 (2005).[1] | 32% reduction in scope 1 $CO_2e$ emissions 1994-2005.[1] | EE, ET, FS, MS, P, RE | – US$4,000,000,000 energy cost savings 1994-2005.*[1] |
| **EASTMAN KODAK**<br>– Consumer Products Manufacturing<br>» 2,860,000 scope 1 and 2 (2005).[1] | 17% reduction in (unknown scope) $CO_2e$ emissions 1997-2005.[1,2] 18% reduction in energy use through manufacturing 1997-2005.[1] 12% reduction in energy use 2002-05.*[2] | EE, MS, P, PC, SC, WM | Not documented |
| **ENBRIDGE INC.**<br>– Energy and Utilities<br>» 353,000 scope 1 (2004). 1,080,000 scope 2 (2004).[1] | 15% reduction in scope 1 $CO_2e$ emissions from Canadian operations 1990-2004.*[1] | C, EE, ET, MS, RE | Not documented |
| **ENDESA S.A.**<br>– Energy and Utilities<br>» 51,000,000* scope 1 (2005).[1] | 2,500,000 tonne reduction in $CO_2e$ emissions through reuse of slag and ash at Endesa plants 2005. 1238 MW wind capacity installed by end 2005.[2] | C, EE, ET, FS, MS, PC, RE, WM | » US$2,500,000 investment in World Bank Prototype Carbon Fund 2000.[2] |
| **ENTERGY**<br>– Energy and Utilities<br>» 32,840,088* scope 1 (2005).[1] | 32% reduction in (unknown scope) $CO_2e$ emissions 2000-04.**[1,2,3] | C, EE, ET, FS, MS, O&CN, PF, RE, WM | » US$20,300,000 investment in GHG emission reduction projects through the end of 2005.[2] |
| **FORD MOTOR CO.**<br>– Automotive and Transport<br>» 2,800,000 scope 1 (2004). 5,600,000 scope 2 (2004).[1] | 1,200,000 tonne reduction in scope 1 and 2 $CO_2e$ emissions 2001-04. 13% reduction in energy use 2001-05.[2] | C, ET, MS, O&CN, P, PC, SC | Not documented |
| **FORTUM**<br>– Energy and Utilities<br>» 6,400,000* scope 1 (2005). 130,000 scope 2 (2005). 1,512,700 scope 3 (2005).[1] | 1,600,000 annual tonne reduction in (unknown scope) $CO_2e$ emissions 1990-2005 through fuel switching.[1] | C, EE, ET, FS, MS, P, PC, RE, S | – €12,000,000 total revenue from hydro- and biomass-based electricity production certificates.[1]<br>» €500,000,000 investment in fuel switching 2000-05. |
| **FOSTER'S GROUP LIMITED**<br>– Beverages<br>» 307,793 scope 1, 2 and 3 (2005).[1] | 17% reduction in scope 1, 2 and 3 $CO_2e$ emissions 2000-05.[2] | EE, PC | – 17% increase in net income 2004-05.[1] |

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WM: Waste Management

| COMPANY/SECTOR/CARBON FOOTPRINT | REDUCTIONS AND ACHIEVEMENTS | MEASURES | FINANCIAL BENEFIT/INVESTMENT |
|---|---|---|---|
| **FREESCALE SEMICONDUCTORS**<br>– Electronics<br>» 525,000 scope 1 and 2 (2005).[1] | 48% reduction in energy use 2001-05.[1] 38% reduction in scope 1 and 2 $CO_2e$ emissions 2001-05.[1,2] | EE, ET, P, PC, RE, WM | Not documented |
| **GAZ METRO**<br>– Energy and Utilities<br>» 53,531 scope 1 (2004).[1] | 24% reduction in scope 1, 2 and 3 $CO_2e$ emissions 1990-2004.[1] | C, EE, MS, O&CN, SB, T&I, WM | Not documented |
| **GENERAL MOTORS**<br>– Automotive and Transport<br>» 12,350,000* scope 1, 2 and 3 (2004).[1] | 12% reduction in scope 1, 2 and 3 emissions 2000-04.[1] 14% reduction in energy use 2000-04.[2] | C, EE, ET, FS, MS, P, PC, PF, RE, WM | – US$2,700,000 annual net revenue from Green Lights Programme 2002.[1] |
| **GLAXOSMITHKLINE**<br>– Pharmaceuticals<br>» 2,634,000* scope 1, 2 and 3 (2005).[2] | 25% reduction in scope 1, 2 and 3 $CO_2e$ emissions 2001-05.[1] | EE, ET, P, RE, T&I, WM | Not documented |
| **HBOS**<br>– Banking<br>» 105,956 scope 1 and 3 (2005).[1] | 133,000 tonne reduction in (unknown scope) $CO_2e$ emissions 1999-2005.[1] | C, EE, MS, PF, SB, SC, T&I, WM | – £16,500,000 cumulative cost savings 1999-2005 through energy efficiency measures.[1]<br>» £4,000,000 investment in energy efficiency measures 1999-2005. |
| **IMPERIAL CHEMICAL INDUSTRIES**<br>– Chemicals<br>» 2,120,544 (unknown scope) (2005).[2] | 8% reduction in (unknown scope) $CO_2e$ emissions 1990-95.[1] 8% reduction in (unknown scope) $CO_2e$ 2000-05.*[2] | EE, ET, MS, PC, RE, SC, WM | – US$750,000 projected savings in 2006 due to switching boiler fuel to biomass.[1] |
| **INTERFACE**<br>– Industrial Manufacturing<br>» 76,741 scope 1 and 2 (2005).[1] | 53% reduction in scope 1 and 2 $CO_2e$ emissions 2000-05.[1,2] 13% global energy consumption from renewables in 2005.[1] | C, EE, MS, O&CN, P, RE, S, SC, T&I, WM | Not documented |
| **INTERNATIONAL BUSINESS MACHINES**<br>– Computer Services<br>» 2,109,025* scope 1 (2005). 224,559** scope 1 (2005). 348,058 scope 2 (2005).[1] | 28% reduction in scope 1 and 2 $CO_2e$ emissions 2000-05.[2] 58% reduction in scope 1 PFC emissions 2000-05.[1] | EE, O&CN, P, PC, RE, T&I | – US$747,000 annual net savings in 2005 through real time monitoring of electrical usage. US$917,000 savings due to building recommissioning projects optimizing energy use of HVAC, thermal plant and electrical system operations.[1] US$38,800,000 annual savings in 2003 due to energy management/planning.[2] |
| **INTERNATIONAL PAPER**<br>– Industrial Manufacturing<br>» 11,900,000 scope 1, 2 and 3 (2005).[1] | 2,800,000 tonne reduction in (unknown scope) $CO_2e$ emissions 1998-2005.[2] | EE, ET, MS, RE, S, T&I, WM | Not documented |
| **INVESTA PROPERTY GROUP**<br>– Real Estate<br>» 2,506* scope 1 (2005). 102,687** scope 2 (2005).[1] | 17% reduction in scope 1 $CO_2e$ emissions 2003/4-04/5.[1] 10% reduction in energy use 2003/4-04/5.[2] | EE, RE, SB | – US$450,780 annual net savings 2003/4-04/5 through energy efficiency.[2] |
| **JOHNSON & JOHNSON**<br>– Pharmaceuticals<br>» 282,726* scope 1 (2005). 790,716 scope 2 (2005).[1] | 11% reduction in scope 1 and 2 $CO_2e$ emissions 1990-2005.[1] | EE, ET, FS, MS, O&CN, RE, S, T&I | – US$30,000,000 cumulative net savings through energy efficiency 1995-2005.**<br>» US$78,000,000 investment 2004-05 in energy efficiency.†[1] |
| **KIMBERLY-CLARK**<br>– Consumer Products Manufacturing<br>» 5,673,427 scope 1 (2005). 3,665,596 scope 2 (2005).[1] | 19% increase in energy efficiency 1995-2005.[2] | EE, ET, FS, MS, PC, PF, RE, S | – US$70,000,000 annual net savings through energy efficiency 2000-05.[2] |
| **KIRIN BREWERY CO. (NOT KIRIN GROUP)**<br>– Beverages<br>» 390,000 scope 1 (2005).[1] | 25% reduction in (unknown scope) $CO_2e$ emissions 1990-2005.[1] | EE, FS, MS, PC, RE, SB, T&I | » US$8,236,275 investment in wind power 2005-06. US$72,453,615 investment in fuel switching.*[1] |
| **KLABIN**<br>– Industrial Manufacturing<br>» 3,403,136 scope 1 (2005).[1] | 26% reduction in scope 1 $CO_2e$ emissions 2005.* 82% energy from biofuels.[1] | C, FS, MS, O&CN | Not documented |
| **KOMATSU**<br>– Industrial Manufacturing<br>» 702,238 (unknown scope) (2005).[1] | 5% reduction in (unknown scope) $CO_2e$ emissions 1990-2005.[1] | EE, P, SC, T&I | » US$52,063,500 investment in improving ESCO operations. US$4,267,500 investment in other energy efficiency measures.[1] |
| **LAFARGE**<br>– Chemicals<br>» 89,200,000 scope 1 and 2 (2005).[1] | 8% reduction in scope 1 and 2 $CO_2e$ emissions 1990-2005.*[1] | EE, FS, P, PC, S, SB | » €7,400,000 total investment in $CO_2e$ reduction measures 2005.[1] |
| **LION NATHAN LIMITED**<br>– Beverages<br>» 192,000 scope 1 and 2 (2005).[1] | 23% reduction in (unknown scope) $CO_2e$ emissions 1995-2004. 20% reduction in energy use 1995-2004.[1] | EE, MS, PC, WM | Not documented |

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| COMPANY/SECTOR/CARBON FOOTPRINT | REDUCTIONS AND ACHIEVEMENTS | MEASURES | FINANCIAL BENEFIT/INVESTMENT |
|---|---|---|---|
| **LLOYD'S TSB**<br>– Banking<br>» 191,981 scope 1, 2 and 3 (2005).[(1)] | 14% reduction in (unknown scope) $CO_2e$ emissions 2002-05.[(1)] | C, EE, MS, PF, RE, SB, T&I | – £40,000,000 annual net savings in 2005.[*(1)] |
| **MARKS & SPENCER**<br>– Retail<br>» 60,000 scope 1 (2005).<br>271,000[*] scope 2 (2005).<br>4,606,000[**] scope 3 (2005).[(1)] | 8% reduction in $CO_2e$ emissions from transport 2003-05. 7% reduction in $CO_2e$ emissions from gas 2003-05.[(2)] | C, EE, ET, MS, P, RE, SB, SC, T&I, WM | Not documented |
| **NESTLÉ**<br>– Food<br>» 4,310,000[*] scope 1 (2005).[(1)] | 12% reduction in (unknown scope) $CO_2e$ emissions 1997-2005.[**(1)] | EE, FS, MS, PC, PF, S, SC, T&I, WM | – €327,370,000 cumulative cost savings 1991-2005.[†(1)] |
| **NEXEN**<br>– Energy and Utilities<br>» 3,840,000 scope 1 and 2 (2005).[(1)] | 19% reduction in scope 1 and 2 $CO_2e$ emissions 2001-05.[(1)] | EE, O&CN, PF, WM | Not documented |
| **NIKE**<br>– Consumer Products Manufacturing<br>» 77,684[*] (unknown scope) (2005).[(1)] | 20% reduction in $CO_2e$ emissions from facilities and travel 2001-05.[**(1)] | C, EE, MS, O&CN, P, PC, RE, S, SB, SC, T&I, WM | » US$1,726,082 cost of employee time, consulting feeds, green power purchases and offset purchases 2001-05.[(1)] |
| **NIPPON OIL**<br>– Energy and Utilities<br>» 13,939,578 (unknown scope) domestic emissions (2006).<br>131,372,970[*] scope 3 (2006).[(1)] | 18% reduction in (unknown scope) $CO_2e$ emissions 1997-2006.[**] 19% reduction in scope 3 $CO_2e$ emissions 1997-2006.[†(1)] | FS, PC, PF | » US$12,802,500 investment in hydrogen technology development. US$12,500,000 investment in project finance 2006.[††(1)] |
| **NORSK HYDRO**<br>– Energy and Utilities<br>Industrial Manufacturing<br>» 8,173,000[*] scope 1 (2005).[(1)] | 1,000,000 tonne reduction scope 1 $CO_2e$ emissions 1990-2005.[**(1)] | EE, ET, FS, P, PC, RE, S | Not documented |
| **NORTEL NETWORKS**<br>– Telecommunications Services<br>» 23,735[*] scope 1 (2005).<br>197,368[**] scope 2 (2005).[(1)] | 11% reduction in (unknown scope) $CO_2e$ emissions 2004-05.[(1)] | C, EE, MS, P, SC, T&I, WM | – US$2,688 revenue per month from Westwinds facility cardboard and paper recycling. US$10,753,656 projected savings from consolidating all buildings to one site.[(2)] |
| **OCCIDENTAL PETROLEUM**<br>– Energy and Utilities<br>» 7,700,000[*] scope 1 (2004).<br>5,000,000[**] scope 2 (2004).[(1)] | 38% increase in energy efficiency scope 1 and 2 1996-2004.[(1,2)] | EE, FS, MS | » US$1,000,000,000 investment in construction of highly efficient gas-fired cogeneration facilities to produce electric power and steam to supply various Occidental operations in 1986.[(1)] |
| **PETROBRAS**<br>– Energy and Utilities<br>» 51,250,000[*] scope 1 (2005).<br>313,325[**] scope 2 (2005).[(1)] | 14% reduction in scope 1 $CO_2e$ emissions 2003-04.[†(2)] 390,000 tonne reduction in scope 1 $CO_2e$ emissions 2005.[††(1)] | C, EE, ET, FS, MS, P, PF, RE, S | » US$86,600,000 investment in biodiesel production plant to begin operation 2007. US$50,000,000 investment in various zero carbon technologies.[(1)] |
| **PFIZER**<br>– Pharmaceuticals<br>» 2,591,375[*] scope 1 and 2 (2005).[(1)] | 201,000 tonne in reduction (unknown scope) $CO_2e$ emissions 2002-05.[**(1)] | C, EE, ET, MS, PC, RE, SC, WM | – US$30,000,000 annual net savings 2002-05 through energy efficiency measures.[**]<br>» US$70,000,000 investment 2002-05.[**(1)] |
| **PG&E**<br>– Energy and Utilities<br>» 62,200,000 (unknown scope) (2004).[(1)] | 68% reduction in $SF_6$ emissions 1998-2005.[(1)] | C, EE, MS, PF, RE, T&I | – US$400,000 savings through $SF_6$ emission reduction 1998-2005. US$1,500,000 cumulative net savings 1998-2004 from energy efficiency measures.<br>» US$1,000,000,000 investment in energy efficiency measures 2006-08.[(1)] |
| **PHILIPS**<br>– Industrial Manufacturing<br>» 842,775[*] scope 1 (2005).[(1)] | 25% reduction in energy use scope 1 and 2 2001-05.[**] 18,144 tonne reduction scope 1 $CO_2e$ emissions 2001-05.[†] 135,000 tonne reduction in scope 1 $CO_2e$ emissions 2004-05.[††(1)] | EE, MS, P, PC, SC, WM | » €400,000,000 investment in energy efficient products 2000-05.[#(1)] |
| **POSCO**<br>– Metals and Mining<br>» 62,800,000 scope 1 and 2 (2003).[(2)] | 8% reduction in (unknown scope) $CO_2e$ emissions 1990-2005.[*(1)] | EE, ET, FS, O&CN, P, PC | » €712,000,000 investment in energy efficiency measures.[(1)] |
| **POTASH CORPORATION**<br>– Chemicals<br>» 7,657,300[*] scope 1 (2005).[(1)] | 1,103,200 tonne reduction in scope 1 $CO_2e$ emissions 1 2002-05.[(1)] | C, EE, MS, PC, SC | – US$2,150,731 annual net savings through energy efficiency measures starting 2005.[**(1)] |
| **PPG INDUSTRIES INC.**<br>– Chemicals<br>» 6,800,000[*] scope 1 and 2 (2005).[(1)] | 17% reduction in (unknown scope) $CO_2e$ emissions 1990-2003.[**(2)] | EE, ET, P, PC, SC | Not documented |
| **RICOH**<br>– Computer Hardware<br>» 314,793 scope 1.<br>609,628[*] scope 3 (2003).[(1)] | 20,593 tonne reduction in (unknown scope) $CO_2e$ emissions 2004-05.[**(2)] | EE, ET, FS, P, PC, RE, WM | » US$7,330,690 investment in environmental measures 2004.[(1)] |

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|---|---|---|---|
| **ROLLS-ROYCE**<br>– Aerospace and Defence<br>» 595,000 scope 1 (2005).(1) | 21% reduction in scope 1 $CO_2e$ emissions 2002-05.(1) 13% reduction in energy use 2003-05.(2) | EE, ET, P, T&I, WM | Not documented |
| **ROYAL BANK OF SCOTLAND**<br>– Banking<br>» 317,809* scope 1, 2 and 3 (2005).(1) | 40% reduction in scope 1, 2 and 3 $CO_2e$ emissions 1990-2005.(1) 41% energy from renewables 2000-05.**(1) | EE, MS, RE, T&I, WM | Not documented |
| **SAB MILLER**<br>– Beverages<br>» 1,800,000 scope 1 and 2 (2005).(1) | 100,000 tonne reduction in scope 2 $CO_2e$ emissions 2004-05.(1) | EE, MS, WM | – £1,000,000 projected revenue 2005-07 from emissions $CO_2e$ trading.(1) |
| **SOMPO JAPAN RISK MANAGEMENT**<br>– Insurance<br>» 46,478* (unknown scope) (2005).(1) | 22% reduction in $CO_2e$ (unknown scope) 2002-04. 20% reduction in scope 2 energy use 2002-04.(1) | C, MS, P, SB | Not documented |
| **STMICROELECTRONICS**<br>– Electronics<br>» 2,013,000* scope 1, 2 and 3 (2005).(1) | 2,087,000 tonne reduction in scope 1 and 2 $CO_2e$ emissions 1995-2005.**(1) 53,000 tonne reduction in scope 3 $CO_2e$ emissions 2005. | C, EE, ET, MS, O&CN, P, PC, RE | – US$375,000,000 profits from products in 2005.(1) |
| **STORA ENSO**<br>– Industrial Manufacturing<br>» 5,595,118 scope 1 and 2 (2005).(1) | 7% reduction in (unknown scope) $CO_2e$ emissions 2004-05. 63% energy from renewables 2004-05.(1) | C, EE, PC, S, SC, T&I, WM | » €211,000,000 investment 2004-05.* €40,000,000 investment 2005-06.**(1) |
| **SUEZ GROUP**<br>– Energy and Utilities<br>» 79,593,800* scope 1 (2005).(1) | 1,000,000 tonne reduction in scope 1 $CO_2e$ emissions 2003-05.**(1) 71,500 tonne reduction in scope 2 $CO_2e$ emissions 2003.†(2) | C, ET, FS, MS, PC, RE, S, WM | » €15,000,000 investment in renewables 2005.††(1)<br>– US$5,000,000 investment in project finance starting 2000.#(2) |
| **TECK COMINCO**<br>– Energy and Utilities<br>» 570,000* scope 1 (2005).(1) | 29% reduction in scope 1 $CO_2e$ emissions 1990-2004.**(2) | EE, MS, WM | Not documented |
| **TECO**<br>– Energy and Utilities<br>» 14,061,364 (unknown scope) (2005).(1) | 24% reduction in (unknown scope) $CO_2e$ emissions 1998-2005.(1) | EE, FS, MS, RE | » US$370,000,000 investment starting 2005.* US$1,500,000,000 10-year investment plan to reduce emissions from power plants.(1) |
| **TELECOM ITALIA GROUP**<br>– Telecommunications Services<br>» 1,109,859 scope 1, 2 and 3 (2005).(1) | 17% decrease in fuel use 2003-05. 18% reduction in scope 1 and 2 $CO_2e$ emissions 2003-05.*(1) | EE, FS, P, RE | Not documented |
| **TIMBERLAND**<br>– Consumer Products Manufacturing<br>» 8,140 scope 1 (2005).<br>18,714 scope 3 (2005).(1) | 10% reduction in scope 1 and 2 $CO_2e$ emissions 2002-05.*(1) | C, EE, MS, O&CN, P, RE, SB, SC, T&I, WM | – US$275,000 annual net savings through energy efficiency measures 2004. US$993,857 cumulative net savings 2005 through T&I.**(1) |
| **TOKYO GAS**<br>– Energy and Utilities<br>» 97,000* scope 1 (2004).<br>104,000* scope 3 (2004).<br>24,110,000** scope 3 (2004).(1) | 4,672,001 tonne reduction in (unknown scope) $CO_2e$ emissions 1997-2004.(1) | EE, FS, P, PC, RE | Not documented |
| **TOYOTA MOTOR CORPORATION**<br>– Automotive and Transport<br>» 1,551,285* scope 1 and 2 (2005).(1) | 19% reduction in scope 1 and 2 $CO_2e$ emissions 1990-2005.(1) | EE, P, PC, PF, SC, WM | – US$117,000,000 cumulative benefits generated from environmental activities 1999-2003.<br>» US$3,000,000 investment in project finance.(2) |
| **UNILEVER**<br>– Food and Healthcare<br>» 3,400,000 (manufacturing sites) (2005).(1) | 34% reduction in $CO_2e$ emissions from 1995 to 2005.(2) | EE, ET, MS, P, PC, SC | – In the UK, sites have saved over £1,000,000 since 2001 by reducing energy and by participating in the Climate Change Levy Scheme. To date, 20,088 tonnes of $CO_2$ allowances have been generated for future trading/offsetting.(2) |
| **VERIZON COMMUNICATIONS, INC.**<br>– Telecommunications Services<br>» 5,198,546 scope 2 (2005).(1) | 115,000 tonne reduction in scope 2 $CO_2e$ emissions 2005.(1) | C, EE, FS, MS, P, SB, SC, T&I, WM | – US$15,000,000 cumulative net savings 2005 through energy efficiency measures.(1) |
| **WESTPAC BANKING**<br>– Banking<br>» 109,000* scope 2 (2006).(1)<br>6,215** scope 2 (2006).(1) | 45% reduction in scope 2 $CO_2e$ emissions 1996-2006.*(1) | C, EE, ET, MS, O&CN, P, RE, SB, SC | – US$7,500,000 net savings 1993-2005 through energy efficiency measures.(2) US$787,300 saving through reduced electricity consumption 2001-06.(1) |
| **WEYERHAEUSER CO.**<br>– Industrial Manufacturing<br>» 6,600,000* scope 1 and 3 (2005).<br>4,500,000* scope 2 (2005).(1) | 13% reduction in scope 1 and 3 $CO_2e$ emissions 2000-05.(1) | C, EE, MS, RE, S, WM | Not documented |
| **WYETH**<br>– Pharmaceuticals<br>» 561,976 scope 1 (2005).<br>649,511 scope 2 (2005).(1) | Not documented | EE, ET, MS | – US$40,000,000 cumulative net savings 1997-2005 through energy efficiency measures.<br>» US$30,000,000 investment in energy efficiency measures 1997-2005.* |

**MEASURES KEY**

C: Communications
EE: Energy Efficiency
ET: Emissions Trading
FS: Fuel Switching
MS: Management Systems
O&CN: Offsets & Carbon Neutrality
P: Products
PC: Process Changes
PF: Project Finance
RE: Renewable Energy
S: Sequestration
SB: Sustainable Buildings
SC: Supply Chain
T&I: Transport & Information and Communications Technology (ICT)
WM: Waste Management

TOKYU RAILWAYS COMMUTER TRAIN, SHIBUYA, JAPAN – INVESTING IN IMPROVING PUBLIC TRANSPORT SYSTEMS CAN MAKE TRAVEL NETWORKS MUCH MORE EFFICIENT AND ALSO CONTRIBUTE TO REDUCING GHG EMISSIONS WITHIN CITIES. TRANSPORT MEASURES HAVE BEEN UNDERTAKEN BY 26 OF THE 36 CITIES LISTED IN THIS REPORT.

# CITIES
# INNOVATION AND COLLABORATION

| TOP 3 REDUCERS | REDUCTION |
|---|---|
| WOKING | (CORPORATE) 79% |
| | (COMMUNITY) 19% |
| SEATTLE | (CORPORATE) 60% |
| ALBERTSLUND | (COMMUNITY) 47% |

Approximately half the world's population now lives in an urban setting, with an estimated 75% of world energy consumption attributable to city-based activities. Against this backdrop, the influence of cities, and in particular city governments, in shaping the carbon intensity of the world economy is coming into sharp focus; much attention has been paid in recent months to cities' role in driving solutions to climate change. This potential influence is matched by the level of risk to which many cities are exposed in a warming world. Coastal cities like New York, London and Shanghai are threatened by sea level rise while others are suffering from exacerbation of the urban heat island effect and pressures on already stretched water supplies.

It is perhaps unsurprising then that over the past few years reported action at the municipal level on climate change has become increasingly widespread. Some cities profiled in this report have been working to reduce energy use and GHG emissions for a number of years. Leading the field is still the small town of Woking in the UK, now approaching an 80% reduction in GHG emissions from its municipal operations after a 15 year programme of investment in energy efficiency and renewables. Heidelberg in Germany has cut emissions associated with municipal buildings by 35% since 1993 through a range of initiatives, as well as supporting reductions in local business energy use. Aspen in the US has moved more recently to limit its carbon footprint, partly in response to increasing awareness of the threats posed by climate change to Colorado's skiing economy. The city's 'Canary Initiative' aims to track the impacts of climate change on the Aspen environment as well as drive local implementation of solutions.

**FEATURE: INTERNATIONAL CLIMATE COLLABORATION 2006**

- IN MAY 2006, THE 1,360 EUROPEAN CITIES OF THE CLIMATE ALLIANCE AGREED TO REDUCE EMISSIONS BY 10% EVERY FIVE YEARS – AIMING FOR A 50% PER CAPITA REDUCTION ON 1990 LEVELS BY 2030.
- IN AUGUST 2006, THE CLINTON CLIMATE INITIATIVE (CCI) WAS LAUNCHED – A PARTNERSHIP BETWEEN THE CLINTON FOUNDATION AND THE LARGE CITIES CLIMATE LEADERSHIP GROUP DESIGNED TO REDUCE EMISSIONS AND ENCOURAGE ENERGY EFFICIENCY WITHIN GLOBAL CITIES. TWENTY THREE OF THE WORLD'S LARGEST CITIES ARE CURRENTLY PARTICIPATING, WITH MORE EXPECTED TO JOIN IN THE COMING MONTHS.
- AS OF DECEMBER 28 2006, THE US MAYORS CLIMATE PROTECTION AGREEMENT HAS BEEN SIGNED BY 353 MAYORS REPRESENTING OVER 54 MILLION AMERICANS. EACH HAS COMMITTED TO MEET OR EXCEED THE US FEDERAL GHG EMISSIONS REDUCTION TARGET INCLUDED IN THE KYOTO PROTOCOL – 7% REDUCTION FROM 1990 LEVELS BY 2012.

Like the companies presented in this report, leading city governments and their communities are benefiting financially from efforts on GHG reduction. In Denmark, the government of Odense has focused on energy management for the past 20 years, reducing demand by more than 15% in city-owned buildings. Its investment of €16 million yielded savings of €48 million – an annual cost reduction of €2.3 million between 1981 and 2002. Elsewhere, innovative local taxation measures are generating new revenue streams in parallel with emissions reduction: London's daily congestion charge on drivers commuting into the city's centre, adapted from an earlier scheme in Singapore, generated £97 million for investment in public transport in 2004-05 alone and since its introduction has reduced transport emissions in the charging zone by 16%. The Mayor of London has also launched the London Climate Change Agency (LCCA), a body designed to deliver the Mayor's energy strategy, which aims to cut community emissions by 20% on 1990 levels by 2010 and 60% on 2000 levels by 2050 (see Feature: London Climate Change Agency).

**RIGHT**
CITY PANORAMA, TOKYO, JAPAN – ALL OF THE CITIES LISTED IN THIS REPORT HAVE IMPLEMENTED ENERGY EFFICIENCY MEASURES AND 95% HAVE INVESTED IN RENEWABLE ENERGY AS PART OF THEIR CLIMATE MITIGATION STRATEGIES.

2006 was a year in which numerous cities forged ahead with new low carbon strategies. Geneva in Switzerland committed to sourcing 100% of its power from renewable energy by 2050, and Santa Fe in New Mexico became the first US city to sign on to the '2030 Challenge', designed to phase out fossil fuel-based energy from city buildings by that date. In Shanghai, planning continued for an innovative 'Ecocity' in the mouth of the Yangtze River. Commissioned by the Shanghai Industrial Investment Corporation (SIIC, a city government agency) and designed by consulting engineers Arup, the development at Dongtan Island aims to be 'as close to carbon neutral as possible'. Construction was set to start in late 2006 (See Feature: Ecocity). 2006 also saw 166 Australian municipalities, of which Melbourne and Newcastle are included in this report, recorded combined GHG abatement of almost 2.9 million tonnes $CO_2e$, a level of reduction 43% higher than that recorded in 2004/5. These municipalities also reported savings of over US$11 million as a result of their low carbon strategies.

International interest in cities as a catalyst for change has sparked a number of high profile initiatives in this area. Following a successful summit meeting convened by London and The Climate Group in late 2005, a network of more than 32 of the world's largest cities is now committing to reducing emissions and increasing energy efficiency through purchasing consortiums

**RIGHT**
**CITY SKYSCAPE, SEATTLE, USA – SEATTLE IS LEADING BY EXAMPLE, HAVING REDUCED ITS CORPORATE GHG EMISSIONS 60% BETWEEN 1990 AND 2002. SEATTLE'S MAYOR GREG NICKELS IS ALSO THE DRIVING FORCE BEHIND THE US MAYORS CLIMATE PROTECTION AGREEMENT.**

and technical assistance from a range of partners including the Clinton Foundation. In the US, support for action has also been growing – through the US Mayors Climate Protection Agreement, 353 Mayors, led by Seattle, are now committed to reducing city GHG emissions by 7% on 1990 levels by 2012 (see Feature: Seattle).

As hubs of economic decision-making, cities have a unique opportunity and capacity to lead on climate change. Success in practice, however, will depend on the ability of a growing number of large, world cities like London and Shanghai to replicate the innovative policies piloted by their smaller front-running counterparts like Albertslund in Denmark and demonstrate that they can be applied at scale. Key to this will be their ability to collaborate among themselves, with other levels of government and the private sector, to integrate planning and implementation across a range of activities and to use their power as consumers to strengthen the market for low carbon energy and transport technologies.

### FEATURE: ECOCITY

Dongtan is set to become the world's first 'Ecocity'. Located on the third largest island in China at the mouth of the Yangtse river, Dongtan is a collaboration between Arup and the Shanghai Industrial Investment Corporation (SIIC). Whilst specific features of the city are yet to be finalised, the first development phase includes waste management and recycling, as well as the creation of renewables-based CHP systems which will provide the technology to source clean and reliable energy. Dongtan will be a liveable space with low energy consumption that is as close to being carbon neutral as possible.

### FEATURE: LONDON CLIMATE CHANGE AGENCY

The LCCA was launched in 2005 and is fully owned by the London Development Agency. It works in partnership with private sector companies (notably EDF Energy) to design, finance and construct decentralised low energy and zero-carbon projects for London. The LCCA is also expected to play a role in ensuring that the London Olympic Games in 2012 are the first to be powered by low carbon technology.

### FEATURE: SEATTLE

It could be argued that Seattle's strong commitment to climate protection is the result of self-preservation, with its hydroelectric supply deeply vulnerable to changes in the Cascade Mountain snowpack. However, since the 1970s, when the city opted to focus its efforts on energy conservation ahead of new power plant developments, Seattle has found that taking action to reduce emissions has not only been successful in environmental terms but has also strengthened the local economy.

Indeed, through the provision of financial and rate incentives, a strong energy code and investment of over US$220 million in conservation measures, Seattle City Light (SCL), the municipally owned utility, has demonstrated that GHG emissions reduction is possible and that climate change mitigation can yield positive economic results, in particular for those customers who are saving energy. Conservation ensures that local dollars stay in the local community, and moreover creates local jobs.

In 2005 SCL became zero net GHG – firstly through conservation and then through ensuring that all new load was met by renewables. Any remaining unavoidable emissions are offset through third-party verified purchases – about 180,000 tonnes $CO_2e$ per year. Seattle is now attracting and retaining businesses in the area by demonstrating that it is a green place to operate – carbon neutral electricity is an advantage that more businesses are recognising.

However, Seattle's role in climate protection is perhaps most strongly associated with its Mayor Greg Nickels, whose leadership initiated the US Mayors Climate Protection Agreement, which has over 350 signatories, all committed to Kyoto reduction targets. Yet Mayor Nickels has stated that whilst Seattle will be able to achieve emissions targets equal to those set by Kyoto by 2012, this is not enough and a larger, long-term reduction is needed.

**"IT'S IN THE BEST INTERESTS OF SEATTLE'S BUSINESSES TO MINIMIZE THE RISKS ASSOCIATED WITH CLIMATE CHANGE. COMPANIES TAKING CLIMATE CHANGE SERIOUSLY NOW WILL DELIVER BETTER LONG-TERM RETURNS TO SHAREHOLDERS AND WILL BE BETTER POSITIONED TO RECRUIT AND RETAIN EMPLOYEES. THAT'S GOOD FOR THEM AND THAT'S GOOD FOR SEATTLE."**
**GREG NICKELS, MAYOR, CITY OF SEATTLE**

Most of Seattle's emissions come from transportation – the 'hardest nut to crack'– and this is the city's current focus. Improved transit, expanding bicycle and pedestrian infrastructure, a new commercial parking tax and zone charging are all contributing to the next generation of Seattle's environmental stewardship and to continuing its impressive success in the reduction of GHGs.

| CITY/COUNTRY/CARBON FOOTPRINT | REDUCTIONS AND ACHIEVEMENTS | MEASURES/TARGETS | FINANCIAL BENEFIT/INVESTMENT |
|---|---|---|---|
| **AALBORG**<br>– Denmark<br>» Community: 700,000* (2002).[1] | 22% reduction in community $CO_2e$ emissions 1990-2002.*[1] | – EE, FS, PC, RE<br>» 34% reduction in community $CO_2e$ emissions by 2012 on 1990 levels.[1] | Not documented |
| **ALBERTSLUND**<br>– Denmark<br>» Community: 179,388 (2005).[1] | 47% reduction in community $CO_2e$ emissions 1986-2005.*[1,2] | – C, EE, SB, T&I, WM | Not documented |
| **AUSTIN**<br>– USA<br>» Corporate: 5,572,676* (2005).[1] | 8% reduction in $CO_2e$ emissions from Austin Energy operations 2000-05. 7% increase in energy efficiency 1992-2005.[1] | – C, EE, FS, MS, O&CN, P, RE, WM<br>» 15% increase in energy efficiency on 1992 levels by 2020. 20% energy from renewables by 2020.[1] | – US$200,000,000 saving through energy conservation 1992-2005.**[1] |
| **BARCELONA**<br>– Spain<br>» Community: 4,800,000 (2004).[1] | 31,050$m^2$ solar heat capture surface area in 2005, producing estimated energy savings of 24.840 MWh/year.[2] | – C, EE, MS, RE, SB, T&I, WM<br>» 17% reduction in energy consumption on 2002 levels by 2012. 20% reduction in $CO_2e$ emissions on 2002 levels by 2012.[3] 60% running hot water from solar energy in new buildings.[4] | Not documented |
| **BERLIN**<br>– Germany<br>» Community: 37,648,167 (2004).[1] | 14% reduction in community $CO_2e$ emissions 1990-2002.[2] | – EE, FS, RE, SB<br>» 25% reduction in $CO_2e$ emissions on 1990 levels by 2010.[1] | – €2,200,000 annual energy cost savings €50,000,000 cumulative savings from investments and maintenance costs.[3] |
| **BRISTOL**<br>– UK<br>» Corporate: 55,600* (2003).[1]<br>Community 3,668,000 (2003).[2] | 21,000 tonne reduction in corporate $CO_2e$ emissions 2004-05 through energy efficiency.[2] | – C, EE, RE, T&I<br>» 15% reduction in corporate $CO_2e$ emissions on 2000 levels by 2010. 60% reduction in community $CO_2e$ emissions on 2000 levels by 2050.[3] | – £2,640,000 annual energy cost savings in 2002 through energy conservation measures.[3] |
| **BURLINGTON**<br>– USA<br>» Community: 624,000 (1997).[1] | 10% reduction in community $CO_2e$ emissions 1990-2005.[2] | – C, EE, FS, MS, RE, S, T&I, WM | – US$6,500,000 annual electricity savings due to energy efficiency programmes 1990-2005.[3] |
| **BURY**<br>– UK<br>» Corporate: 33,432 (2000).<br>Community: 1,319,403 (2000).[1] | 29% reduction in corporate $CO_2e$ emissions 1990-2000. 24% reduction in community $CO_2e$ emissions 1990-2000.[1] | – C, EE, MS, RE, SB, T&I, WM<br>» 28% reduction in corporate $CO_2e$ emissions on 2000 levels by 2010. 8% reduction in community $CO_2e$ emissions on 2000 levels by 2010.[1] | Not documented |
| **CALGARY**<br>– Canada<br>» Corporate: 442,300 (2004).<br>Community: 14,489,000 (2004).[1] | 4% reduction in corporate $CO_2e$ emissions 1990-2004 (18,900 tonnes).* 2% reduction in community $CO_2e$ emissions 2000-04 (239,000 tonnes).[1] | – C, EE, FS, PF, RE, SB, T&I, WM<br>» 50% reduction in corporate $CO_2e$ emissions on 1990 levels by 2012. 6% reduction in community $CO_2e$ emissions on 1990 levels by 2012.[1] | – US$2,700,000 annual cost savings by reducing energy consumption at 225 city facilities by 20-25%. US$1,800,000 annual savings 2005 through streetlight retrofits.<br>» US$19,500,000 investment in energy efficiency improvements.[1] |
| **CHICAGO**<br>– USA<br>» Community: 25,746,629 (2004).[1] | Retrofitting city buildings is reducing corporate $CO_2e$ emissions by 6,900 tonnes annually.[2] | – C, EE, FS, MS, RE, SB, T&I, WM<br>» 6% reduction in corporate energy use on 2000 levels by 2010. 50% reduction in corporate fleet emissions on 2003 levels by 2020.[4] | – US$6,000,000 projected savings in operating costs through retrofitting government facilities. US$4,400,000 projected savings through replacing traffic lights.[3] US$21,000 annual savings in fleet fuel costs. US$250,000 annual energy savings through replacing lighting in all 105 fire stations.[4] |
| **CHRISTCHURCH**<br>– New Zealand<br>» Community: 2,500,000 (2001).[1] | 21% reduction in corporate $CO_2e$ emissions 1994-2001. 19% reduction in energy consumption from city-owned buildings 1994-2001.[1] | – EE, FS, RE, T&I<br>» 10% reduction in corporate $CO_2e$ emissions on 2001 levels by 2010.[1] | Not documented |
| **COPENHAGEN**<br>– Denmark<br>» Community: 2,525,000 (2000).[1] | 23% reduction in community $CO_2e$ emissions 1990-2003.[1] | – EE, FS, RE, SB<br>» 5% reduction in energy use from city-owned buildings on 2002 levels by 2007.[2] 35% reduction in community $CO_2e$ emissions on 1990 levels by 2010.[1] | Not documented |
| **FRANKFURT**<br>– Germany<br>» Community: 9,155,000 (1995).[4] | 54,000 tonnes avoided per annum through use of 70 CHP plants.[3] | – EE, FS, MS, PC, RE, SB<br>» 50% reduction in $CO_2e$ emissions below 1990 levels by 2010.[1] | – €35,000 annual fuel cost savings from wood chip boiler (8-year return rate).[2]<br>» €450,000 investment in wood chip facility. €41,000,000 investment costs in 70 CHP plants 1992-2002.[3] |
| **HANNOVER**<br>– Germany<br>» Corporate: 4,080,000* (2005).[1] | 8% reduction in corporate $CO_2e$ emissions 2001-05.*[1] | – C, EE, FS, PF, RE, SB, T&I<br>» 25% reduction in community $CO_2e$ emissions on 1990 levels by 2005.[2] | – €400,000 annual savings from energy efficiency in municipal buildings and schools.[2] |

## USING THESE TABLES

These tables present the reported GHG reduction activities of leading cities in alphabetical order. All GHG emissions data is in metric tonnes $CO_2$ equivalent. The carbon footprint and reduction data is listed as covering either corporate (city government-related) or community (entire city) emissions. Where available, data for both have been recorded. Measures undertaken by each city are abbreviated and listed in full in the key (below). For a fuller explanation of measures please refer to the Glossary (page 28). Supplementary details, indicated by symbols, can be found in the corresponding source information for each entry (pages 24-27).

## MEASURES KEY

C: Communications
EE: Energy Efficiency
ET: Emissions Trading
FS: Fuel Switching
MS: Management Systems
O&CN: Offsets & Carbon Neutrality
P: Products
PC: Process Changes
PF: Project Finance
RE: Renewable Energy
S: Sequestration
SB: Sustainable Buildings
SC: Supply Chain
T&I: Transport & Information and Communications Technology (ICT)
WM: Waste Management

| CITY/COUNTRY/CARBON FOOTPRINT | REDUCTIONS AND ACHIEVEMENTS | MEASURES/TARGETS | FINANCIAL BENEFIT/INVESTMENT |
|---|---|---|---|
| **HEIDELBERG**<br>– Germany<br>» 973,000 (2002).[1] | 35% reduction in corporate $CO_2e$ emissions 1993-2004. 13% reduction in $CO_2e$ emissions from university buildings 1999-2002.[2] | – C, EE, FS, MS, PF, RE, SB, T&I | Not documented |
| **HELSINKI**<br>– Finland<br>» Community: 4,500,000 (2005).[1] | 5% reduction in community $CO_2e$ emissions 1990-2005.[2] | – EE, FS, RE, T&I, WM | – €1,100,000 cumulative energy cost savings from city-owned buildings 1990-2005.[1] |
| **KYOTO**<br>– Japan<br>» Community: 7,980,000 (2001).[1] | 2% reduction in community $CO_2e$ emissions 1990-2001.[1] | – EE, FS, PF, RE, SB, T&I, WM<br>» 10% reduction in community $CO_2e$ emissions on 1990 levels by 2010.[1] | – US$4,000,000 annual energy cost savings through CHP system.*[2] |
| **LEICESTER**<br>– UK<br>» 2,500,000 (2003).[1] | 32% reduction in corporate $CO_2e$ emissions 1990-2000. 6% reduction in energy use in city-owned buildings 1990-2000.[2] | – C, EE, FS, MS, RE, S, SB, T&I, WM<br>» 50% reduction in $CO_2e$ emissions below 1990 levels by 2025.[2] | – £3,929,000 savings in energy costs 1993-2004.[2,3] |
| **LONDON**<br>– UK<br>» Community: 43,600,000 (2003).[1] | 16% reduction in community $CO_2e$ emissions from road transport within the congestion charging zone 2002/3.[2] | – C, EE, FS, MS, RE, S, SB, T&I, WM<br>» 20% reduction in community $CO_2e$ emissions on 1990 levels by 2010. 60% reduction on 2000 levels by 2050.[3] | » London's congestion charge generated £97,000,000 for investment in public transport 2004-05.[4] |
| **MELBOURNE**<br>– Australia<br>» Corporate: 24,326 (2003/4).[1]<br>Community: 58,200,000 (2004).[2] | 26% reduction in corporate $CO_2e$ emissions 1996-2003.[3] | – C, EE, O&CN, PF, RE, S, SB, T&I, WM<br>» Zero (net) corporate emissions by 2020.[3] | – US$1,400,000 cost savings through energy efficiency measures.[1] |
| **MINNEAPOLIS**<br>– USA<br>» 7,600,000 (2003).[1] | 15% reduction in $CO_2e$ emissions 1994-2004.[2] | – C, EE, FS, MS, RE, S, T&I, WM<br>» 12% reduction in corporate $CO_2e$ emissions by 2012 and 20% by 2020 on 1988 levels. 12% reduction in community $CO_2e$ emissions by 2012 and 20% by 2020 on 1988 levels.[3] | – US$185,000,000 savings in energy costs.[2] |
| **MUNICH**<br>– Germany<br>» Community: 10,831,786 (2004).[1] | 7% reduction in community $CO_2e$ emissions 1987-2000.[2] | – EE, RE<br>» 50% reduction in community $CO_2e$ emissions by 2010 on 1987 levels.[2] | Not documented |
| **NEW HAVEN**<br>– USA<br>» Community: 1,838,138 (2001).[1] | Anticipated annual reductions in corporate $CO_2e$ emissions due to energy conservation programmes total 21,300 tonnes.[2] | – EE, RE<br>» 20% energy from renewables by 2010.[2] | – US$3,000,000 annual energy cost savings.<br>» US$9,000,000 investment in energy conservation and efficiency.[2] |
| **NEW YORK**<br>– USA<br>» Corporate: 2,550,000 (2006).[1] | 15% reduction in corporate $CO_2e$ emissions 1995-2006.[1] | – EE, RE, SB, SC, T&I, WM<br>» 20% reduction in corporate $CO_2e$ emissions on 1995 levels by 2010.[1] 30% reduction in community $CO_2e$ emissions on 1996 levels by 2030.[2] | – US$1,100,000 energy cost savings for New York Power Authority through reducing peak demand 2004. Current emission reduction measures are expected to generate annual cost savings of more than US$4,500,000 by 2010.[1] |
| **NEWCASTLE**<br>– Australia<br>» Corporate: 18,602* (2000).<br>Community: 2,540,088 (2000).[1] | 35% reduction in corporate energy-related $CO_2e$ emissions from city-owned buildings 1995-2000.[2] | – EE, RE, SB, T&I, WM<br>» 30% reduction in corporate $CO_2e$ emissions on 1995 levels by 2008. 25% reduction in community $CO_2e$ emissions on 1995 levels by 2008.[1] | – US$302,518 annual energy cost savings from city-owned buildings 1995-2001.[2] |
| **ODENSE**<br>– Denmark<br>» 350,000* (2003).[1] | 15% reduction in electricity consumption from city-owned buildings 1988-2002.[2] | – C, EE, MS, RE, SB<br>» 15% reduction in energy consumption on 1998 levels by 2005.[2] | – €48,000,000 cumulative energy cost savings 1981-2002.<br>» Initial investment €16,000,000.[2] |
| **OTTAWA**<br>– Canada<br>» Corporate: 106,996 (2005).[1]<br>Community: 5,380,802 (2005). | 11% reduction in community $CO_2e$ emissions 1990-2005.[1,2] | – C, EE, FS, MS, SB, T&I, WM<br>» 20% reduction in corporate $CO_2e$ emissions on 1990 levels by 2007. 20% reduction in community emissions on 1990 levels by 2012.[2] | – US$80,000 cost savings through implementing anti-idling policy for city fleet.[3] US$268,000 maintenance cost savings 1990-98. US$360,000 energy cost savings 1990-98 through energy efficient street lighting systems.[4] |

**MEASURES KEY**

C: Communications
EE: Energy Efficiency
ET: Emissions Trading
FS: Fuel Switching
MS: Management Systems
O&CN: Offsets & Carbon Neutrality
P: Products
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SC: Supply Chain
T&I: Transport & Information and Communications Technology (ICT)
WM: Waste Management

| CITY/COUNTRY/CARBON FOOTPRINT | REDUCTIONS AND ACHIEVEMENTS | MEASURES/TARGETS | FINANCIAL BENEFIT/INVESTMENT |
|---|---|---|---|
| **PORTLAND**<br>– USA<br>» Community: 9,690,949 (2004).[1] | 12% reduction in community $CO_2e$ emissions 1990-2004.*[1] | – C, EE, MS, O&CN, PF, RE, S, SB, T&I, WM<br>» 10% reduction in community $CO_2e$ emissions on 1990 levels by 2010.[1] | – US$300,000,000 cumulative cost savings for businesses and residents through energy efficiency improvements 1990-2003. US$11,000,000 cost savings through City Energy Challenge 1991-2003.[2] |
| **REGINA**<br>– Canada<br>» Community: 4,100,000 (2001).[1] | 12% reduction in corporate $CO_2e$ emissions 1990-2001.[3] | – C, EE, MS, T&I<br>» 6% reduction in community $CO_2e$ emissions on 1990 levels by 2012.[2] 20% reduction in corporate $CO_2e$ emissions on 1990 levels by 2005 and 1% reduction each year 2005-2012.[3] | – US$414,000 annual energy cost savings.<br>» Expenditures up to 1997 matched cumulative savings from energy retrofits.[4] |
| **SALT LAKE CITY**<br>– USA<br>» Corporate: 93,440 (2005).[1] | 22% reduction in corporate $CO_2e$ emissions 2001-05.[1] | – C, EE, FS, MS, RE, SB, T&I, WM<br>» 7% reduction in corporate $CO_2e$ emissions on 1990 levels by 2012. 21% below 2000 levels by 2012.[2] | – US$33,000 annual energy cost savings from LED lighting.[2] |
| **SAN DIEGO**<br>– USA<br>» Corporate: 10,643,998* (2003).[1] | 22% reduction in corporate $CO_2e$ emissions 1990-2003.[1] | – C, EE, FS, RE, SB, T&I, WM<br>» 15% reduction in community $CO_2e$ emissions on 1990 levels by 2010.[1] | – US$15,000,000 annual energy cost savings.[1] |
| **SEATTLE**<br>– USA<br>» Corporate: 554,000 (2000).[1] Community: 7,013,000 (2000).[2] | 60% reduction in corporate $CO_2e$ emissions 1990-2002. Seattle City Light became zero net emissions in 2005.[2] | – C, EE, FS, MS, O&CN, RE, S, SB, SC T&I, WM<br>» 7% reduction in community $CO_2e$ emissions on 1990 levels by 2012.*[1] | – US$18,370,000 increase in net present value to Seattle City Light from conservation. US$350,000 in fleet fuel cost savings. US$2,500,000 benefits from municipal conservation fund for energy and water in 2002.[2] |
| **TORONTO**<br>– Canada<br>» Community: 40,200,000 (2004).[2] | 2% reduction in community $CO_2e$ emissions 1990-98. 42% reduction in corporate $CO_2e$ emissions 1990-98.[1] | – EE, RE, T&I, WM<br>» 20% reduction in $CO_2e$ on 1990 levels. 15% reduction in corporate energy use. 25% corporate energy from renewables.[1] | » US$16-25,000,000 in cumulative revenue estimated from landfill methane capture.[1] The Better Buildings Partnership facilitated retrofits in 467 privately owned buildings, saving a total of US$102,000,000 in energy costs.[3] |
| **VÄXJÖ**<br>– Sweden<br>» Corporate: 7,329 (2004). Community: 268,250 (2004).[1] | 25% reduction in community $CO_2e$ emissions per inhabitant 1993-2004.[1] | – C, EE, FS, PF, RE, SB, T&I<br>» 50% reduction in community $CO_2e$ emissions per inhabitant on 1993 levels by 2010 and 70% by 2025. Reduce corporate $CO_2e$ emissions from transportation on 1999 levels by 2015.[1] | Not documented |
| **WOKING**<br>– UK<br>» Corporate: 7,019 (2005).[2] Community: 862,421 (2005).[1] | 79% reduction in corporate $CO_2e$ emissions 1991/2-2005. 19% reduction in community $CO_2e$ emissions 1990-2005. 51% reduction in energy consumption from city-owned buildings 1991/2-2005. 30% increase in energy efficiency of council housing stock 1996-2005.[1] | – C, EE, FS, MS, RE, SB, WM<br>» 60% reduction in community $CO_2e$ emissions on 1990 levels by 2050 and 90% by 2100.[1] | Not documented |
| **ZÜRICH**<br>– Switzerland<br>» 150,000* (2000).[1] | 5% reduction in $CO_2e$ emissions 1990-2000.[1] | – EE, RE, SB, T&I<br>» 10% reduction in community $CO_2e$ emissions on 1990 levels by 2010.[1] | » US$30,000,000 investment in Energy Saving Fund 1990-2005.**[2] |

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HIGH OCCUPANCY VEHICLE LANE, CALIFORNIA, USA – WITH INITIATIVES SUCH AS ITS HIGH OCCUPANCY VEHICLE LANES AND PROPOSED HYDROGEN HIGHWAY, CALIFORNIA DEMONSTRATES HOW REGIONS CAN BEGIN TO TACKLE TRANSPORT-RELATED GHG EMISSIONS.

# REGIONS
## BUILDING POSITIVE MOMENTUM

| TOP 3 REDUCERS | REDUCTION |
|---|---|
| SCOTLAND | 16% |
| SCHLESWIG-HOLSTEIN | 13% |
| BAVARIA | 9.5% |

In recent years the number of regional, state and provincial governments committing to robust climate targets and policies has grown steadily. While the scope of these sub-national entities to act and the magnitude of their achievements is conditioned by national emissions trends and


**RIGHT**
**CNG POWERED BUS – TRANSPORT AND INFORMATION TECHNOLOGY MEASURES HAVE BEEN IMPLEMENTED BY OVER HALF OF THE REGIONS PROFILED IN THIS REPORT. ALONGSIDE RENEWABLE ENERGY, ENERGY EFFICIENCY AND SUSTAINABLE BUILDINGS, IT CONTINUES TO BE A FUNDAMENTAL PART OF SUCCESSFUL EMISSION REDUCTION STRATEGIES.**

policies and their degree of autonomy from national governments, several regions have made successful attempts to tackle their emissions. In Austria, for example, Upper Austria's policies have achieved a 33% reduction in heating energy consumption from new buildings and a 64% decrease from renovated buildings since 1994. In Germany, Bavaria's rational energy use scheme (see Case Study: Bavaria) brought similar benefits. Across the Atlantic, Canadian Province Quebec committed to a range of initiatives in 2006, which will reduce community GHG emissions 1.5% below 1990 levels by 2012.

In 2005, at the UNFCCC 11th Conference of the Parties (COP11/MOP1), The Climate Group and the governments of Manitoba and Quebec convened a climate change summit, attended by over 30 sub-national governments from across the globe. The resulting Montreal Climate Leaders Declaration currently has 20 state signatories and is a testament to these regional governments' commitment to resolving the issue.

Some of these states have recognised their obligation to ensure existing national targets are met or exceeded. Perhaps more significantly some US and Australian states are taking action where national governments have not committed to achieving emission reductions.

In April 2006, South Australia's Premier Mike Rann proposed draft legislation for consultation which would require a 60% emission reduction by 2050, making his the first Australian state to attempt to legally underpin action. In August 2006, the seven Northeast US states of the Regional Greenhouse Gas Initiative (RGGI) released suggested regulations to implement the first mandatory US-based GHG cap-and-trade scheme.

Similarly, California has taken significant strides to enshrine action into law. Assembly Bill (AB) 32 is the first US GHG emissions reduction framework which includes mandatory reporting and reductions for the biggest emitters, requiring all industries to be at their 1990 levels – equivalent to 25% reduction below current levels – by 2020. Governor Schwarzenegger signed the mandate in September 2006, sending strong signals to the US federal government that its reluctance to act will not dissuade states from undertaking decisive initiatives. California had previously committed to reducing its emissions by 80% on 1990 levels by 2050 and AB 32 is designed to lead action towards achieving this target.

California also partners on other multi-state climate change initiatives throughout the US and globally, including the Western Governor's Association, through which California, Oregon and Washington advance clean energy and low carbon initiatives. California recently collaborated with the Brazilian state of São Paulo on 'No Reason to Wait', a report highlighting the climate action that the two most developed states in their respective countries are taking. Both have demonstrated how GHG reduction and economic development can go hand-in-hand.

São Paulo itself has proven that developing economies can effectively implement low carbon solutions. Between 1980 and 2003, the state's commitment to alternative fuel, specifically ethanol, avoided the emission of 74 million tonnes $CO_2e$. Similarly, Western Cape in South Africa, also a Montreal Declaration signatory, has invested US$51 million in energy efficiency, successfully incorporating climate change into intelligent strategy development.

### CASE STUDY: BAVARIA

**TEN YEARS AGO BAVARIA SET OUT TO REDUCE ITS GHG EMISSIONS 13% ON 1996 LEVELS BY 2010. TO DATE, THE STATE HAS ACHIEVED A 9.5% REDUCTION IN ABSOLUTE EMISSIONS. A PIONEERING FORCE IN ENERGY EFFICIENCY FOR OVER TWO DECADES, IN 1978 BAVARIA WAS THE FIRST GERMAN STATE TO INTRODUCE A SCHEME PROMOTING RATIONAL ENERGY GENERATION AND USE, RESULTING IN A REDUCTION OF HEATING ENERGY IN EXISTING BUILDINGS BY AROUND A THIRD. SINCE 1990 ALONE, BAVARIA HAS INVESTED OVER €500 MILLION IN ENERGY EFFICIENCY – RETROFITTING BUILDINGS AND IMPLEMENTING MUNICIPAL ENERGY MANAGEMENT SYSTEMS, BUILDING BIOMASS, GEOTHERMAL AND SOLAR ENERGY INSTALLATIONS, INFORMATION CAMPAIGNS, FORESTATION AND FULFILLING THE STATE'S OBLIGATIONS FOR EMISSIONS TRADING UNDER THE EU ETS. WITH AREAS OF THE STATE, SPECIFICALLY THE ALPINE REGION, EXPERIENCING TEMPERATURE INCREASES UP TO TWICE THE GLOBAL AVERAGE, BAVARIA'S COMMITMENT TO AND LEADERSHIP IN INNOVATION TOWARDS A LOW CARBON FUTURE IS LIKELY TO CONTINUE.**

Regional governments have the ability to take actions which benefit local communities at the same time as influencing large-scale changes – exerting pressure on national governments and using state-level mechanisms to sway opinion and catalyse action. If effective, this pressure will enable state governments to have a central role in forging the path towards a low carbon economy.

| REGION/COUNTRY/CARBON FOOTPRINT | REDUCTIONS AND ACHIEVEMENTS | MEASURES/TARGETS | FINANCIAL BENEFIT/INVESTMENT |
|---|---|---|---|
| **BAVARIA**<br>– Germany<br>» Community: 83,300,000 (2003).[1] | 9.5% reduction in community $CO_2e$ emissions 1996-2003.[1] | – C, EE, ET, FS, RE, S, SB, WM<br>» 10% reduction in $CO_2e$ emissions on 2000 levels by 2010.[3] | » Over €500,000,000 investment in energy efficiency since 1990.[2] |
| **CALIFORNIA**<br>– USA<br>» Community: 493,000,000 (2002).[1] | 30% reduction in community $CO_2e$ emissions/per capita 1975-2002 due to energy efficiency.[2] | – EE, RE, SB, T&I, WM<br>» Reduce community $CO_2e$ emissions to 2000 levels by 2010, 1990 levels by 2020, and 80% below 1990 levels by 2050.[3] | – Energy efficiency in the industrial and commercial sectors 1975-1995 provided economic net benefits of US$875-1,300 per capita. California Energy Commission estimates that existing building and appliance standards saved Californians US$56,000,000,000 through 2003 and will save an additional US$43,000,000,000 in utility costs 2001-23.[2] |
| **CONNECTICUT**<br>– USA<br>» Community: 43,650,000 (2001).[1] | 50,000 tonne $CO_2e$ reduction from natural gas and oil systems (non-$CO_2$) 1990-2001.[1] Department of Environmental Protection facilities 100% powered by renewables.[2] | – C, EE, RE, SB, T&I, WM<br>» Reduce community $CO_2e$ emissions to 1990 levels by 2010. 10% below 1990 levels by 2020.[3] | » US$1,000,000,000 investment in mass transit programme.[2] |
| **HYOGO**<br>– Japan<br>» Community: 73,990,742 (2002).[1] | 20% reduction in $CO_2e$ emissions from industry 1990-2004.* In 2003, Japanese Prefecture with most solar installations.[1] | – C, EE, RE<br>» 6% reduction in community $CO_2e$ emissions on 1990 levels by 2010.[1] | Not documented |
| **JÄMTLAND**<br>– Sweden<br>» 566,272* (2004).[1] | 10% reduction in $CO_2e$ emissions 2000-05. 60% of heat production and 90% of electricity production from renewables in 2005.[2] | – C, EE, RE, SB, T&I, WM<br>To be a non-fossil fuel region and to reduce community $CO_2e$ emissions by 15% on 1990 levels by 2015.[2] | Not documented |
| **MAINE**<br>– USA<br>» Community: 25,000,000* (2002).[1] | First US state to enact NEG/ECP goals into statute.[1] 40% energy from renewables by 2000.[3] | – EE, FS, MS, O&CN, RE, SB, T&I, WM<br>» Reduce community $CO_2e$ emissions to 1990 levels by 2010. 10% below 1990 levels by 2020, 75-85% below 1990 levels over the longer term.[1] | – Almost half of the measures in the State's Climate Action Plan will be achieved at little or no cost.[2] |
| **MANITOBA**<br>– Canada<br>» Community: 19,323,035 (2003).[1] | 37,000 tonne reduction in $CO_2e$ emissions from first wind farm in Manitoba. 35,000 tonne reduction in $CO_2e$ emissions 2001-05 from heat pump installations. 540,000 tonne $CO_2e$ emission reduction per annum from energy efficiency programming to 2005.*[2] | – EE, RE, SB, T&I<br>» 23% reduction in community $CO_2e$ emissions 1990-2012. Triple energy efficiency across the province by 2010 on 2004 levels reducing emissions by 840,000 tonnes.[1] | – Wind industry expected to produce 700 jobs per year from construction, operations and manufacturing; and annual revenues from energy sales of US$200,000,000 per year. Heat pump industry has grown from US$5,000,000 in annual sales to US$25,000,000.[2] |
| **MASSACHUSETTS**<br>– USA<br>» Community: 112,242,557 (2001).[1] | 1,129,366 tonne reduction in $CO_2e$ emissions through energy conservation projects to 2004.[1] | – EE, RE, SB, T&I<br>» $CO_2e$ emission reduction to 1990 levels by 2010, 10% below 1990 levels by 2020, 75-85% below 1990 levels over the longer term.[1] | – US$152,314,094 cost savings through energy conservation projects to 2004.[1] |
| **NAVARRE**<br>– Spain<br>» Corporate: 167,829 (2005).[1] | 61% energy from renewables in 2004.[1] 8,130,000 tonne reduction in $CO_2e$ emissions 2002-03.[2] Region's renewables sector employs over 3,600 people. | – RE<br>» 100% renewable energy generation by 2010.[1] | » Since 1984, total capital expenditure in renewable projects is €162,500,000.[2] |

## USING THESE TABLES

These tables present the reported GHG reduction activities of leading regions in alphabetical order. All GHG emissions data is in metric tonnes $CO_2$ equivalent. The carbon footprint and reduction data is listed as covering either corporate (regional government-related) or community (entire region) emissions. Where available, data for both have been recorded. Measures undertaken by each region are abbreviated and listed in full in the key (below). For a fuller explanation of measures please refer to the Glossary (page 28). Supplementary details, indicated by symbols, can be found in the corresponding source information for each entry (pages 24-27).

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| REGION/COUNTRY/CARBON FOOTPRINT | REDUCTIONS AND ACHIEVEMENTS | MEASURES/TARGETS | FINANCIAL BENEFIT/INVESTMENT |
|---|---|---|---|
| **NEW MEXICO**<br>– USA<br>» Community: 83,000,000 (2000).[(2)] | 2,000 tonne reduction in corporate $CO_2e$ emissions from state buildings and vehicles 2003-05.[(3)] | – EE, RE, SB, T&I<br>» Reduce community $CO_2e$ emissions to 1990 levels by 2010, 10% below 1990 levels by 2020, 75-85% below 1990 levels over the longer term.[(5)] All new buildings to consume 50% less fossil fuels than conventional buildings and be fossil fuel free by 2030.[(6)] | – US$20,000,000 bond for solar and energy efficiency will result in utility savings of US$46,000,000 over its lifetime.[(4)] |
| **NEW YORK**<br>– USA<br>» Community: 80,976,290 (2004).[(4)] | 19% electrical energy from renewables (2004).[(2)] 10% primary energy use from renewables.[(4)] | – C, EE, FS, MS, PF, RE, SB, T&I, WM<br>» 25% electrical energy from renewables by 2013.[(2)] 35% reduction in corporate energy use by 2010. 20% electrical energy from renewables by 2010.[(3)] 5% reduction in community $CO_2e$ emissions on 1990 levels by 2010 and 10% reduction $CO_2e$ below 1990 levels by 2020. 50% primary energy from renewables by 2020.[(4)] | – US$284,000,000 annual projected energy savings for consumers through improved energy efficiency standards.[(1)]<br>» US$800,000,000 investment in energy efficiency and demand reduction in New York Energy Smart Program to 2005 with US$2,000,000,000 in present value benefits. US$25,000,000 investment in CNG, hybrid vehicles and fuel cells for transportation.[(4)] |
| **SÃO PAULO**<br>– Brazil<br>» 75,296,333[*] (2003).[(1)] | 74,000,000 tonnes $CO_2e$ emissions avoided 1980-2003 through the use of ethanol, 4.6% reduction in corporate electricity use 1995-2003.[(1)] | – EE, FS, RE, S, T&I, WM | – Ethanol programme saved consumers US$7,500,000,000 in fuel costs 2003.[(1)] |
| **SCHLESWIG-HOLSTEIN**<br>– Germany<br>» Community: 22,561,000 (2001).[(1)] | 13% reduction in community $CO_2e$ emissions 1990-2001.[(1)] 30% energy from renewables 2004.[(2)] | – EE, RE, SB | Not documented |
| **SCOTLAND**<br>– UK<br>» Community: 53,500,000 (2004).[(1)] | 16% reduction in community $CO_2e$ emissions 1990-2004.[(1)] | – ET, FS, MS, PF, RE, S, WM<br>» 12.5% reduction in $CO_2e$ emissions on 1990 levels by 2008-12 plus an additional 1,000,000 tonnes $CO_2e$ by 2010.[*(2)] | Not documented |
| **SOUTH AUSTRALIA**<br>– Australia<br>» Community: 27,000,000 (2004).[(1)] | 28,000 tonne reduction in $CO_2e$ emissions 2000/1-2004/5.[*] 3% reduction in energy use 2000/1-2004/5.[*] 8% electricity from renewables 2006.[(1)] | – C, EE, ET, FS, MS, O&CN, RE, SB<br>» 60% reduction in community $CO_2e$ emissions on 1990 levels by 2050. 20% increase in electricity from renewables between 2006 and 2016. 10% increase in energy efficiency on 2004 levels by 2014. 25% reduction in energy consumption in government buildings between 2006 and 2016.[(1)] | – US$1,700,000 cumulative gross savings through fuel switching 2005-06.[**]<br>» US$185,846 annual investment in communications.[†] US$433,392,804 investment in renewable energy.[††(1)] |
| **UPPER AUSTRIA**<br>– Austria<br>» Community: 22,900,000 (2002).[(1)] | 33% reduction in energy consumption in heating of new buildings 1994-99. 64% reduction in energy consumption for heating renovated buildings 1994-99. 30% energy from renewables.[(2)] | – EE, RE, SB | Not documented |
| **VICTORIA**<br>– Australia<br>» Community: 123,000,000 (2004).[(1)] | 1,100,000 tonne $CO_2e$ reduction annually from industry.[(2)] 15% increase in energy efficiency in government-owned buildings since 1999. 4% electricity from renewables.[(1)] | – C, EE, O&CN, RE, SB<br>» 10% renewable energy by 2016. Commitment to legislate to reduce GHG by 60% by 2050 on 2000 levels. 20% renewable and low emissions energy generation by 2020.[(2)] Commitment to a 10% reduction in community GHG emissions by 2010.[(3)] | – US$26,329,000 annual energy cost savings to business. US$13,555,817 annual energy cost savings to government.[(2)] |

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# SOURCES
# CORPORATES

## ABITIBI CONSOLIDATED INC.
1 – Abitibi Response CDP4 http://cdproject.net/results.asp

*Resulting from installation of ultrasonic device to produce process steam, reduce landfill costs and fossil fuel usage.

## ABN AMRO HOLDING
1 – ABN Amro Response CDP4 http://cdproject.net/results.asp

*Globally – offices and retail in US, Netherlands, Brazil.
**Business travel.

## ALCOA
1 – CERES Report – Corporate Governance and Climate Change: Making the Connection, March 2006 http://www.ceres.org/pub/docs/Ceres_corp_gov_and_climate_change_0306.pdf.
2 – Alcoa Website http://www.alcoa.com/global/en/environment/climate_change/doing.asp

*$CO_2$, PFC and $SF_6$.

## ALLERGAN
1 – Allergan Response CDP4 http://cdproject.net/results.asp.
2 – Allergan EHS Sustainability Performance Report http://allergan.com/download/Corporate_EHS_Performance_Report.pdf

*Covers manufacturing, R&D operations, sales force vehicles.

## AMCOR LTD.
1 – Amcor Response CDP4 http://cdproject.net/results.asp.
2 – Amcor Sustainability Report 2005 http://www.amcor.com/content/investorinformation/downloads/Amcor%20Sustainability%20Report%202005.pdf

## AMERICAN ELECTRIC POWER
1 – American Electric Power Response CDP4 http://cdproject.net/results.asp

*Covers US utility operations; US domestic independent power production facilities. Does not include $SF_6$, $CH_4$, $N_2O$, HFCs; emission from auxiliary boilers, emergency generators, facility heating, fleet and barge sources.

## ARCELOR
1 – Arcelor Response CDP4 http://cdproject.net/results.asp

*Process emissions (direct emissions and emissions resulting from combustion of exported gas): 70.3 Mt – emission linked to net electricity purchase from grid calculated from local equivalent $CO_2$ (ahead of generation from exported gas): 4.4 Mt.
**Continuous improvement, material efficiency and development of steel recycling in European facilities only.

## ASAHI GLASS
1 – Asahi Glass CSR Report 2006 http://www.agc.co.jp/english/csr/book/pdf/csr_report_2006e.pdf

*Covers $CO_2$ emissions.
**Covers $CO_2$ emissions (2005 data includes major company affiliates as well as Asahi Glass).

## ASSOCIATED BRITISH PORTS
1 – Associated British Ports Corporate Social Responsibility Report 2005 http://www.csr.abports.co.uk/files/2005_CSR.pdf

*No dates given.

## ASTRAZENECA
1 – AstraZeneca Response CDP4 http://cdproject.net/results.asp.
2 – AstraZeneca Website http://www.astrazeneca.com/article/511607.aspx

*Travel & transport, waste incineration.
**Patients using products.
†Supply chain.

## BANCO ITAU
1 – Banco Itau Response CDP4 http://cdproject.net/results.asp

*Through retrofitting air cooling facilities on CTO HQ.

## BAYER
1 – Bayer Response CDP4 http://cdproject.net/results.asp

*Globally for onsite emissions.
**Total collective reduction figure does not involve divestiture.

## BP
1 – BP Response CDP4 http://cdproject.net/results.asp.
2 – Climate Group correspondence with Chris Tuppen, Head of BT Sustainable Development and Corporate Accountability.
3 – BP 3-Sustainability Report 2005 http://www.bp.com/liveassets/bp_internet/globalbp/STAGING/global_assets/downloads/S/bp_sustainability_report_2.pdf

*Covers $CO_2$ and $CH_4$.
**Electricity.
†Emissions from products sold.
††Increase in net present value due to increased operational efficiency, technological innovation and improved energy management.
#From products.

## BRITISH AMERICAN TOBACCO
1 – British American Tobacco Response CDP4 http://cdproject.net/results.asp.
2 – British American Tobacco Social Report http://www.bat.com/OneWeb/sites/uk__3mnfen.nsf/vwPagesWebLive/C1256E3C003D3339C125715A004FA7D8?opendocument&SID=&DTC=

*Energy used in own operations; group business travel and freight. Does not include energy used to produce and deliver purchased energy; achieved from energy conservation, improved fuel economy.

## BRITISH SKY BROADCASTING
1 – Sky Corporate Sustainability Report 2006 http://media.corporate-ir.net/media_files/irol/10/104016/CSR/BSY_CSR_2006.pdf.

## BT GROUP
1 – BT Group Response CDP4 http://cdproject.net/results.asp.
2 – BT Climate Group correspondence with Chris Tuppen, Head of BT Sustainable Development and Corporate Accountability.

*Oil, gas, electricity production from oil combustion; refrigeration gases; commercial fleet diesel and petrol.
**Company and non-company car diesel and petrol; refrigeration gases; rail travel; air travel; rented cars.
†Does not include an equivalent 25% reduction from renewable energy purchases – only UK data has been verified.

## CANADIAN IMPERIAL BANK OF COMMERCE
1 – CIBC 2005 Accountability Report http://www.cibc.com/ca/pdf/about/pas-environment-05-en.pdf.
2 – CIBC Response CDP4 http://cdproject.net/results.asp

*Employee business travel.

## CATALYST PAPER CORP.
1 – Catalyst Response CDP4 http://cdproject.net/results.asp

## CATERPILLAR INC.
1 – Caterpillar Response CDP4 http://cdproject.net/results.asp.
2 – CERES Report – Corporate Governance and Climate Change: Making the Connection, March 2006 http://www.ceres.org/pub/docs/Ceres_corp_gov_and_climate_change_0306.pdf

*100% of emissions for global facilities with 50% ownership; partially tracked, partially estimated.

## CHUGOKU
1 – Chugoku Response CDP4 http://cdproject.net/results.asp

*Domestic only.
**US$7,000,000 to Prototype Carbon Fund and US$3,000,000 to Japan Greenhouse Gas Reduction Fund.

## CISCO
1 – Cisco Response CDP4 http://cdproject.net/results.asp

*Energy efficiency programmes in San Jose alone – in place for over a decade – annual savings calculated on this timeframe.

## CLP HOLDINGS
1 – CLP Holdings Response CDP4 http://cdproject.net/results.asp

*Emission from $CO_2$ and $CH_4$ in $CO_2e$, excludes Aushun 2 facility in China.
**Avoided $CO_2e$ emission in Australian business.

## DEUTSCHE BANK
1 – Deutsche Bank Response CDP4 http://cdproject.net/results.asp

*For business travel and electricity emissions for largest locations in Germany, UK, and US.
**In German offices, for total energy use, through communications programme.

## DEUTSCHE TELEKOM
1 – Deutsche Telekom Response CDP4 http://cdproject.net/results.asp.
2 – Deutsche Telekom 2005 Sustainability Report http://download-dtag.t-online.de/englisch/company/9-sustainability/PUN_2005_engl.pdf

*Through purchase of 1TWh of RECs and existing 10% renewable energy in German grid.

## E. I. DU PONT DE NEMOURS (DUPONT)
1 – DuPont Response CDP4 http://cdproject.net/results.asp.
2 – DuPont Sustainable Growth Progress Report http://www2.dupont.com/Social_Commitment/en_US/SHE/usa/us3b.html#4

*Includes $CO_2$, $CH_4$, PFCs and HFCs.
**$CO_2$, HFCs, PFCs, $CH_4$; amount adjusted to reflect Invista divestiture (previously 72% reduction).

## DOW CHEMICAL
1 – Dow Chemical Response CDP4 http://cdproject.net/results.asp

*Through combination of global use of cogeneration, Six Sigma discipline and methodology application and employee engagement in energy efficiency.

## EASTMAN KODAK
1 – Eastman Kodak Response CDP4 http://cdproject.net/results.asp.
2 – Eastman Kodak Annual Corporate Environment Report 2005 http://www.kodak.com/US/plugins/acrobat/en/corp/environment/05CorpEnviroRpt/HSE2005AnnualReport.pdf

*Exceeded 2008 target of 10% 3 years early.

## ENBRIDGE INC.
1 – Enbridge Response CDP4 http://cdproject.net/results.asp

## ENDESA S.A.
1 – Endesa Response CDP4 http://cdproject.net/results.asp.
2 – Endesa 2005 Sustainability Report http://www.endesa.es/NR/rdonlyres/ezp4z72uhglfhhiz64m7npd4hjtd2i7b6ijiampwmh/sustainability2005report.pdf

*$CO_2$ only. For facilities that are not wholly owned but controlled by the company, 100% of GHG emissions are reported. For those facilities that are jointly controlled, the 'equity share of GHG emissions' criteria is applied.

## ENTERGY
1 – Entergy Response CDP4 http://cdproject.net/results.asp.
2 – Entergy Sustainability Report 2005 http://www.entergy.com/content/our_community/pdfs/Sustainability_Report.pdf.
3 – CERES Report – Corporate Governance and Climate Change: Making the Connection, March 2006 http://www.ceres.org/pub/docs/Ceres_corp_gov_and_climate_change_0306.pdf

*$CO_2$, $CH_4$ and $SF_6$ from ownership share of US power plants.
**Surpassed goal of stabilising $CO_2$ emissions from US power plants at 2000 levels through 2005.

## FORD MOTOR CO.
1 – Ford Response CDP4 http://cdproject.net/results.asp.
2 – Ford Motor Co. Sustainability Report 2005-6 http://www.ford.com/NR/rdonlyres/5syl5bb33xlhoaxv4z7yc3yty6sdi25makivgg/2005-06_sustainability_report.pdf

## FORTUM
1 – Fortum Response CDP4 http://cdproject.net/results.asp.

*Globally, reported in whole (not % basis) for all majority owned facilities: $CO_2$, $CH_4$, $N_2O$.

## FOSTER'S GROUP LTD.
1 – Foster's Group Ltd. Response CDP4 http://cdproject.net/results.asp.
2 – Foster's Group Ltd. Website http://www.fosters.com.au/about/performance.htm

## FREESCALE SEMICONDUCTORS
1 – Freescale Semiconductors Response CDP4 http://cdproject.net/results.asp.
2 – Freescale Semiconductors Corporate Social Responsibility Report 2005 http://www.freescale.com/files/abstract/misc/CPA7734_CSR_REPORT_BOOKLET.pdf

## GAZ METRO
1 – Gaz Metro Response CDP4 http://cdproject.net/results.asp

## GENERAL MOTORS
1 – General Motors Response CDP4 http://cdproject.net/results.asp.
2 – General Motors Sustainability Report 2005 http://www.gm.com/company/gmability/sustainabi lity/reports/05/600_environment/index.html.

*Direct emissions from fossil fuel combustion and indirect emissions from purchased electricity; about 65% from purchased electricity.

## GLAXOSMITHKLINE
1 – GlaxoSmithKline Response CDP4 http://cdproject.net/results.asp.
2 – GlaxoSmithKline Corporate Social Responsibility Report 2005 http://www.gsk.com/responsibility/cr_report_2005/environment/energy-climate.htm

*Electricity and steam purchased; fuels burned in fixed combustion equipment on site; emergency generators; transport by air, road, rail; waste treatment and fermentation.

## HBOS
1 – HBOS Response CDP4 http://cdproject.net/results.asp

## IMPERIAL CHEMICAL INDUSTRIES
1 – Imperial Chemical Industries Response CDP4 http://cdproject.net/results.asp.
2 – Imperial Chemical Industries Sustainability Review 2005 http://www.ici.com/ici-she/2004/pdf/ICI_sustainability_review_2005.pdf

*Period 1995-2000 not covered due to fundamental changes in company structure and divestment at this time.

## INTERFACE
1 – Interface Sustainability Website http://www.interfacesustainability.com.
2 – Correspondence with Valerie Bennett, Interface Director of Communications.

## INTERNATIONAL BUSINESS MACHINES
1 – International Business Machines Response CDP4 http://cdproject.net/results.asp.
2 – International Business Machines Website http://www.ibm.com/ibm/responsibility/world/environmental/energy.shtml

*$CO_2$ does not include travel.
**PFCs.

## INTERNATIONAL PAPER
1 – International Paper Response CDP4 http://cdproject.net/results.asp.
2 – International Paper Corporate Social Responsibility Update 2006 http://www.internationalpaper.com/PDF/PDFs_for_Our_Company/Sustainability%20Reports/IPSustainability2006.pdf

## INVESTA PROPERTY GROUP

1 – Investa Property Group Response CDP4 http://cdproject.net/results.asp.
2 – Investa Property Group Sustainability Report 2005 http://investa.com.au/Common/Pdf/CorporateGov/sustain_report_2005.pdf

*Gas consumption.
**Electricity consumption.

## JOHNSON & JOHNSON

1 – Johnson & Johnson Response CDP4 http://cdproject.net/results.asp

*Stationary combustion, mobile combustion from vehicles, fugitive emissions, process emissions.
**Annualised savings from energy efficiency projects to date are approximately US$3 million and approx. 200,000 tonnes $CO_2$.
†New capital funding process with plans to invest US$100 million to reduce $CO_2e$ emissions; amount to date is for projects already approved in energy efficiency, PVs and CHP.

## KIMBERLY-CLARK

1 – Kimberly-Clark Response CDP4 http://cdproject.net/results.asp.
2 – Kimberly-Clark Sustainability Report 2005 http://www.kimberly-clark.com/aboutus/Sustainability2005/2005SustainabilityReport.pdf#page=1

## KIRIN BREWERY CO. (NOT KIRIN GROUP)

1 – Kirin Brewery Co. Response CDP4 http://cdproject.net/results.asp

*Costs of switching to larger trucks, purchase and implementation of anaerobic treatment equipment.

## KLABIN

1 – Klabin 2005 SocioEnvironment Report http://www.klabin.com.br/upload/br/relacoesinvestidores/relatorioanual/RSA_2005.pdf

*Through replacement of fuel oil with natural gas in boilers at the Guapimirim (RJ) plant.

## KOMATSU

1 – Komatsu Response CDP4 http://cdproject.net/results.asp

## LAFARGE

1 – Lafarge Response CDP4 http://cdproject.net/results.asp

*Annex 1 countries.

## LION NATHAN LTD.

1 – Lion Nathan Ltd. Response CDP4 http://cdproject.net/results.asp.

## LLOYD'S TSB

1 – Lloyd's TSB Response CDP4 http://cdproject.net/results.asp

*Study of 2500 employees regularly using teleconferencing to replace circa five meetings per week, some of which would otherwise have involved travel. Total of travel and time saved.

## MARKS & SPENCER

1 – Marks & Spencer Response CDP4 http://cdproject.net/results.asp.
2 – Marks & Spencer Corporate Social Responsibility Report 2005 http://www2.marksandspencer.com/thecompany/investorrelations/downloads/2005/corporate_social_responsibility_2005.pdf

*Electricity.
**Includes supplier transport, general merchandise and food, production general merchandise and food, customer travel general merchandise and food, home deliveries general merchandise and food, customer use general merchandise and food.

## NESTLÉ

1 – Nestlé Response CDP4 http://cdproject.net/results.asp

*Globally, own combustion only. Will incorporate electricity in coming reports.
**Absolute improvement in manufacturing emissions, despite 55% increase in production.
†Packaging material savings from 1991 to 2005 amounted to 284,000 tonnes and CHF 520 million. These savings have enabled emission reductions at the packaging disposal stage.

## NEXEN

1 – Nexen Sustainability Website http://www.nexeninc.com/Sustainability/Environment/air.asp

## NIKE

1 – Nike Response CDP4 http://cdproject.net/results.asp

*Represents approximately 78% of emissions because only includes facilities >20,000 sq. ft.
**Set in 2001, exceeded goal of 13% reduction for facilities and travel.

## NIPPON OIL

1 – Nippon Oil Response CDP4 http://cdproject.net/results.asp

*130,847,410 tonnes $CO_2e$ from use and disposal of products and 525,560 tonnes $CO_2e$ from transportation of products.
**From refineries – on 1991 levels.
†From road and coastal transportation – on 1991 levels.
††US$2,500,000 investment in World Bank Carbon Fund, US$10,000,000 investment in Japan Greenhouse Gas Reduction Fund

## NORSK HYDRO

1 – Norsk Hydro Response CDP4 http://cdproject.net/results.asp

*For Norsk Hydro owned and controlled facilities; unclear if indirect emissions from purchased electricity are included.
**Through 55% intensity reduction, in voluntary agreement with Norwegian government signed in 1997.

## NORTEL NETWORKS

1 – Nortel Networks Response CDP4 http://cdproject.net/results.asp
2 – Nortel and the Environment Website: http://www.nortel.com/corporate/community/environment/index.html

*Natural gas consumption; does not include business travel.
**Electricity, does not include emissions related to product use and disposal.

## OCCIDENTAL PETROLEUM

1 – Occidental Petroleum Response CDP4 http://cdproject.net/results.asp.
2 – Occidental Petroleum Health, Environment and Safety Annual Report 2005 http://www.oxy.com/PUBLICATIONS/HES_Annual_reports/2005_hes.pdf.

## PETROBRAS

1 – Petrobras Response CDP4 http://cdproject.net/results.asp.
2 – Petrobras Air Emissions Management Performance Report www2.petrobras.com.br/meio_ambiente/ingles/pdf/Atmospheric_emissions_management.pdf

*Emissions estimates reflect share of equity ownership in the company-operated facilities.
**Electricity – emissions estimates reflect share of equity ownership in the company-operated facilities.
†From reduction in flaring of gas in Brazil.
††In 2005, fossil fuel savings reached 2,700 barrels of oil equivalent per day saving 390,000 tonnes $CO_2e$.

## PFIZER

1 – Pfizer Response CDP4 http://cdproject.net/results.asp

*Includes downstream logistics and distributions services as 0.5% of total emissions.
**900 energy conservation projects produced recurring annual savings of US$30 million and $CO_2$ reductions of 201,000 MT.

## PG&E

1 – PG&E Response CDP4 http://cdproject.net/results.asp

## PHILIPS

1 – Philips Electronics Sustainability Report 2005 http://www.philips.com/assets/Downloadablefile//SAR2005_screen-15318.pdf

*Globally, for $CO_2$ and PFCs at $CO_2e$.
**Exceding EcoVision II target of 20% reduction.
†$CO_2$ only, from manufacturing process.
††Reduction of PFCs, in $CO_2e$.
#Investments in green lighting technology.

## POSCO

1 – POSCO Response CDP4 http://cdproject.net/results.asp.
2 – Posco Website http://www.posco.co.kr/homepage/docs/en/sustain/environ/s91d1010150c.html

*Due to increased scrap use at Mini mill and Stainless mills, installation of energy recovery facilities including coke dry quenching, and fuel change from heavy oil to LNG.

## POTASH CORPORATION

1 – Potash Corporation Response CDP4 http://cdproject.net/results.asp

*Flue gases, process gases.
**Converted phosphoric plant was converted from a dihydrate to a hemihydrate process.

## PPG INDUSTRIES INC.

1 – PPG Industries Inc. Response CDP4 http://cdproject.net/results.asp.
2 – CERES Report – Corporate Governance and Climate Change: Making the Connection, March 2006 http://www.ceres.org/pub/docs/Ceres_corp_gov_and_climate_change_0306.pdf

*80% from purchased electricity at 110 PPG operated manufacturing facilities.
**US emissions.

## RICOH

1 – Ricoh Response CDP4 http://cdproject.net/results.asp.
2 – Ricoh Sustainability Report 2006 (Environment) http://www.ricoh.com/environment/report/pdf2006/all.pdf

*Associated with service and supply chain.
**Reduction through the use of QSU Technology – one of Ricoh's original energy saving technologies that achieves a shorter warm-up time and recovery time to make the device both "energy saving" and "user friendly".

## ROLLS-ROYCE

1 – Rolls-Royce Response CDP4 http://cdproject.net/results.asp.
2 – Rolls Royce Environment Report 2005 http://www.rolls-royce.com/community/downloads/environment06.pdf

## ROYAL BANK OF SCOTLAND

1 – Royal Bank of Scotland Response CDP4 http://cdproject.net/results.asp

*Energy-related $CO_2$ emission; air travel $CO_2$ emissions; road $CO_2$ emissions; rail $CO_2$ emissions.
**Exceeded goal to use a minimum of 5% renewable electricity.

## SAB MILLER

1 – SAB Miller Website http://www.sabmiller.com/sabmiller.com/en_gb/Our+responsibility/Tracking+our+performance/Enviroment+review.htm

## SOMPO JAPAN RISK MANAGEMENT

1 – Sompo Japan Risk Management Response CDP4 http://cdproject.net/results.asp

*Domestic (Japanese only).

## STMICROELECTRONICS

1 – STMicroelectronics Response CDP4 http://cdproject.net/results.asp.
2 – STMicroelectronics Corporate Responsibility Report 2005 Environment Section, http://www.st.com/stonline/company/cr/2005/environmental/performance/carbon.htm

*Globally, all GHG for facilities directly owned, imported electricity, and indirect transport/commuting emissions. Based on internal guidelines, based on 2002 GHG Protocol.
**Total cumulative savings through all actions in contrast to projected Business as Usual (given recent economic growth).

## STORA ENSO

1 – Stora Enso Annual Report (Sustainability) 2005 http://www.storaenso.com/CDAvgn/showDocument/0,3877,00.pdf

*Energy 2005 project at Skoghall Mill includes a new recovery boiler, an evaporation plant and the remodelling of a turbine and steam system.
**Rebuilt bark boiler at Hylte Mill. This investment will reduce natural gas consumption by 70% and increase biofuel consumption by 50%.

## SUEZ GROUP

1 – Suez Group Response CDP4 http://cdproject.net/results.asp.
2 – Suez Report "Combating Climate Change" http://www.suez.com/popups/english/SUEZ_climatiques.htm

*Includes $CO_2$ and $CH_4$, emissions from the installations for which global or proportionally consolidated subsidiaries hold technical operational control. Data is consolidated along with environmental and financial consolidation rules, which means that emissions reported by subsidiaries are weighted by their Suez financial integration rate.
**Reductions achieved by substituting coal with natural gas for older units in Suez Energy North America (SENA).
†Annual emissions reductions resulting from energy audits conducted by subsidiary Laborelec.
††Building biomass infrastructure.
#Investment in a World Bank Prototype Carbon Fund.

## TECK COMINCO

1 – Teck Cominco Response CDP4 http://cdproject.net/results.asp.
2 – Teck Cominco Climate Change Website http://www.teckcominco.com/sustainability/environment/ghg.htm

*Estimation.
**Only covers operations with managerial control.

## TECO

1 – TECO Environment Report 2005 http://www.tecoenergy.com/enviroreport/

*Investment in customer-focused energy conservation programmes.

## TELECOM ITALIA GROUP

1 – Telecom Italia Group Response CDP4 http://cdproject.net/results.asp

*Reduction is for Telecom Italia SpA (measured in kg).

## TIMBERLAND

1 – Timberland 2005 Corporate Sustainability Report http://www.timberland.com/timberlandserve/content.jsp?pageName=timberlandserve_inform_environmental_environmental_impact

*Emissions went up from 2004-05, but are below baseline of 2002.
**Fuel cost savings from outbound transportation reduction.

## TOKYO GAS

1 – Tokyo Gas Response CDP4 http://cdproject.net/results.asp

*Includes gas manufacturing plants and business offices.
**From the use of products.

## TOYOTA MOTOR CORPORATION

1 – Toyota Motor Sustainability Report 2006 http://www.toyota.co.jp/en/environmental_rep/06/download/pdf/e_report06.pdf.
2 – Toyota Motor Response CDP4 http://cdproject.net/results.asp

## UNILEVER

1 – http://www.unilever.com/ourvalues/environmentandsociety/env_social_report/environment/
2 – http://www.cdproject.net/response_list.asp?id=4&exp=11&desc=FT+500&letter=U

## VERIZON COMMUNICATIONS INC.

1 – Verizon Communications Inc. Response CDP4 http://cdproject.net/results.asp

## WESTPAC BANKING

1 – Westpac 2006 Stakeholder Impact Report http://www.westpac.com.au/manage/pdf.nsf/21F2EC3D9E013921CA25724200155A85/$File/SIR_2006.pdf?OpenElement
2 – Westpac correspondence with The Climate Group Australia

*Does not include travel.
**Westpac New Zealand.

## WEYERHAEUSER CO.

1 – Weyerhaeuser Response CDP4 http://cdproject.net/results.asp

*Includes emissions from $CO_2$, $CH_4$ and $N_2O$.

## WYETH

1 – Wyeth Response CDP4 http://cdproject.net/results.asp

*Investment in energy efficiency projects at existing facilities, as well as incorporating efficiency into new build at design stage.

# SOURCES CITIES


## AALBORG

SAME DATA AS SECOND EDITION
1 – Sustainable utility supply in Aalborg 2004, http://www.aalborg.dk/NR/rdonlyres/4FC72AA8-2420-443C-984C-C7FF7D7BFAF7/4971/rapportuk.pdf#search=%22sustainable%20utility%20supply%20aalborg%22

*Excludes transport and Aalborg Portland (cement company)

## ALBERTSLUND

1 – Albertslund Kommunes Emissioner, http://www.albertslund.dk/miljoe/info.asp?infoId= 1532619
2 – Climate Change Albertslund (Danemark), www.energie-cites.org/db/albertslund_134_en.pdf

*Reduction for the period 1986-2000 mainly due to the extension of the town's district heating network and to the purchase of heat derived from CHP and town waste disposal systems

## AUSTIN

1 – Austin Energy Environmental Initiatives Website http://www.austinenergy.com/About %20Us/Environmental%20Initiatives/index.htm

*From Austin Energy Operations only
**Conservation DSM avoided constructing a power plant by reducing peak demand by 446 MW from 1992 to 2005. The avoided power plant construction cost is over US$200 million.

## BARCELONA

1 – The Climate Group correspondence with Toni Pujol, Barcelona Energy Agency, September 5, 2005
2 – Solar Thermal Ordinance Balance Barcelona Energy Agency http://www.barcelonaenergia.com/homeeng.htm
3 – ICLEI Barcelona http://www.iclei.org/index.php?id=1156
4 – Barcelona Solar Thermal Ordinance April 2004 http://www.barcelonaenergia.com/eng/operations/ost.htm

## BERLIN

1 – ICLEI, The top 100 greenhouse gas emitting cities (2004)
2 – Landesenergieprogram Berlin 2006 – 2010 http://www.stadtentwicklung.berlin.de/umwelt/klimaschutz/landesenergieprogramm/de/downloads/endfassung_landesenergieprogramm.pdf
3 – http://www.stadtentwicklung.berlin.de/umwelt/klimaschutz/landesenergieprogramm/index.shtml

## BRISTOL

1 – EMAS report 2004-5 http://www.bristol-city.gov.uk/ccm/content/Environment-Planning/sustainability/environmental-performance.en
2 – Sustainabilty Update Autumn 2005 – Climate Change, Published by the Sustainable Development Advisory Group of the Bristol Partnership Issue 1 www.bristol-city.gov.uk/ccm/cms-service/download/asset/?asset_id=11321025
3 – http://www.carbontrust.co.uk/NR/rdonlyres/0EA46B4C-EB81-4F29-9FA2-E00B5D1769C3/0/Bristol_ActionPlan.pdf#search =%22Bristol_Action Plan%22

*Includes buildings, street lighting, transport fleet, business travel

## BURLINGTON

SAME DATA AS SECOND EDITION
1 – Burlington Climate Action Plan http://www.adobe.com/prodindex/acrobat/readstep.html
2 – Cool Solutions for Global Warming
3 – 2005 Burlington Electric Performance Measures Report http://www.burlingtonelectric.com/bed/perfmeas.htm

## BURY

1 – Climate Change Strategy for Bury http://www.bury.gov.uk/NR/rdonlyres/144D073D-E397-422B-8F9D-8C786594E910/0/climatechangestrategy 2002.pdf

## CALGARY

1 – City of Calgary Environmental Management Website www.calgary.ca/em

## CHICAGO

SAME DATA AS SECOND EDITION
1 – ICLEI, The top 100 greenhouse gas emitting cities 2004, Produced for The Climate Group
2 – Renew America's Earth Day 1998 http://solstice.crest.org/environment/renew_america/issue982.html
3 – City of Chicago Energy Plan 2001 http://egov.cityofchicago.org/city/webportal/portalContentItemAction.do?contentOID=536910604&contenTypeName=COC_EDITORIAL&topChapt&channelId=0&programId=0&entityName=Environment&deptMainCategoryOID=-536887205
4 – City of Chicago 2006 Environmental Action Agenda, http://egov.cityofchicago.org/webportal/COCWebPortal/COC_ATTACH/ActionAgenda.pdf

## CHRISTCHURCH

1 – Christchurch City Council Sustainability Website http://www.ccc.govt.nz/SustainableChristchurch/SuccessStories/EnergyEfficiencyGreenhouseGasEmissionsProject.asp

## COPENHAGEN

1 – $CO_2$ plan for København 1990-2010 http://www.miljoe.kk.dk/0824E18A-E3E2-47F4-A534-70E96A7A3709
2 – Copenhagen Agenda 21 plan, 2004 http://www.netpublikationer.dk/kk/5490/pdf/Agenda21_uk.pdf#search=%22Copenhagen%20Agenda%2021%20plan%22

## FRANKFURT

1 – Frankfurt Energy Website http://www.frankfurt.de/sixcms/detail.php?id=3077
2 – http://www.energie-cites.org/db/frankfurt-am-main_140_en.pdf
3 – http://www.managenergy.net/download/r163.pdf#search=%22Implementing%20decentralized%20co-generation%3A%20%22
4 – Solar Cities $CO_2$ Reduction Europe Summary http://sc.ises.org/downloads/B2_2.3.pdf#search=%22CO2%20balances%20from%20cities%22

## HANNOVER

1 – enercity® Report 2005 Energie erfahren http://www.enercity.de/include/Downloads/Publikationen/enercity_report_2005.pdf
2 – 10 Years of Climate Protection in Hannover http://www.hannover.de/data/download/umwelt_bauen/1/10jklimaenglisch.pdf

*Stadtwerke Hannover (enercity.de) emissions

## HEIDELBERG

1 – Fortschreibung Klimaschutzkonzept für die Stadt Heidelberg 2004, http://ww2.heidelberg.de/session/bi/pdf/00161078.pdf
2 – Heidelberg submission of data to The Climate Group, August 2006

## HELSINKI

1 – Helsinki submission of data to The Climate Group, August 2006
2 – Helsinki Environment Report 2005 http://www.hel2.fi/ymk/raportti05/downloads/Helsinki_Environment _Report_05.pdf#search=%22helsinki%20environmental%20report%22

## KYOTO

1 – Strategies for Reducing Emissions from Residential, Commercial and Industrial Sectors in Kyoto City, City of Kyoto Global Environment Policy Section, Assistant Manager Fumiaki Utaka State and Local Government Roundtable on Global Climate Change 28th March 2005, http://www.ccap.org/domestic/srt05 presentations/(Fumiaki_Utaka)_Reducing_Emissions_in_Kyoto.pdf
2 – City of Kyoto website, Solar Power Generation Systems http://www.city.kyoto.jp/kankyo/ge/eigo/solar.html

*A residential garbage CHP incineration system which generates electricity that is sold to electric power companies, creating an income for the city of approximately US$4 million per year. A part of the resulting income is used to finance the system for encouraging the installation of solar electric generation systems.

## LEICESTER

1 – Leicester's contribution to climate change http://www.environmentcity.org.uk/article.asp?ParentID=4&ArticleID=67
2 – Beacon Case Study – Sustainable Energy Leicester 2005 http://www.idea.gov.uk/idk/aio/650673#search = %22Beacon%20Case%20Study%20-%20Sustainable%20Energy%20Leicester%22 2- UK Government GHG Reduction Strategy
3 – Leicester City Council 21 Feb. 2005 http://www.parliament.the-stationery-office.co.uk/pa/ld200506/ldselect/ldsctech/21/2125.htm

## LONDON

1 – London Economic Development Snapshot, Issue 3, July 2006 http://www.lda.gov.uk/upload/rtf/London_Economic_Development_Snapshot_July_2006.rtf
2 – Transport for London, Central London congestion charging impacts monitoring Fourth Annual Report, June 2006 http://www.tfl.gov.uk/tfl/cclondon/pdfs/FourthAnnualReportFinal.pdf
3 – Green Light to Clean Power: The Mayor's Energy Strategy http://www.london.gov.uk/mayor/strategies/energy/docs/energy_strategy04.pdf
4 – Transport for London Annual Report 2004/2005 http://www.tfl.gov.uk/tfl/pdfdocs/annrep-04-05.pdf

## MELBOURNE

1 – Inventory information submitted to The Climate Group by ICLEI Australia, June 2006
2 – ICLEI, The top 100 greenhouse gas emitting cities 2004, Produced for The Climate Group
3 – City of Melbourne CCP Profile http://www.greenhouse.gov.au/local/ccp/melbourne.html

## MINNEAPOLIS

1 – Mark Ritchie: Minnesota can profitably reach Kyoto standard, http://www.chicagoclimatex.com/news/articles/archive/newsScroller20050615 07522785.html (from last years report)
2 – Minneapolis Exceeds Kyoto Protocol on Measurable Pollutants Web News 2004 http://www.ci.minneapolis.mn.us/news/index_2004.asp
3 – http://www.ci.minneapolis.mn.us/environment/sustainability-report2005.pdf

## MUNICH

1 – ICLEI, The top 100 greenhouse gas emitting cities 2004, Produced for The Climate Group
2 – Kommunaler Klimaschutz Strategien für eine Halbierung der $CO_2$– Emissionen am Beispiel der Stadt München http://www.muenchen.de/cms/prod2/mde/_de/rubriken/Rathaus/70_rgu/07_wohnen_bauen/energie/pdf/co2_broschuere.pdf

## NEW HAVEN

SAME DATA AS SECOND EDITION
1 – City of New Haven Environmental Quality Data Book 2001 http://www.cityofnewhaven.com/CityPlan/pdfs/PlanningPrograms/Comprehensive Plan/Web_Data_Book/Environment.pdf
2 – For Earth Day, the City of New Haven celebrates... http://www.cityofnewhaven.com/Mayor/ReadMore.asp?ID={5E79CFEB-6FD1-4890-A8B2-2D5BB6DACA20}

## NEW YORK

1 – New York City Department of Environmental Protection submission of data to The Climate Group, August 2006
2 – PlaNYC website, GreeNYC section, http://www.nyc.gov/html/planyc2030/html/about/10-goals.shtml

## NEWCASTLE

1 – Newcastle City Council Greenhouse Gas Reduction Plan http://www.ncc.nsw.gov.au/services/environment/ameif/climatecam/pdf/gp_ghgemissions.pdf
2 – Newcastle City Council Greenhouse Actions http://www.ncc.nsw.gov.au/services/environment/ameif/climatecam/pdf/gp_councilactions.pdf

*Does not include emissions from waste

## ODENSE

1 – Odense Sustainable School Building Article http://www.display-campaign.org/page_162.html
2 – Odense Energy Management in Buildings http://www.display-campaign.org/IMG/pdf/case-study_odense_en.pdf

*Estimation based on graphical information

## OTTAWA

1 – Ottawa submission of data to The Climate Group 2006
2 – Air Quality and Climate Change Management Plan http://ottawa.ca/city_services/planningzoning/2020/air/index_en.shtml
3 – Fleet Emission Reduction http://www.ottawa.ca/city_services/environment/workplace/fleet_emission_en.html
4 – City of Ottawa Community Greenhouse Gas Reduction Action Plan: Third Annual Progress Report http://www.ghgregistries.ca/registry/out/C1121-CITYOTTAWA-PDF.PDF

## PORTLAND

SAME DATA AS SECOND EDITION
1 – Progress Report City of Portland Local Action Plan on Global Warming http://www.portlandonline.com/shared/cfm/image.cfm?id=112118#search=%22A%20PROGRESS%20REPORT%20ON%20THE%20portland%20greenhouse%22
2 – Portland Climate Change Efforts April 2003 http://www.portlandonline.com/shared/cfm/image.cfm?id=112117#search=%22Portland%20climate%20change%20efforts%22

*On a per capita basis

## REGINA

1 – Regina's Community Greenhouse Gas Emission Reduction Action Plan http://www.regina.ca/pdfs/Summary.pdf
2 – Green Ribbon Community Climate Change Advisory Committee Annual Report 2005 http://www.regina.ca/pdfs/green_ribbon/GRC_Annual_Report.pdf
3 – Regina Leadership http://www.regina.ca/content/info_services/climate/information/leadership.shtml
4 – Comprehensive GHG Emission Reductions – Regina, Saskatchewan, http://www.climatechangesolutions.com/municipal/buildings/

## SALT LAKE CITY

1 – Salt Lake City Climate Action Plan http://www.slcgreen.com/pages/actionplan.htm.
2 – Salt Lake City Green Climate Change and Sustainability Presentation www.slcgreen.com/pdfs/CCclimate.pdf

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††Investment in wind farm projects.

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# MEASURES

## COMMUNICATIONS
Spreading effective messaging on the science and/or solutions to mitigate climate change.

## EMISSIONS TRADING
A market-based approach to achieving environmental objectives that allows those reducing GHG emissions below the mandated level to trade the excess reductions to offset emissions at another source inside or outside the country.

## ENERGY EFFICIENCY
An improvement in energy efficiency occurs when the quantity of energy inputs needed for a given level of output is reduced.

## FUEL SWITCHING
Reducing $CO_2$ emissions by switching to lower carbon-content fuels, such as from coal to natural gas.

## MANAGEMENT SYSTEMS
Alteration of the organisational structure within a company that better enables it to address climate change issues.

## OFFSETS AND CARBON NEUTRALITY
Reduction in GHG emissions via a third party in order to cancel out the emissions from an activity. Offsetting all GHG emissions results in a company being labeled 'carbon neutral'.

## PROCESS CHANGES
Alterations during production made to reduce GHG emissions.

## PRODUCTS
Changes in products to reduce downstream lifetime emissions of the product and/or production of new technologies that enable carbon reduction for other users.

## PROJECT FINANCE
Providing monetary funds for projects that support the reduction of GHG emissions.

## RENEWABLE ENERGY
Electricity or heat generated from renewable resources, including wind, solar, geothermal, biomass, landfill gas, and low impact hydro.

## SEQUESTRATION
Process of increasing the carbon content of a carbon reservoir other than the atmosphere. Biological approaches to sequestration include direct removal of $CO_2$ from the atmosphere through land-use change, afforestation, reforestation, and practices that enhance soil carbon in agriculture. Physical approaches include separation and disposal of $CO_2$ from flue gases or from processing fossil fuels to produce hydrogen-and carbon dioxide-rich fractions and long-term storage underground in depleted oil and gas reservoirs, coal seams, and saline aquifers.

## SUSTAINABLE BUILDINGS
Efforts to increase/optimise the energy efficiency or reduce the energy use of a building so that it decreases the GHG emissions through the lifetime of the building.

## SUPPLY CHAIN
Placing demands on companies who provide materials that support the reduction of GHG emissions.

## TRANSPORT AND ICT (INFORMATION AND COMMUNICATION TECHNOLOGY)
Efforts to reduce the GHG emissions from travel through changes in fleet composition, mode of travel, amount/frequency of travel or fuel source/efficiency.

## WASTE MANAGEMENT
Reduction in refuse production or alternative means of disposal that reduce GHG emissions from waste decomposition and processing.

# SECTORS

– AEROSPACE AND DEFENCE
– AGRICULTURE
– AUTOMOTIVE AND TRANSPORT
– BANKING
– BEVERAGES
– BUSINESS SERVICES
– CHEMICALS
– COMPUTER HARDWARE
– COMPUTER SERVICES
– COMPUTER SOFTWARE
– CONSTRUCTION
– CONSUMER PRODUCT MANUFACTURING
– CONSUMER SERVICES
– EDUCATION
– ELECTRONICS
– ENERGY AND UTILITIES
– ENVIRONMENTAL SERVICES AND EQUIPMENT
– FINANCIAL SERVICES
– FOOD
– HEALTH CARE
– INDUSTRIAL MANUFACTURING
– INSURANCE
– LEISURE
– MEDIA
– METALS AND MINING
– PHARMACEUTICALS
– REAL ESTATE
– RETAIL
– SECURITY PRODUCTS AND SERVICES
– TELECOMMUNICATIONS EQUIPMENT
– TELECOMMUNICATIONS SERVICES
– TRANSPORTATION SERVICES

List from Hoovers Sectors http://www.hoovers.com/free/

# GLOSSARY OF TERMS

**BASELINE EMISSIONS**
Any datum against which change is measured – A current baseline represents observable, present-day conditions. Future baseline is a projected future set of conditions without additional actions, here efforts to reduce GHG emissions.

**CCX**
Chicago Climate Exchange – The world's first and North America's only voluntary, legally binding rules-based GHG emission reduction and trading system.

**CDM**
Clean Development Mechanism – Defined in Article 12 of the Kyoto Protocol, the CDM allows industrialised countries with emission reduction targets to invest in emission reducing projects in developing countries and take credit for any emissions reduced. Such credits are known as Certified Emission Reductions (CERs). CDM projects are also intended to contribute to the sustainable development of the host country.

**CDP**
Carbon Disclosure Project – A global institutional investor collaboration, demanding disclosure of climate change risks and GHG emissions from the world's leading corporates. www.cdproject.net

**CER/REC**
Certified Emissions Reduction – Equal to 1 tonne of $CO_2e$ emissions reduced or sequestered through a CDM project calculated using global warming potentials (GWP).

**CFCs**
Chlorofluorocarbons – GHGs covered under the 1987 Montreal Protocol. Used for refrigeration, air conditioning, packaging, insulation, solvents or aerosol propellants.

**$CH_4$**
Methane – A hydrocarbon and GHG with 24 times the GWP of $CO_2$.

**CHP**
Combined Heat and Power – Also known as cogeneration of heat and electricity from the same fuel source.

**CNG**
Compressed Natural Gas.

**$CO_2$**
Carbon Dioxide – The principal GHG.

**$CO_2e$**
Carbon Dioxide Equivalent – A unit, measured in tonnes that allows emissions of non-$CO_2$ GHG emissions to be expressed as if they were $CO_2$ emissions using global warming potential coefficients to make the conversion.

**CSR**
Corporate Social Responsibility.

**DEFRA**
UK Government Department of Environment, Food and Rural Affairs.

**DSM**
Demand Side Management.

**EHS**
Environment, Health and Safety – Also referred to as Environment, Safety and Health (ESH).

**EOR**
Enhanced Oil Recovery – Techniques to prolong oil field production after primary methods of extraction have been used. May involve gas re-injection or $CO_2$ flooding – hence sequestering GHG emissions at least temporarily.

**EPICA**
European Project for Ice Coring in Antarctica.

**ERU**
Emission Reduction Unit.

**ESCO**
Energy Services Company.

**EU ETS**
European Union Emissions Trading Scheme – The world's largest multinational GHG emissions trading scheme commenced on January 1, 2005.

**GWh**
Gigawatt hour.

**GWP**
Global Warming Potential – Index describing the radiative characteristics of well-mixed GHGs that represents the combined effect of the differing times these gases remain in the atmosphere and their relative effectiveness in absorbing outgoing infrared radiation. This index approximates the time-integrated warming effect of a unit mass of a given GHG in today's atmosphere, relative to that of $CO_2$.

**GHG**
Greenhouse Gas.

**HFCs**
Hydrofluorocarbons – Produced commercially as a substitute for CFCs. HFCs are largely used in refrigeration and semiconductor manufacturing. Their GWP range from 1,300 to 11,700.

**HVAC**
Heating, Ventilating, and Air Conditioning.

**ICLEI**
Local Governments for Sustainability.

**IGCC**
Integrated Gasification Combined Cycle – Coal production plant where coal is turned into gas and can assist in the separation and sequestration of $CO_2$ at a lower cost than conventional coal plants.

**IPCC**
Intergovernmental Panel on Climate Change – Body established by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) in 1988 in order to assess the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation.

**LED**
Light Emitting Diode.

**LEED**
Leadership in Energy and Environmental Design – A US voluntary, consensus-based green building rating system for developing high-performance, sustainable buildings.

**LNG/LPG**
Liquified Natural Gas/Liquid Petroleum Gas.

**MT**
Metric Tonnes.

**MW**
Megawatt.

**MWh**
Megawatt hour.

**NSIDC**
US National Snow and Ice Data Center.

**$N_2O$**
Nitrous Oxide – Powerful GHG emitted through soil cultivation practices, especially the use of commercial and organic fertilizer, fossil-fuel combustion, nitric acid production, and biomass burning. The GWP of $N_2O$ is 296 times that of $CO_2$.

**PFCs**
Perfluorocarbons – By-products of aluminium smelting and uranium enrichment. Replace CFCs in manufacturing semiconductors. The GWP of PFCs is 6,500-9,200 times that of $CO_2$.

**PV**
Photovoltaics.

**RES**
Renewable Energy Systems.

**R&D**
Research and Development.

**RGGI**
Regional Greenhouse Gas Initiative – Agreement by 7 North-Eastern US states to establish a GHG emissions trading scheme, due to commence in 2009. www.rggi.org

**RPS**
Renewable Portfolio Standard.

**SCOPE 1 EMISSIONS**
Direct GHG emissions from sources owned or controlled by a company (owned vehicle fleet, chemical production, furnaces). www.ghgprotocol.org.

**SCOPE 2 EMISSIONS**
Indirect GHG emissions resulting from purchased electricity for operational and non-operational purposes. www.ghgprotocol.org.

**SCOPE 3 EMISSIONS**
Other indirect GHG emissions not covered under scope 2 (emissions from use of sold products and services, non-owned travel emissions). www.ghgprotocol.org.

**$SF_6$**
Sulfur Hexafluoride – Largely used in heavy industry to insulate high-voltage equipment and to assist in the manufacturing of cable-cooling systems. Its GWP is 23,900 times that of $CO_2$.

**SINK**
Any process, activity or mechanism that removes a GHG, an aerosol, or a precursor of a GHG or aerosol from the atmosphere.

**TWh**
Terawatt hour.

**UNFCCC**
The United Nations Framework Convention on Climate Change – Adopted on 9 May 1992 and signed at the 1992 Earth Summit in Rio de Janeiro by more than 150 countries and the European Community. Its ultimate objective is the "stabilisation of greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system." The Convention entered into force in March 1994.

**US EPA**
United States Environment Protection Agency.

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www.northsoutheastwest.org

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## ABOUT THE CLIMATE GROUP

The Climate Group is an independent, non-profit organisation dedicated to accelerating the international uptake of corporate and government best practice in emissions reduction. We have offices and charitable status in the UK, USA and Australia and we operate internationally.

Proactive companies, states, regions and cities around the world are demonstrating that the cuts in GHG required to stop climate change can be achieved while growing the bottom line. Using the work of these leaders as a catalyst, The Climate Group strives to accelerate international action on global warming with a new, strong focus on practical solutions.

Since launching in 2004, we have developed an interlocking programme of sectoral leadership groups, research and publication, media engagement, and high-impact events. Our coalition has demonstrated that emissions reductions, while essential, can also be profitable. We inspire further action and outreach and mobilise business and sub-national governments to implement and support effective strategies and policies that mitigate climate change.

We also promote the development and sharing of expertise on how business and government can lead the way towards a low carbon economy while boosting profitability and competitiveness.

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