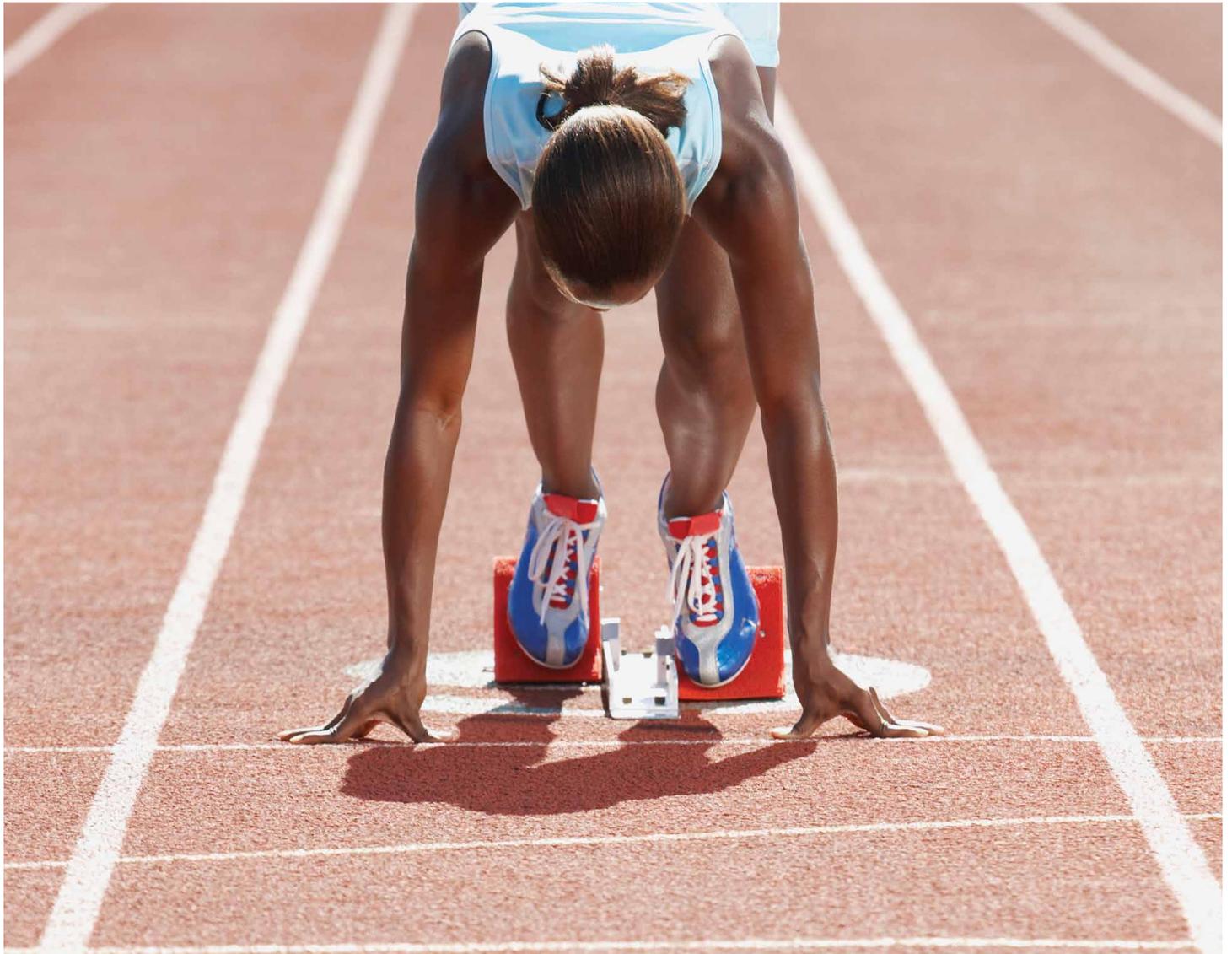


Out of the starting blocks

Tracking progress on corporate climate action

Written on behalf of 827 investors with US\$100 trillion in assets



CDP 2016 climate change scoring partners

CDP works with a number of partners to deliver the scores for all our responding companies. These partners are listed below along with the geographical regions in which they provide the scoring. All scoring partners complete training to ensure the methodology and guidance are applied correctly, and the scoring results go through a comprehensive quality assurance process before being published. In some regions there is more than one scoring partner

and the responsibilities are shared between multiple partners.

In 2016, CDP worked with RepRisk, a business intelligence provider specializing in ESG risks (www.reprisk.com), who provided additional risk research and data into the proposed A-List companies to assess whether they were severe reputational issues that could put their leadership status into question.



Australia & New Zealand, Benelux, Canada, DACH, Hong Kong, India, Ireland, Italy, Japan, Nordic, Russia, SE Asia, South Africa, Taiwan, UK, USA.



North America*



Central and Eastern Europe (CEE)



China



France



Japan, Latin America, Turkey



Japan, Korea



Brazil



Korea



Japan



Iberia (Spain & Portugal)



All regions



Japan

*Aligned Incentives are retained as an alternative scoring partner in the event of a conflict of interest.

Contents

4	CDP foreword Paul Simpson	55	Investing in CDP's Global Climate A List: Strong performance by climate change leaders
5	COP22 foreword Salaheddine Mezouar	56	Communicating progress
6	Executive summary	57	Evolution of disclosure and scoring Pedro Faria, CDP Technical Director
12	Measuring and disclosing: Visibility on the road	60	CEO perspective Richard Lancaster, Chief Executive Officer, CLP
17	CEO perspective Frans van Houten, Chief Executive Officer, Royal Philips	62	Investor CEO perspectives
22	Emissions reduction targets: The compass for the low carbon transition	68	Appendix I Investor signatories and members
30	Bridging the gap to 2°C	69	Appendix II Largest non-responders by market capitalization
36	Transition plans: The road to get there	70	Appendix III 2016 Key trends
44	Low carbon, high revenue: Decoupling emissions from revenue	72	Appendix IV List of companies that de-coupled emissions growth from financial growth
50	We Mean Business: Commit to Action		
52	The Climate A List 2016		

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Paul Simpson
Chief Executive Officer, CDP



Measurement and transparency are where meaningful climate action starts, and as governments work to implement the Paris Agreement, CDP will be shining a spotlight on progress and driving a race to net-zero emissions.

The Paris Agreement – unprecedented in speed of ratification – and the adoption of the Sustainable Development Goals (SDGs) marked the start of a new strategy for the world, with a clear message for businesses: the low-carbon revolution is upon us. By agreeing to limit global temperature rises to well below 2°C, governments have signaled an end to the fossil fuel era and committed to transforming the global economy.

The choice facing companies and investors has never been clearer: seize the opportunities of a carbon-constrained world and lead the way in shaping our transition to a sustainable economy; or continue business as usual and face serious risks – from regulation, shifts in technology, changing consumer expectations and climate change itself. CDP's data shows that hundreds of companies are already preparing for the momentous changes ahead, but many are yet to grapple with this new reality.

Investors are poised to capitalize on the opportunities that await. Some of the biggest index providers in the world, including S&P and STOXX, have created low-carbon indices to help investors direct their money towards the sustainable companies of the future. Meanwhile, New York State's pension fund – the third largest in the United States – has built a US\$2 billion low-carbon index in partnership with Goldman Sachs, using CDP data.

With trillions of dollars' worth of assets set to be at risk from climate change, investors are more focused than ever on winners and losers in the low-carbon transition. Information is fundamental to their decisions. Through CDP, more than 800 institutional investors with assets of over US\$100 trillion are asking companies to disclose how they are managing the risks posed by climate change. Their demands don't stop there: international coalitions of investors with billions of dollars under management are requesting greater transparency on climate risk at the AGMs of the world's biggest polluters.

The glass is already more than half full on environmental disclosure. Over fifteen years ago, when we started CDP, climate disclosure was nonexistent in capital markets. Since then our annual request has helped bring disclosure into the mainstream. Today some 5,800 companies, representing close to 60% of global market capitalization, disclose through CDP.

Now, we are poised to fill the glass. We welcome the FSB's new Task Force on Climate-related Financial Disclosures, building on CDP's work and preparing the way for mandatory climate-related disclosure across all G20 nations. We look forward to integrating the Task Force recommendations into our tried and tested disclosure system and working together to take disclosure to the next level.

We know that business is key to enabling the global economy to achieve – and exceed – its climate goals. This report, produced in collaboration with We Mean Business, sets the baseline for corporate climate action post-Paris. In future reports, we'll be tracking progress against this baseline to see how business is delivering on the low-carbon transition and enabling investors to keep score. Already, some leading companies in our sample – including some of the highest emitters – are showing it's possible to reduce emissions while growing revenue, and we expect to see this number multiply in future years.

Measurement and transparency are where meaningful climate action starts, and as governments work to implement the Paris Agreement, CDP will be shining a spotlight on progress and driving a race to net-zero emissions.

The Paris Agreement and the SDGs are the new compass for business. Companies across all sectors now have the chance to create this new economy and secure their future in doing so. High-quality information will signpost the way to this future for companies, investors and governments – never has there been a greater need for it.

Salaheddine Mezouar
COP22 President, Minister for Foreign Affairs and Cooperation of Morocco



The ultimate goal is to have a conscious linking of NDCs with capital of all kinds, so that policy, technology and finance can be clearly aligned.

Significant progress has been made in terms of mobilization of both governments and non-state actors to face climate change. However, the resources challenge remains: massive stocks of capital are available in all parts of the world, but flows are not channelled in the right amounts to the right places. Financial flows need to be redirected to reduce climate risk, ensuring sustainable development for a prosperous and secure world.

The message from the scientific community is clear: greenhouse gas emissions are leading to global warming at an alarming pace, causing massive damage on the environment, human health and national economies. The international community needs to take action quickly to curb global carbon emissions, and to adapt to climate change impact.

Significant progress has been made over the past few years, and the COP21 marked a tipping point by reaching an unprecedented alignment of parties, and strongly including non-party stakeholders in global discussions.

However, the main challenge to achieve global ambitions remains access to funding. Massive stocks of capital are available all over the world, but funding is not flowing in the right amounts to the right places. The financial system needs to be changed at its core to redirect substantial capital flows towards projects reducing climate risk as part of routine financial transactions, and not only on an ad hoc basis.

Governments' efforts to attract private funding must be strengthened, and action needs to be taken by key decision makers of the finance industry to realign interests of private investors with the climate action

agenda, especially by revamping incentive systems. The ultimate goal is to have a conscious linking of NDCs with capital of all kinds, so that policy, technology and finance can be clearly aligned.

The COP22 that will take place in Marrakech, from 7th to 18th November 2016, can help make this promise a reality. It will be the first of a series of COPs blending negotiation and action agendas, focusing on the implementation of the Paris Agreement by monitoring tangible actions led in the field and resources mobilized by governments and non-party stakeholders.

CDP participates in this effort of transparency by using its 2016 Global Climate Change Report to set the baseline which will underpin annual progress tracking on corporate action to reduce greenhouse gas emissions.

Climate change is a universal issue, and we would like to invite global leaders to further use their resources to make capital flow where it is most needed in particular vulnerable states, in Africa, and Small Island States; the ultimate goals being to reduce climate risk and ensure sustainable development for a prosperous and secure world.



MARRAKECH
COP22 | 2016 | CMP12
UN CLIMATE CHANGE CONFERENCE
مؤتمر الأمم المتحدة لتغير المناخ

Executive summary

The challenge of climate change and how to address it is now firmly on the global agenda. The Paris Agreement has been ratified at unprecedented speed by the international community, including some of the world's biggest carbon emitters, such as the US, China, India, the EU and Brazil, and will enter into force in November.

This historic agreement, with defined goals to limit climate change and clear pathways for achieving its goals, marks a step-change in the transition to a low-carbon world.

In the Paris Agreement, emissions reductions are talked about at the country level, and national governments will lead with policy changes and regulation. But companies can move much faster than governments, and they have an opportunity to demonstrate their leadership, agility and creativity in curbing their own substantial emissions. Many companies had already realised the need for action before Paris, and they played an important role in making that summit a success. Others, however, are yet to come on board.

The first in an annual series, this report, in collaboration with the We Mean Business coalition, establishes the baseline for corporate action on climate change. In the future, this report will demonstrate the progress we are making along with our fellow We Mean Business partners (WBCSD,

Ceres, BSR, The Climate Group, The B Team and the Prince of Wales Corporate Leaders Group) against our ambitious plans to support the implementation of the Paris Agreement. Transparency is key to maintain the credibility of business commitments and we will use this report to track companies' progress on reducing greenhouse gas emissions in line with the goals of the Paris Agreement against this benchmark.

We will be reporting on corporate climate action including emissions reductions, the adoption of targets based on the most up-to-date climate science ("science based targets"), use of internal carbon prices, and the uptake of renewable energy.

The benchmark established in this first report includes a number of companies failing to engage even with the critical first step of disclosure. From the 1,839 companies in this sample, just over a thousand responded with data within the deadline. We hope the remaining 700+ companies will start to engage during the course of the next five years.

Figure 1: Global company tracking sample by sector. The total number of companies in each sector is presented in parentheses.

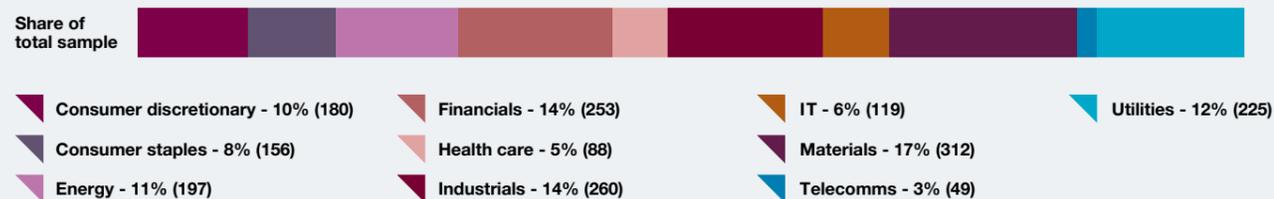


Figure 2: Global company tracking sample by region. The total number of companies is presented in parentheses.



Figure 3: Companies responded and not-responded by sector. The total number of companies in each sector is presented in parentheses.

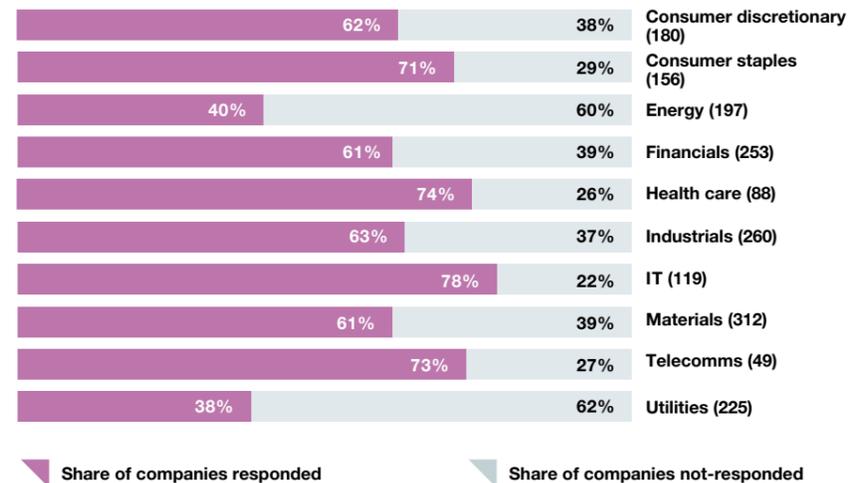
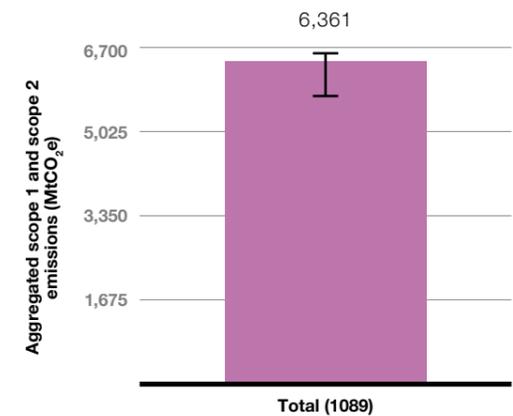


Figure 4: Aggregated scope 1 and scope 2 emissions for total sample. The total number of companies responded is presented in parentheses.



The companies will be tracked over the next five years to see how they are performing. Between them these companies that provided data for analysis account for 12% of global greenhouse gas emissions, and 85% of them have already set targets to reduce their emissions.

Visibility on the road

Although companies and governments are starting to realise the benefits of the low-carbon transition, the need for a complete economic shift can make it hard for individual companies to start the process of change. A shift in thinking is also needed, to see the transition as an opportunity, rather than a restriction.

In order to achieve this success, however, companies need to measure their emissions, then work out how to reduce them.

Already two out of three companies disclose emissions and this is likely to rise following the early entry into force of the Paris Agreement and the focus on disclosure due to the Task Force on Climate-related Financial Disclosures (TCFD) led by Mark Carney and Michael Bloomberg.

Business gearing up to go low-carbon, but targets lack long-term vision

Eighty-five per cent of companies in the sample have already set targets (comprising absolute and/or intensity targets) to reduce their greenhouse gas

emissions. Setting targets is not enough, however, without realistic plans for meeting them. Even meeting those targets might not be enough if the targets themselves are inadequate.

There has been significant improvement in recent years in the numbers of companies setting targets for emissions reductions, but these targets are in many cases unambitious in their time horizon. While 55% of companies have targets for 2020 and beyond, just 14% set goals for 2030 or beyond, a situation that must change to achieve a transition to well below 2°C.

The headline figures from this report mask wide variance in performance both at company level and at sector level. Of significant concern to investors will be the low level of clarity from energy companies on plans to reduce their emissions. Fossil fuel companies must undergo a major transition to mitigate climate change and are in general not ready to face up to this.

Given that this data is mostly based on calendar year 2015, and so predates the Paris Agreement, we may reasonably hope to see a jump in longer term targets in the next report, which will be based on data generated after the Paris Agreement.

Companies wishing to ensure they are taking meaningful action should set science-based targets, one of the commitments recommended to business by the We Mean Business coalition partners; this report and its successors will monitor how many companies are setting targets in line with the latest climate science.

From our sample, 94 have publicly committed to science-based greenhouse gas reduction targets via the Science Based Targets Initiative. Eighty-five of those companies submitted a target to the initiative for official check, and 15 companies have passed the initiative's official check.

Company targets achieving just one quarter of the emissions reductions required by science; Paris Agreement expected to help close that gap

As well as recording them, we analyse the potential impact of the existing targets to see if they are compatible with the objective of limiting global warming to well below 2°C and how they align with the potential for reductions that were identified in the Business End of Climate report published by We Mean Business in June 2016.*

We found that if the companies in the sample were to achieve their current targets, they could realise 1Gt CO₂e of reductions by 2030 below current emission levels. This is about one quarter of the 4GtCO₂e of reductions that this group of companies would need to achieve in order to be in line with a 2°C-compatible pathway, leaving a gap of at least 3GtCO₂e between where companies' current targets take them, and

where they should be. This gap is equal to nearly 50% of these companies' current total emissions.

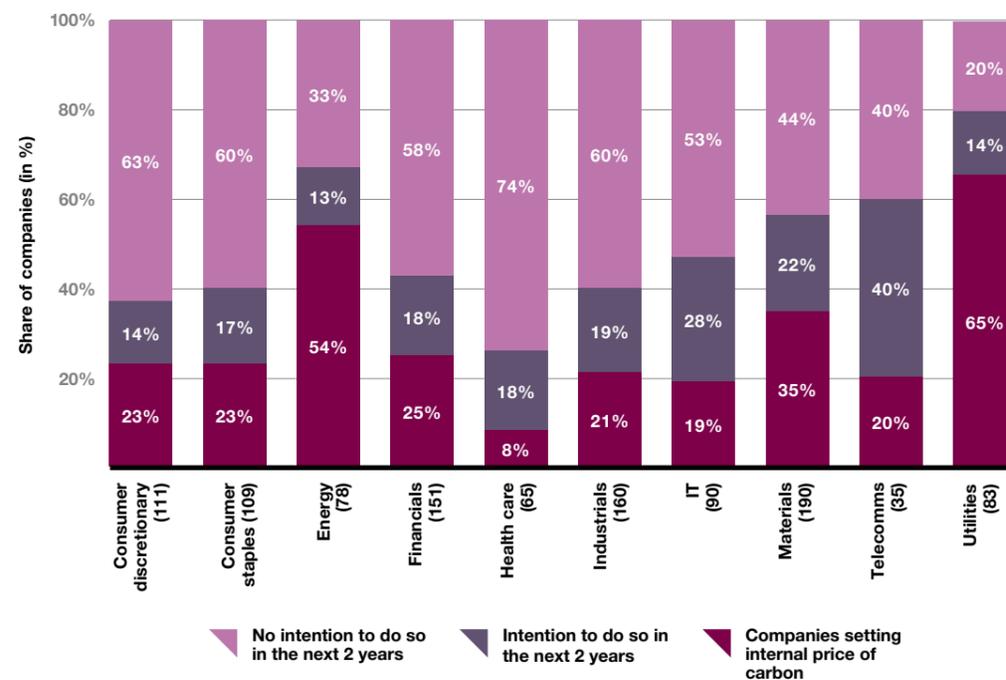
The amount of emissions reductions pledged by companies has been increasing steadily from 2011 to 2015 and we hope to see it close at a faster rate in future years, as company targets become more ambitious in response to the regulatory certainty offered by the Paris Agreement.

Transition planning: carbon pricing on the rise, yet companies lag in renewable energy production and consumption

Even those companies that have not set themselves targets have almost all established emissions reduction initiatives (97% of all companies), although the success and scope of these initiatives has been varied.

Increasingly, companies are utilising internal carbon pricing as an approach to help them manage climate risks and opportunities. Companies are using this tool in a range of different ways including risk assessment in their scenario planning, as a real hurdle rate for capital investment decisions and to reveal hidden risks and opportunities in their operations. Some companies embed a carbon price deep into their

Figure 5: Companies setting an internal price of carbon by sector. The total number of companies responded is presented in parentheses for each sector.



* <http://www.businessendofclimate.org/>

corporate strategy, using it to help to deliver on climate targets, whether it be an emissions or energy related target or to help foster a new line of low-carbon products and services.

Currently 29% of responding companies use internal carbon pricing, while a further 19% plan to do so in the near future. By 2017, about half of this sample should have introduced carbon pricing.

Renewable energy will need to play a major role in any global shift to a low carbon economy. So far, relatively few companies (just 5%) have targets for increasing their renewable energy generation, while 11% have targets for renewable energy consumption.

Of the companies in the utilities sector, 90% of which are electric power companies, fewer than a third have renewable energy generation targets.

Companies decoupling emissions from revenue, showing the low carbon transition does not necessarily mean lower revenue

A small group of companies are showing that reducing environmental impact is compatible with economic growth.

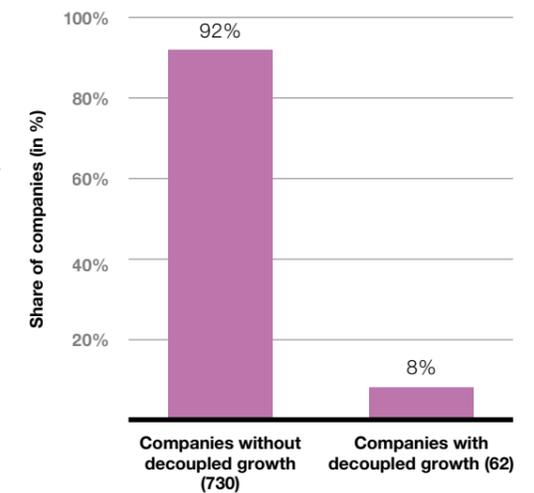
We report on the 62 companies in our sample that can be shown to have made impressive and consistent year on year achievements both in reducing emissions and decoupling growth of revenue from growth of emissions.

They include consumer staples companies such as J. Sainsbury and Walmart de Mexico, as well as utilities companies like Idacorp. The materials sector, also a heavy emissions source, is represented by the likes of Givaudan in Switzerland and Lixil in Japan.

'Decoupling' is defined for this purpose as having reduced emissions by 10% or more over five years, while simultaneously growing revenue by 10%.

The success of these leaders points the way for others to realise the opportunity for innovative

Figure 6: Share of companies with decoupled growth over period of five years (time-series sample)



companies to turn the challenge of emissions reduction from risk management to business success.

Although correlation must not be taken to be causation, it is worth noting that the group of companies that met the "decoupled growth" criteria increased revenue by 29% over the five-year period of measurement, while reducing GHG emissions by 26%. For the rest of the companies in the tracking sample, revenue decreased by 6% while GHG emissions increased by 6%.

Switching to renewable energy or producing its own renewable energy, using internal carbon pricing to make production more efficient, using innovation to create less energy intensive systems or even selling products to help customers reduce emissions are all strategies that add to the bottom line, rather than to costs.

Figure 7: Comparison of the changes in revenues (left) and GHG emissions (right) over the 5-year period between companies that achieved decoupled growth and other companies.

Company group (no. companies)	Total revenue: (trillion current USD)		Total emissions covered for evaluation GtCO ₂ e	
	Year 1 of the 5-year period	Final year of the 5-year period	Year 1 of the 5-year period	Final year of the 5-year period
No decoupled growth (730)	17.7	16.6 (-6%)	4.82	5.08 (+6%)
Achieved decoupled growth (62)	1.31	1.70 (+29%)	0.468	0.345 (-26%)

Featured Profile

Profile: Daimler AG, Consumer Discretionary



The automotive industry is on the verge of fundamental technological changes. Today, 130 years after the invention of the automobile by Gottlieb Daimler and Carl Benz, we are committed to play a decisive role in this transformation towards a more sustainable mobility.

The mobility of the future at Mercedes-Benz will stand on four pillars: Connected, Autonomous, Shared and Electric. The new concept vehicle 'Generation EQ' is the logical fusion of all four pillars. Presented at the Paris Motor Show, 'Generation EQ' is the forerunner of Mercedes-Benz's new product brand for electric mobility, which goes far beyond electric vehicles. EQ stands for a comprehensive electric ecosystem of services, technologies and innovations.

The close-to-production concept vehicle 'Generation EQ' marks the launch of an architecture for battery-electric vehicles across all models. In 2007, the e-smart was a pioneer of electric motoring. We're now flipping the switch. We're ready for the launch of an electric product offensive that will cover all vehicle segments, from the compact to the luxury class.

Prof. Dr. Thomas Weber
Member of the Board of Management of Daimler AG
Group Research & Mercedes-Benz Cars Development



This profile is collaborative content supported by Daimler AG

Measuring and disclosing: Visibility on the road

In order to make progress towards the necessary low carbon transition, we need to be able to see how companies are contributing to global emission reduction efforts. The first step towards this is disclosure. To track progress, we must know what the starting point is.

This report shows that although some sectors are making good progress in reporting emissions, the more energy intensive industries are lagging. Disclosure of both direct and indirect emissions is below average in energy and utility companies.

Across the board, companies are failing to understand the challenge of reporting Scope 3 emissions, indirect emissions other than from energy purchased. In many cases, Scope 3 emissions are under-reported; in others, companies fail to understand what category of emissions is material, focusing on those easy to recognise, instead of more significant but more complex categories.

At all levels, companies need to build trust in their reporting by using verification schemes to reassure investors their figures are accurate. Use of these schemes is growing, but still has a long way to go, particularly for Scope 3 emissions.

The Paris Agreement gives an ideal opportunity to put this information into the global context, to see what progress companies are making, both against their own targets and against the broader goals of the Paris Agreement. This also entails looking at the detail of the targets to see if they are on track to limit carbon emissions sufficient to meet the overall objective of limiting warming to well below 2°C.

The group of companies invited to submit data for this and following reports (which we will refer to as the High Impact sample) was selected to represent the global equities space, weighted for size as determined by market capitalisation and GHG emissions. Out of a universe exceeding 6,000 companies (including the 20 largest privately held companies in the US and 15 largest of Europe), our selection process constructed a list of 1,839.* This sample will be the focus of the We Mean Business coalition's work in the next four years. Of that number, just 1,089 responded.

These companies will be asked to report annually over the next five years. In this way CDP can offer a consistent picture of how this High Impact sample of the private sector globally is changing to meet its obligations under the Paris Agreement which the We Mean Business coalition partners will use to guide their work, focussing on the areas of greatest potential impact.

Different sectors have varying levels of response to the initial request for data. The response from both utilities and energy at less than 40% in both cases is disappointing, given that they are among the heaviest emitters. Highlighting the leaders in the field, including showcasing their approach to emissions reduction, should help ensure best practice becomes standard. From the High Impact sample, the 1,089 companies

Figure 10: Companies responded and not-responded by sector. The total number of companies in each sector is presented in parentheses.

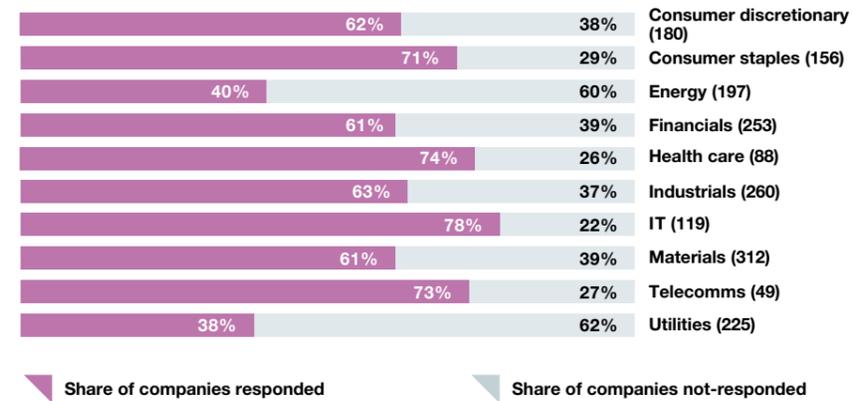
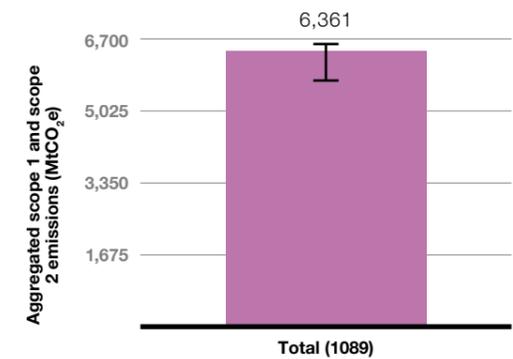


Figure 11: Aggregated scope 1 and scope 2 emissions for total sample. The total number of companies responded is presented in parentheses.



that submitted data, account for roughly 6.4GtCO₂e, or 12% of global emissions, according to the estimate for 2014 by the United Nations Environment Programme. This figure is the aggregated total of Scope 1 and Scope 2 emissions.

Scope 1 emissions (from sources owned or controlled by the reporting company) amounted to 5.7GtCO₂e, while Scope 2 emissions (from the generation of purchased energy) were 1.0GtCO₂e.

These emissions are concentrated heavily in just four sectors: utilities, materials, industrials and energy. Together they account for 92% of the total emissions from the tracking sample. This leaves just 8% of the

total aggregated Scope 1 and Scope 2 emissions being generated by the remaining six sectors.

Scope 3 emissions is a broad category covering other indirect emissions such as the extraction of purchased materials and fuels, transport-related activities such as business travel, outsourced activities, waste disposal etc. Inevitably it is harder to pin down a figure for Scope 3 emissions, because they are not reported as consistently and the likelihood of significant double-counting is increased. Instead, our analysis has focused on establishing how well companies understand the relative importance of different categories of Scope 3 emissions.

* To view the full list of companies in the High Impact sample please visit <http://bit.ly/2e84qpC>

Figure 8: Global company tracking sample by sector. The total number of companies in each sector is presented in parentheses.

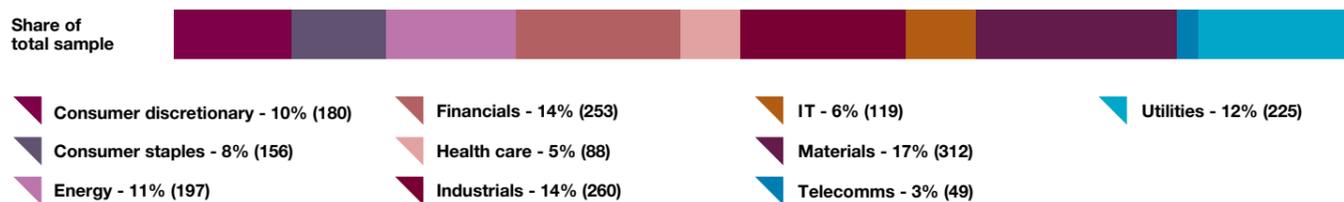


Figure 9: Global company tracking sample by region. The total number of companies is presented in parentheses.



Figure 12: Aggregated scope 1 and 2 emissions by sector. The total number of companies responded is presented in parentheses for each sector.

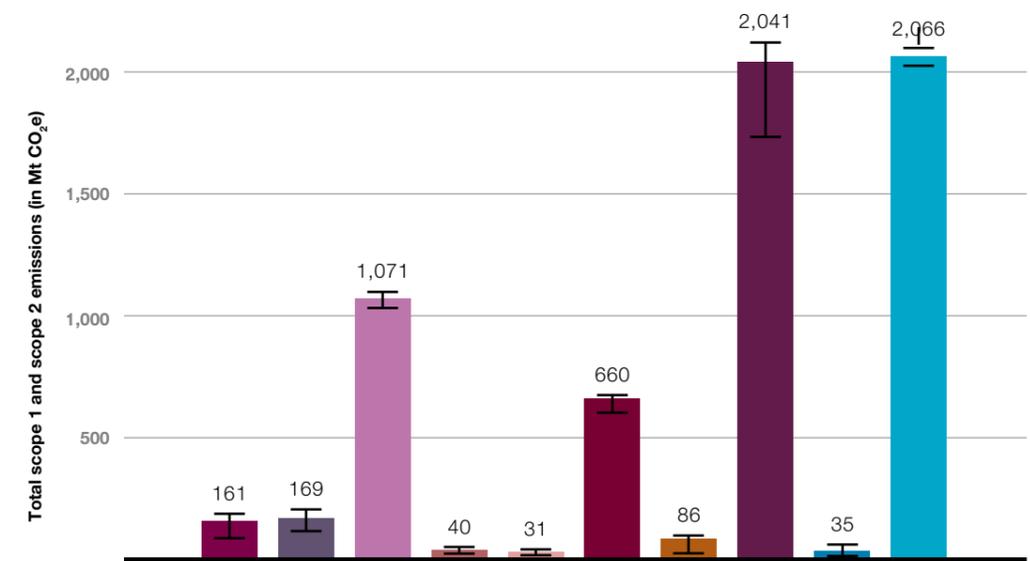
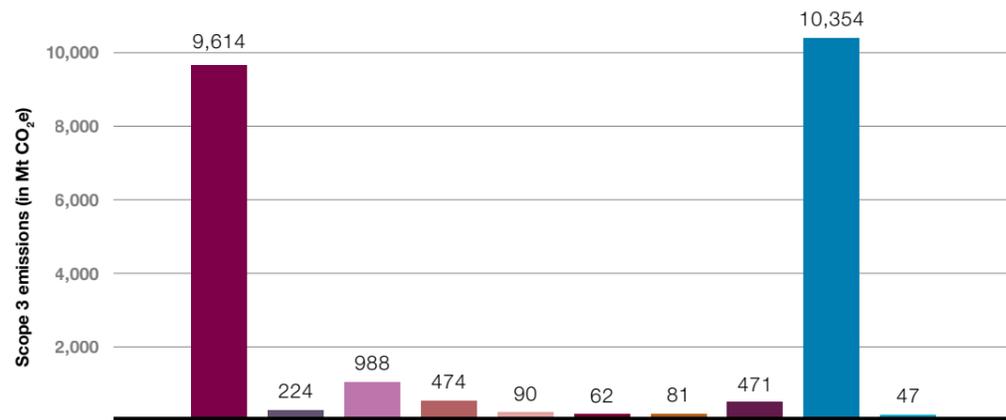


Figure 13: Scope 3 emissions estimated by CDP for 35,533 companies per emission source in year 2014. The number of companies for which each type of Scope 3 emissions was calculated is presented in parentheses for each sector.



- Purchased goods and services (35,264)
- Capital goods (14,063)
- Fuel- and energy-related activities (35,533)
- Upstream transportation and distribution (35,473)
- Waste generated in operations (35,531)
- Business travel (35,532)
- Employee commuting (24,762)
- Downstream transportation and distribution (35,266)
- Use of sold products (1,135)
- End-of-life treatment of sold products (6,277)

Because Scope 3 emissions are significant in terms of climate change, it is important that companies understand which aspects are material and develop methodologies for measuring and therefore managing them. Unfortunately, the indications are that companies have not yet come to grips with this complex challenge.

Based on its own modelling of emissions from 35,533 companies for the year 2014, CDP estimates that just two categories (*purchased goods and services* and *use of sold products*) together account for nearly all Scope 3 emissions.

There is a large gap, however, between the CDP data-based estimate and the self-reported view of how important each category is, indicating that companies need to pay more attention to their Scope 3 emissions in order to manage them better.

Although 68% of companies said they see *purchased goods* and services as the most relevant category, which is in line with the CDP model, they see *business travel* as the next most relevant. This may be because it is easy to measure, understand and reduce. Unfortunately, the CDP data-based estimate identified it as among the least important Scope 3 emission sources.

Use of sold products, the second-most relevant category according to CDP estimates, is relegated by the tracking sample's self-reporting to one of the less relevant with just 40%. However, this category is extremely relevant in categorizing both the carbon intensity of energy supplied to the economy - for example, through the use of sold products of oil companies - as well as the energy demand for energy - for example by characterizing the energy requirements of cars or electric appliances.

The four sectors with the highest Scope 1 and Scope 2 emissions view Scope 3 as comparatively less

relevant than other sectors, which is not always the case. Electric utilities often have relevant business in gas distribution and do not monitor and report those emissions; a large majority of oil and gas companies simply do not report the embedded emissions of their products, which represent up to 90% of their total emissions (Scope1+2+3).

A key question for investors looking at carbon emissions reporting is how reliable those reports are. To help companies build trust with investors in their reporting, a number of agencies offer independent verification services.

The concept is widely accepted, but not all companies have their emissions reports verified. The proportion of emissions verified is variable and the levels of verification are not the same across Scope 1, Scope 2 and Scope 3.

The challenges of identifying, reporting and verifying Scope 3 emissions are real, but there is plenty of room for improvement. Better accounting and verification would help manage and reduce these emissions. This might mean putting pressure on companies in the supply chain to improve their performance, ensuring that goods sold are as efficient as possible, or changing internal business practice such as increasing use of technology to minimise business travel.

The top ranking companies in this arena are demonstrating that full and clear disclosure of GHG emissions is possible and even beneficial to businesses. The remaining companies need to follow suit to maintain competitiveness in a world where reporting will soon be a standard ask from investors, if not required by regulation from governments intent on reaching the national reduction goals agreed in Paris.

Figure 14: Self-reported relevant Scope 3 emissions by categories. The total number of companies responded is presented in parentheses for each emission category.

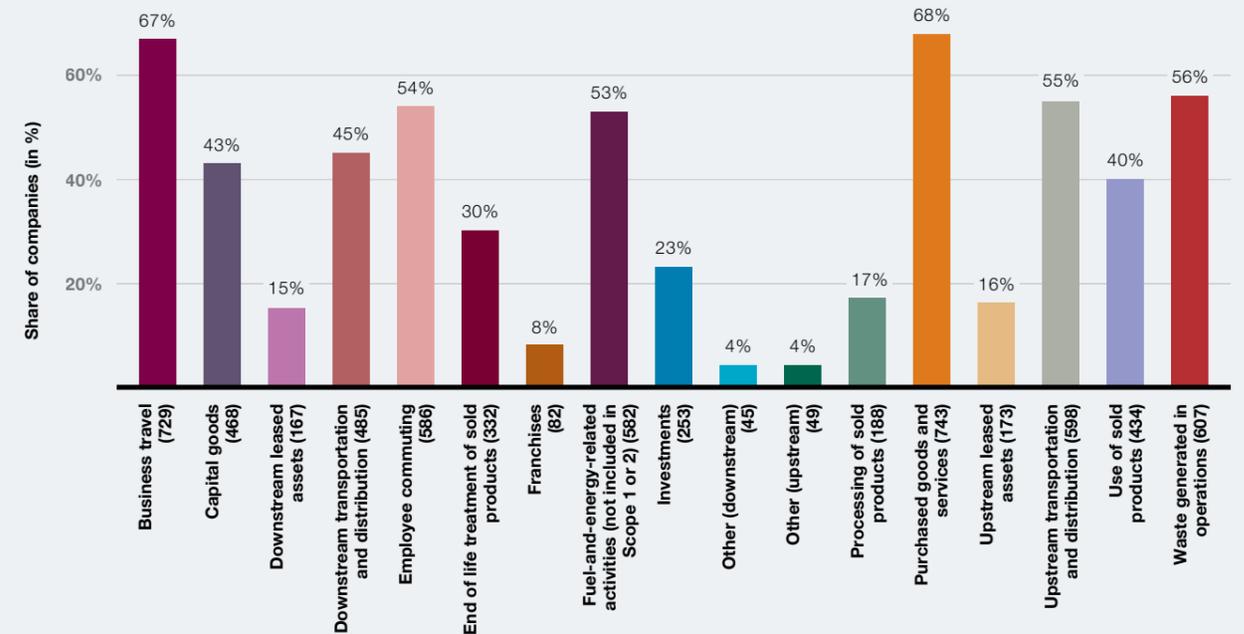


Figure 15: Share of companies with verification schemes and average coverage of applied schemes. The total number of companies that reported Scope 1, 2 and 3 emissions verification are presented in parentheses.

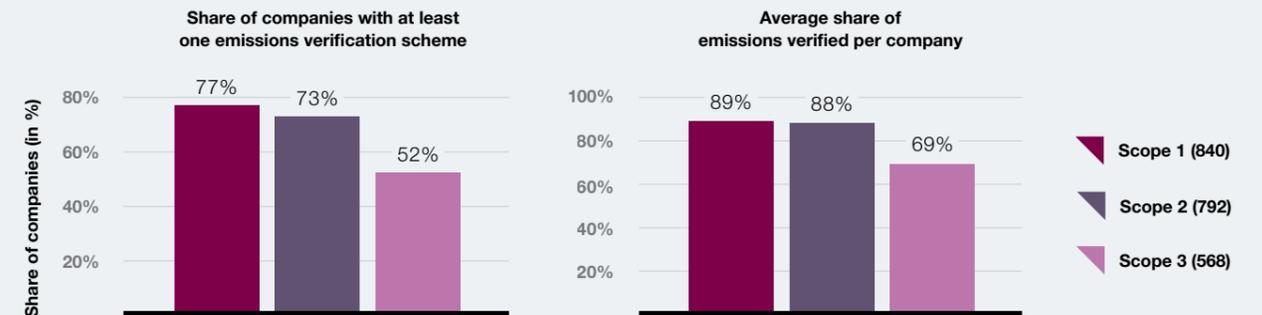
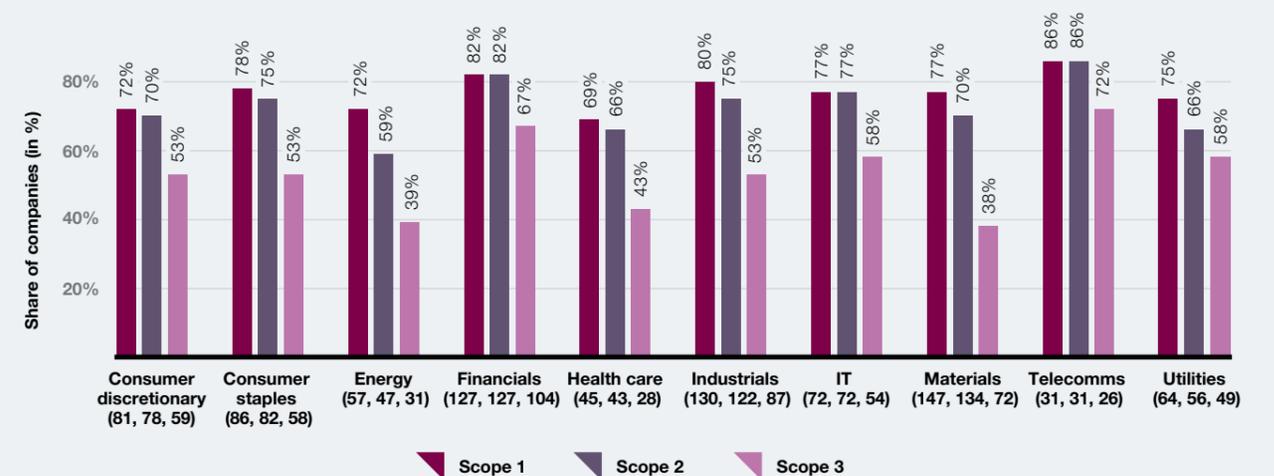


Figure 16: Share of companies with verification schemes by sector. The numbers of companies responded for Scope 1, 2 and 3 emissions verification are presented in parentheses.



The analysis is not complete, because the CDP questionnaire asks about the 15 named GHG Protocol categories, plus other (downstream and upstream), seven more than the CDP estimates, so a direct comparison cannot be made in all cases. The seven types of Scope 3 emissions that cannot be estimated by CDP's model are: (1) Downstream leased assets, (2) Franchises, (3) Investments, (4) Other (downstream), (5) Other (upstream), (6) Processing of sold products, and (7) Upstream leased assets.

Scope 3 spotlight on automobiles

Pedro Faria, CDP Technical Director



Scope 3 emissions accounting can be quite revealing in the true determination of a company's climate impact. Look, for example, at the scope 3 emissions of a car. Transportation today is dominated by light passenger vehicles, most often with only one occupant per vehicle. The emissions that the cars produce during their lifetime is the most significant source of emissions from car companies (scope 3, use of sold products). Therefore, the carbon intensity of the vehicle fleet is the most important indicator to see whether a car company is meeting the demands of climate change mitigation.

The impact on the planet is brutal: over 72 million new vehicles were sold in 2015*, but the global car fleet is more than 1.2 billion vehicles**. The 2015-2050 carbon budget for car transport is already over 30% locked-in via the existing vehicle fleet on the road. It is this same vehicle fleet that creates the demand for continuing oil extraction – the same emissions, counted also by oil & gas companies as Scope 3 emissions via the use of their sold products. The two sectors are strongly linked by demand and supply, until a significant technology shift occurs. It is likely that action on the demand side will trickle down with significant leverage throughout the system.

Technological change in the sector is happening but can only transform the vehicle population at a speed limited by the rate of replacement of the existing fleet. Thus it is so important that policy incentives are put in place to speed up the pace of this transition. Action is already happening: e.g. following plans by Norway to ban cars fuelled by petrol or diesel by 2025, several other countries in Europe (Germany, Netherlands, Sweden, Belgium, Switzerland***) are considering similar programs to phase out fossil fuel-powered transportation.

The planet requires car companies to make strategic choices right now and invest in low-carbon mobility to reduce their indirect emissions. This might soon become critical for car companies wanting to do business and sell their products.

Every electric car sold today will start a positive cascade effect preventing years of cumulative emissions of the cars that it will replace, promote consumer acceptance of the technology and ultimately help the sector meet its climate targets on the long-term. It also has huge systemic effects downstream. Catching an electric-car taxi eliminates not only the scope 1 emissions of the driver, but also your scope 3, as well as the one of the car manufacture, while reducing the demand for the oil company's product – and associated scope 3 emission. Think about this when you next choose your taxi drive.

Please read the investor focussed 'Emission Impossible' report at <https://www.cdp.net/en/reports/downloads/623>

¹ According to IEA and ICCT 2° mitigation scenarios

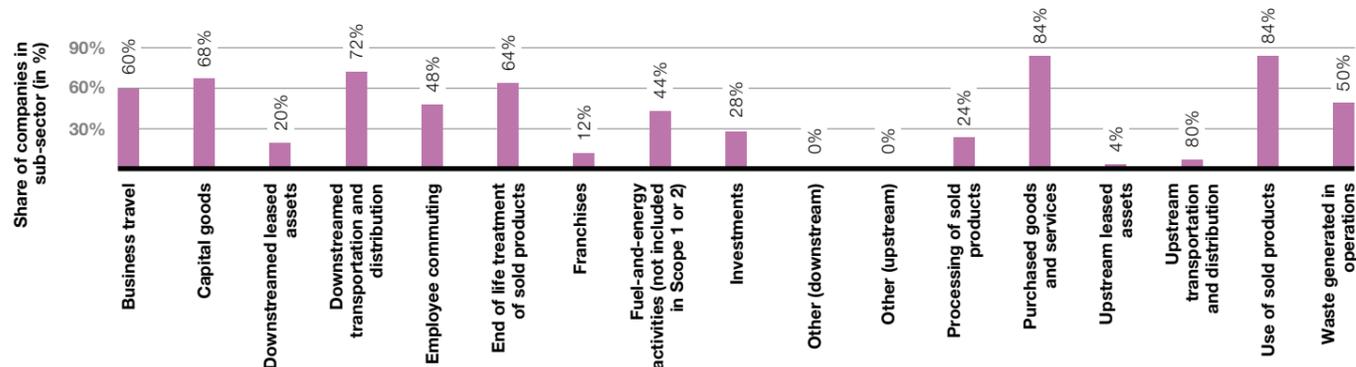
* <https://www.statista.com/statistics/200002/international-car-sales-since-1990/>

** http://www.greencareports.com/news/1093560_1-2-billion-vehicles-on-worlds-roads-now-2-billion-by-2035-report

*** <http://www.spiegel.de/auto/aktuell/bundeslaender-wollen-benzin-und-dieselaautos-ab-2030-verbieten-a-1115671.html> and <https://pedestrianobservations.wordpress.com/2016/04/01/several-european-countries-to-follow-norways-lead-ban-fuel-powered-cars/>

<https://cleantechnica.com/2016/04/06/tesla-rivals-may-kill-the-petrol-car-as-early-as-2025/>

84% of Auto manufacturing responses indicated that 'use of sold products' and 'purchased goods and services' were the most relevant which directly matched CDP's Scope 3 analysis. On the third most relevant category companies chose 'upstream distribution and transportation' while CDP analysis indicated 'capital goods'. The clear alignment on the first two categories indicates the Auto sector is well aware how it can have the most influence on reductions.



CEO perspective

Frans van Houten, Chief Executive Officer, Royal Philips



We are the first generation that can really feel the impact of climate change and it is vital that we act with urgency. Our mission at Philips is to drive meaningful innovation that improves people's lives – while reducing our own environmental impact to help support a healthy planet for all.

Four of the last five years have been identified as the warmest recorded since 1880, contributing to unprecedented environmental challenges. But the impact of climate change goes beyond our physical environment – it affects the social and environmental determinants of health such as clean air, safe drinking water and food supply. The World Health Organization expects that climate change will cause approximately 250,000 additional deaths per year between 2030 and 2050 and the direct cost to health is estimated to be between US\$ 2-4 billion per year by 2030. It is our collective responsibility to act now.

As a leader in health technology and lighting we believe our greatest contribution to addressing climate change is to lead by example through our own operations while driving meaningful innovation to improve people's lives. That's why our goal to improve the lives of three billion people a year by 2025 is at the heart of our vision and underpins our five-year sustainable business strategy. This strategy focuses on our contribution across three core areas where we can add the most value: our products and solutions, our operations and the impact across our extended supply chain.

At COP21 we committed to becoming carbon neutral by 2020. We are proud to announce that by the end of 2016 we will run our North American

operations on 100% renewable electricity. Working together with EDP Renewables North America, Philips will purchase 250,000 MWh of electricity per year over the next 15 years from the Hidalgo Wind Farm in McCook, Texas, an amount equivalent to the power used at Philips' 133 sites which support over 21,000 employees in the market. And more will follow, as by 2020, *all* our electricity usage globally will be sourced from 100% renewable electricity.

For the last four years, Philips has been recognized by CDP for its integrated climate change strategy which contributes to climate change mitigation, adaptation and transparency. Achieving these ambitions has required a new way of doing business – one that moves away from the traditional way of working and harnesses collaboration to develop new business models.

We are encouraged by this year's findings from the CDP Climate Change Report which particularly highlight the important contribution of the private sector. There is still much more to do and we fully support CDP's ambitions to provide essential guidance towards global standardization of corporate natural capital disclosure to increase the impact of our collective efforts. We must continue to innovate and build on the momentum we've achieved.

At COP21 we committed to becoming carbon neutral by 2020. We are proud to announce that by the end of 2016 we will run our North American operations on 100% renewable electricity.

Featured Profile

Profile: Santander Brazil, Financials

Santander Brazil is committed to the goals of the Paris Agreement through concrete and viable solutions, to generate scale and shared value supporting the growth of our client's businesses, as well as managing the impacts of our own activities.

In Brazil, we are leaders in the area of renewable energies and participated with advisory and/or financing in 80% of the total capacity installed. Since 2010 we have invested 25 billion reais in the funding of wind farms and financed 1 billion reais of energy efficiency projects and photovoltaic systems. In the agribusiness sector we are increasing our focus towards low carbon agriculture and compliance with Brazil's new Forestry Code.

In 2016 we improved our risk analysis, introducing a socio-environmental score in our risk rating methodology. In all regions of Brazil, we classified our branches for risk according to their vulnerability to water scarcity, and used this data to inform our strategic management plans. By 2018 we aim to reduce our energy consumption and carbon emissions by 9%, against a base year of 2015.

The financial sector has a key role to achieve the scale needed in the transition to a low carbon economy. Incorporating new risks and opportunities into our day to day business will yield results that are up to the great challenge we have in front of us.

Linda Murasawa
Executive Superintendent of Sustainability
Banco Santander Brazil

Featured Profile

Profile: Deutsche Telekom, Telecommunication Services



Digitization is one of the biggest environmentalists ever.

(Timotheus Höttges, speaking at the 7th International CSR Conference, Berlin, September 2016)

Deutsche Telekom plays a fundamental role in driving the global sustainability agenda, demonstrating not only its clear business case but also the positive impact on the environment and peoples' lives. In this era of digitization, Deutsche Telekom will make sure, through its products and services, that the vision put forward in the UN SDGs becomes a reality in 2030, including solutions to address climate change.

Our sustainable products and services, from teleconferencing through connected cars, smart home solutions and smart vineyards to our Industry 4.0 solutions, contribute to emission reductions and additional revenues. Already, 37 percent of our revenues in Europe are from sustainable products and services, enabling carbon reductions of more than 9 million tons. By driving sales and development of these products and by achieving our emission reduction target of 20 percent against 2008 baseline by 2020, Deutsche Telekom intends to be, and to stay, a leader in terms of climate protection.

Deutsche Telekom AG



This profile is collaborative content supported by Deutsche Telekom

Emissions reduction targets: The compass for the low carbon transition

To reach a destination, it is important to have a clear idea of where it is and what direction to go in. For companies considering their transition to a low-carbon economy, targets are the compass they should be using, a tool to understand where they are, to guide them to their destination, and to check they are on-course during the journey.

CDP is working with the Science Based Targets initiative (SBTi) to guide companies on how best to set these GHG reduction targets. The We Mean Business coalition identifies setting SBTs as one of the key commitments companies can make.

So where should companies start in setting science-based targets? The Sectoral Decarbonization Approach (SDA) is the methodology introduced by SBTi in 2015, although other methods are summarized on the website of the Science Based Targets initiative, a collaboration between CDP, the UN Global Compact, the World Resources Institute and WWF.

Using the most recent climate science, the science-based target setting methods determine a company's share of the remaining global carbon budget based on company attributes such as their sector

Mind the Science, a report from CDP, found the "level of effort from the corporate world is still inadequate". While hundreds of companies are now setting emissions targets for their direct emissions, many were not relevant and for the ones setting targets compatible with a 2°C trajectory, only a few are long-term (looking to 2030 or beyond).

"To realize the type of structural changes required, particularly in energy- and capital-intensive industries with long investment cycles, companies need a long-term vision of where they are heading," the report concludes.

Because of the infrastructure needed to support a low carbon economy, it is important that targets should be set with the ultimate destination in mind - that of limiting global warming to well under 2°C, with efforts to limit temperature increase to 1.5°C. The Science Based Targets initiative has used the most up-to-date climate science to work out what companies in each sector should be aiming for.

In 2015, the initiative launched a new method to set science-based targets - the Sectoral Decarbonization Approach. Put simply, the SDA builds on IEA scenarios that divide the global carbon budget between industry sectors, based on each sector's projected level of economic activity and potential for emissions reductions. Company targets are derived

based on their share of activity for their sector, base year intensity, and projected growth. The results are challenging for business, requiring reductions at a level most companies have not yet contemplated.

If the transition to a low-carbon economy is inevitable, companies acting in their own long-term best interest need to prepare for it. One such is **Coca-Cola HBC**; having achieved its initial targets early, the company has now set itself tougher goals and is among the first companies to be approved by the Science Based Targets initiative. Its ambition is to achieve a 50% reduction of Scope 1+2 emissions intensity and 25% reduction in value chain emissions intensity by 2020, compared to a 2010 base year.

Other companies with SBTi approved targets, such as US utility **NRG Energy** and Japanese electronics giant **Sony**, took a longer term view with targets out to 2050 and have both committed to achieving 90% reductions by 2050 (against a 2008 baseline for Sony and a 2014 baseline for NRG). Their interim checkpoints to ensure they are on track are 42% reduction by 2020 for Sony (against a 2000 baseline) and 50% by 2030 for NRG.

Although 19% of targets submitted for this report were 'science-based' according to the companies themselves, and a further 40% are intending to set science-based targets in the next two years, this is not strictly compatible with the SBTi analysis.

In the sample, of the 85 targets submitted to the SBTi, only 15 were approved. The main reasons for targets not being approved was because they didn't meet the SBTi's Scope 3 criteria. This is not solely due to companies ignoring the issue; Scope 3 emissions are challenging to calculate and at this time methodologies are primarily designed for Scopes 1 and 2 (with the exception of the light-duty vehicle manufacturing sector).

While 85% of the companies offering full disclosure in response to CDP's questionnaire have set themselves

emissions reduction targets, many more of these need to be in line with the science in order to achieve the shift required.

Moreover, these targets are mostly short term - more than half have at least one emissions reduction target for 2020 or beyond, but only 14% have targets set out as far as 2030 or beyond. This lack of long term vision implies companies are not taking the strategic nature of the low-carbon transition seriously.

There are companies with the vision to pioneer this kind of change. Swedish construction company **Skanska** has laid out an ambitious plan: "In 2015, Skanska Sweden set the target to be carbon neutral (zero carbon) by 2050. A detailed plan is being developed in 2016 to meet this target by focusing on actual carbon reductions within Skanska Sweden and throughout its value chain. The aspiration is to use no carbon offsetting to achieve this target."

"At least one emissions reduction target" can also mask another inadequacy - the targets may only apply to a limited proportion of a company's emissions. To be meaningful, targets must cover a majority of the company's total emissions, including direct (Scope 1) and indirect emissions (Scope 1+2).

Figure 17: Companies with self-reported 'science-based' targets by sector. The number of companies that responded is presented in parentheses for each sector.

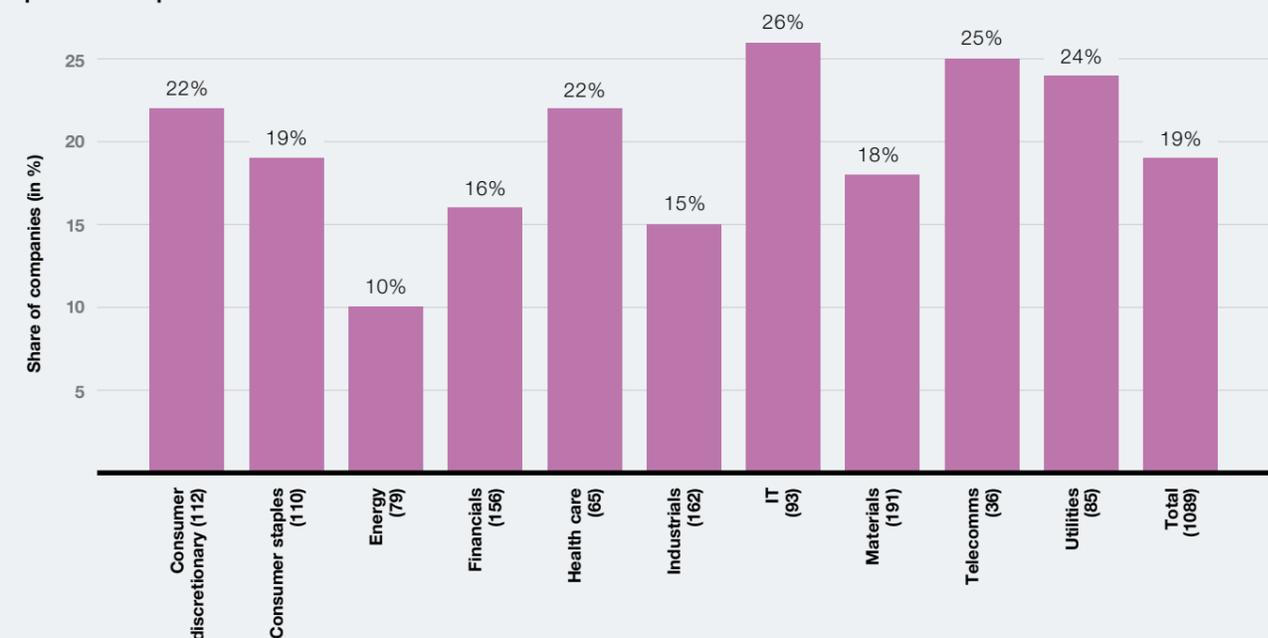
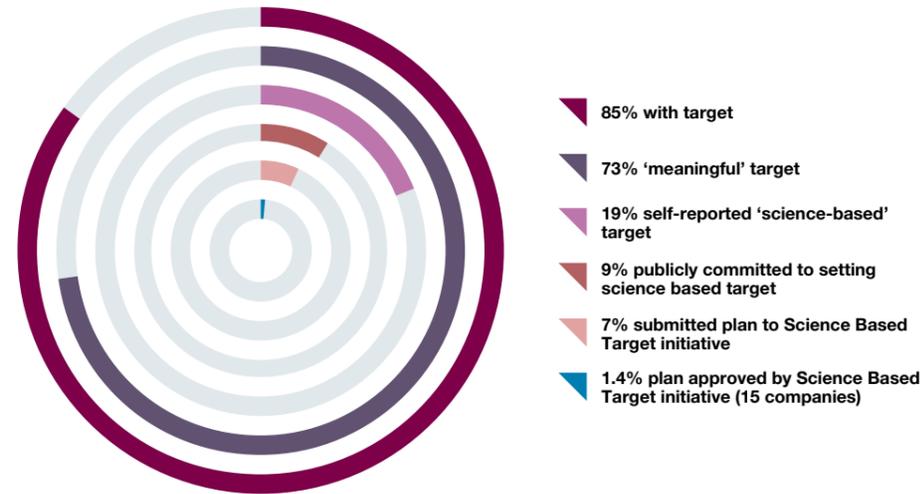


Figure 18: Ratio of target types in High Impact sample group of 1,089 companies.



When looking at companies with at least one reduction target that covers more than 80% of the respective emission Scopes (which we will consider "meaningful" targets for that scope), the number of companies with meaningful targets falls from 85 to 73%, a reduction of 12 percentage points. Those with meaningful targets beyond 2020 represent 49% and companies setting meaningful targets to 2030 or beyond are reduced by 2 percentage points to 12%.

A sectoral analysis reveals a sharp and worrying gap between levels and meaningfulness of targets in the different sectors.

In particular, just half of all companies in the energy sector have meaningful targets, while just a quarter have targets to 2020 or beyond. Given this sector will require wholesale transformation as part of climate change mitigation, this suggests the sector is yet to come to terms with this new reality and there is a great deal of work to be done. The most significant emissions of the energy sector are within the carbon embedded in their products - and as we have seen in previous section, here too there is a long way to go.

The companies themselves need to consider how they might survive in the long term, and what their strategic options are or even whether they should be thinking in terms of: keep being oil and gas extracting companies and winding down the business; becoming energy companies and expanding their operations to the renewable space; or becoming carbon capture and storage providers.

One such company is French oil major **Total**, which has integrated climate change into its business strategy, according to chairman and chief executive Patrick Pouyanné.

Speaking at the Business and Climate Summit in June 2016, Mr Pouyanné said: "There has been an evolution of energy technology over 300 years from wood to coal to oil to gas, and now to renewables. Total is now an oil and gas major and we will, I hope, become a gas, oil and renewables company in the future."

The lower carbon strategy means Total is exiting the coal business entirely; because oil assets need to be low cost to be competitive, it is avoiding Arctic drilling, and renewables are expected to grow from 8% of the portfolio to 20-30%.

Investors in these companies are becoming more and more vocal in demanding they are transparent on what their strategic approach to the low-carbon transition is.

The Aiming for A coalition is demanding accountability from companies in this area, calling for emissions-heavy companies to be more transparent on the likely impact of climate change regulation. **BP**, **Shell** and **Statoil** have agreed to greater disclosure on this, while shareholder pressure is increasing on other oil companies to do the same. This transparency should include reporting any emissions reduction targets, and would allow shareholders to hold companies to account for the inadequacy of those targets.

Other sectors have a better record. About 60% of companies in both Consumer Discretionary and Consumer Staples sectors have targets for 2020 and beyond, virtually all of which are meaningful in terms of coverage.

The telecoms sector also performs well.

Belgian telecoms company **Proximus** reduced its carbon emissions for its Belgian emissions by 70% in 2015, and is now aiming to make the entire Proximus Group climate neutral in 2016.

"This means we will primarily strive to become more energy efficient and further continue to reduce carbon

emissions, with the aim of achieving a reduction of 30% from 2015 until 2025 for Scope 1 and 2 on the group level."

Emissions that cannot be eliminated, including from refrigerants, will be offset, says Proximus.

Across all sectors, those companies with longer term targets tend to have better coverage of their emissions, implying the exercise of considering long-term targets tends to be better integrated into a strategic vision of a company in transition to a low carbon world.

Figure 19: Companies with emission reduction targets (total and by sector). The number of companies that responded is presented in parentheses for each sector.

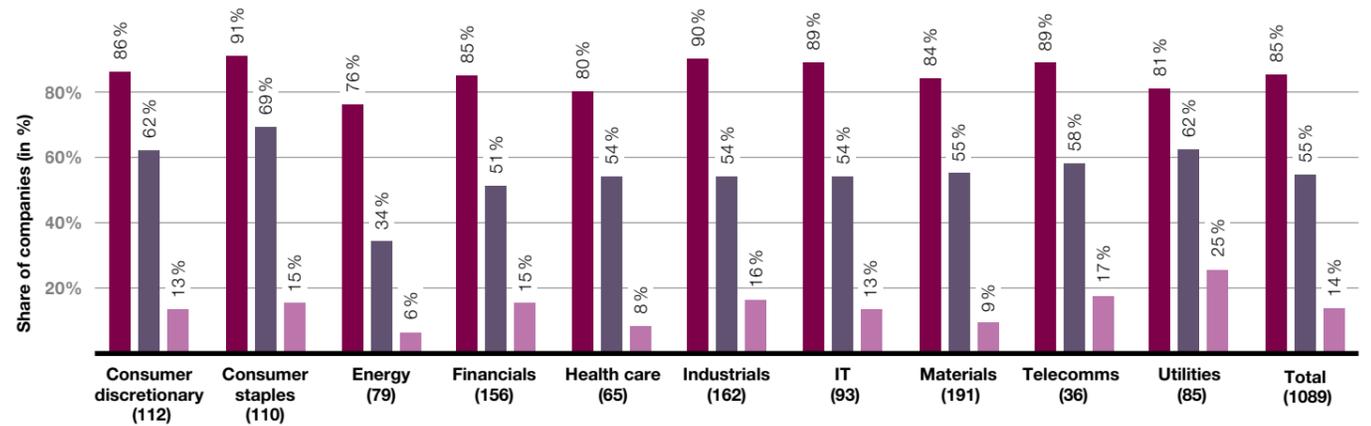
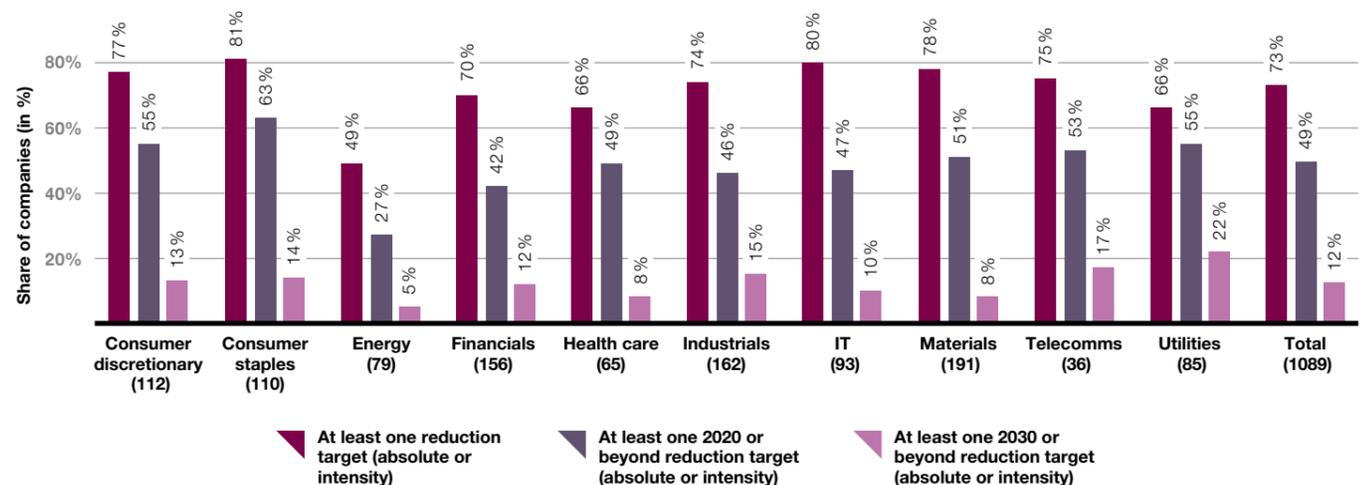


Figure 20: Share of companies with emission reduction targets covering at least 80% of emissions per scope. The number of companies that responded is presented in parentheses for each sector.



Featured Profile

Profile: Novo Nordisk, Health Care

Novo Nordisk produces life-saving medicine for millions of people living with diabetes and other serious chronic diseases. This is a tremendous responsibility that we take with us in everything we do, relying on our scientific expertise and deep disease understanding to help people achieve better health.

When it comes to climate change, we also rely on scientific experts. Our accountability and level of responsibility must align with the recommendations from the scientific community. We refer to the findings of the UN Intergovernmental Panel on Climate Change (IPCC), acknowledging the overwhelming scientific evidence and agree with the need to keep the temperature increase below 2°C.

Novo Nordisk has committed to set a science-based emission reduction target in line with the Science Based Targets Initiative's Call to Action criteria. We are using methods endorsed by the initiative to develop our targets. Our Scope 1 and 2 initiatives include renewable power at all production sites, bio-natural gas and biomass based steam supply in Denmark as well as reduced emission from the car fleet.

Novo Nordisk has signed up for the RE100 initiative and pledged that all our electricity consumption from production will come from renewable sources by 2020.

Dorethe Nielsen
Senior Director, Environmental Strategy
Novo Nordisk A/S



This profile is collaborative content supported by Novo Nordisk

Featured Profile

Profile: L'Oreal, Consumer Staples

Launched in 2013, our sustainability ambition, the program *Sharing Beauty With All*, is completely integrated in L'Oréal's value chain and aims at transforming our Group in order to have a positive impact on society and the environment.

We have already achieved key milestones regarding our 2020 goal of reducing greenhouse gas emissions from our plants and distribution centers by 60% in absolute terms, compared to 2005. By the end of 2015, nine L'Oréal industrial sites reached carbon neutrality, and we achieved reductions in carbon emissions by 56% in absolute terms, while production increased by 26% over the same period. By decoupling our growth from its environmental impact, L'Oréal proves that economic performance can clearly be compatible with an ambitious commitment towards climate.

We are ahead of our CO₂ target but given the urgency we are going even further. Last year, just before COP21, we made a new commitment to become a "carbon-balanced" company by 2020. L'Oréal will completely counter-balance its remaining emissions from production by generating carbon gains through the sustainable sourcing of raw materials, in partnership with our suppliers.

This new ambition reflects our desire to develop an innovative low-carbon business model and to do our utmost to support the collective campaign to reduce global warming.

Jean-Paul Agon
Chairman and Chief Executive Officer
L'Oréal Group



This profile is collaborative content supported by L'Oréal
Image by Alain Buu

Bridging the gap to 2°C

We found that if the companies in the sample were to achieve their current targets, and maintain their reduction trend, they could realise 1 GtCO₂e of reductions by 2030. This accounts for one tenth of the emissions reduction potential of the private sector as a whole, as estimated by We Mean Business and CDP's "The Business End of Climate Change" report.

The emissions reductions that could be achieved by the companies in our sample meeting their current targets equal about one quarter of the 4GtCO₂e of reductions needed in order for these companies to be in line with a 2°C-compatible pathway. This leaves a gap of at least 3GtCO₂e between where companies' current targets take them, and where they should be. This gap is equal to nearly 50% of these companies' current total emissions.

The ratification of the Paris Agreement means the necessary trajectory of carbon reduction is much clearer and companies can have much more certainty about the future regulatory environment. This should see the level of emissions reductions targeted, already rising steadily over the past five years, increase sharply as companies become more ambitious in response.

But for now, we must work with the targets companies have actually set themselves. Are companies actually on track to meet these targets? It is difficult to get a reliable view of this, because targets are set for different time periods and companies have often not set or reported progress against targets for very long. In addition, progress against targets has varied widely, so aggregated figures are not helpful. Furthermore, not all such progress is linear, with some emissions reduction plans being front loaded, and others showing limited effect until near the end of the period.

For this report, we have identified 270 companies from the tracking sample which have published sufficient data to produce a meaningful time-series. The analysis has constructed proxy targets for the years 2020 and 2030, in order to be able to measure those companies' success on a comparable basis.

The top line produced by this analysis is not encouraging, as about half of these companies are apparently not on track to meet their 2020 targets.

Median emissions from these companies hardly changed between 2011 and 2014. About half of the companies had emissions of more than 93% of their baseline; this makes it relatively unlikely they will reach

85% below baseline by 2020, which is the figure implied by their targets.

In 2014, a quarter of those companies were on course to achieve their proxy 2020 target. In 2014, these companies together were responsible for 0.42 GtCO₂e of emissions covered by targets, down from 0.46 GtCO₂e in 2011.

Of those, roughly half were already on track in 2011. Achieving this has entailed significant emissions reductions, so it is encouraging that companies from all sectors, including the heaviest emitters such as energy, utilities and materials, are among these leaders. (Appendix A7)

Brazilian mining company **Vale** and Italian cement producer **Italcementi** are on the list, along with Italian energy company **Eni** and Portuguese electricity company **EDP**. Industrials are represented by the likes of French aerospace company **Safran**.

Figure 21: Emissions (as % baseline) covered by targets in the period 2011-2014 of the sample of 270 companies that provide continuous time series in this period, and their corresponding pledge targets. (Lines are median; the top and bottom of the box are the 25th and 75th percentile, respectively. The bars represent the top and bottom quartile up to 1.5 times the interquartile range from the box.)

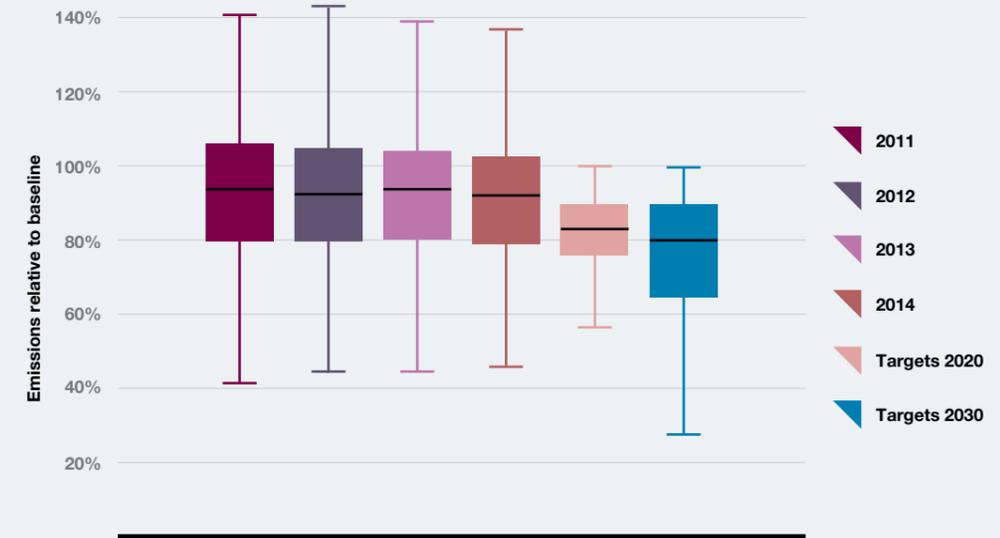
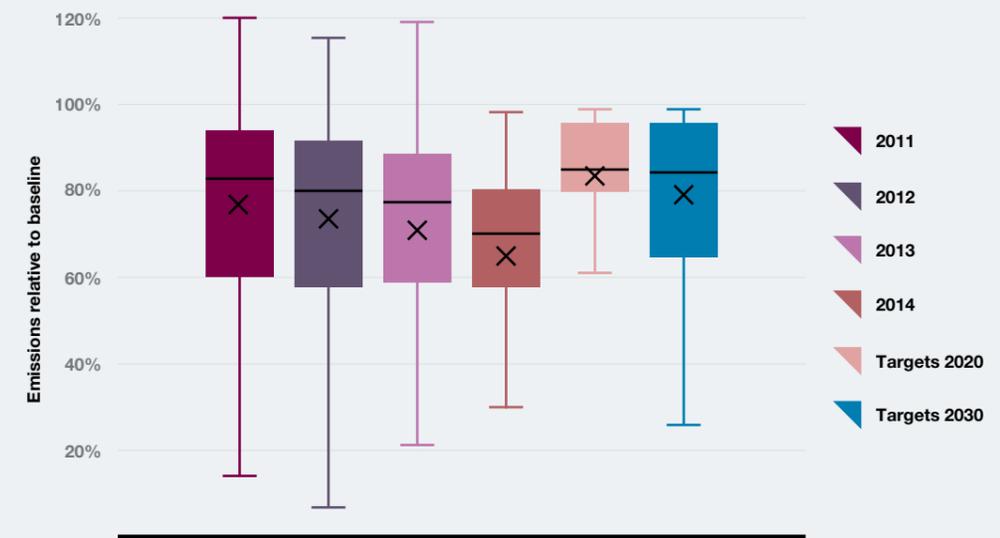


Figure 22: Companies that had reached their targets by 2014. The emission trend between 2011-2014 is clearly downwards. (Lines are median, crosses are average values; the top and bottom of the box are the 25th and 75th percentile, respectively. The bars represent the top and bottom quartile up to 1.5 times the interquartile range from the box.)



Featured Profile

Profile: Kingspan Group, Industrials

Every year Kingspan solutions save our customers six times the annual energy consumption of Dublin, Ireland.

Kingspan is a global provider of innovative high performance, sustainable building envelope solutions for the international construction industry, contributing to carbon management and mitigation strategies that are yielding major environmental benefits worldwide.

Our product range includes world-leading proprietary energy saving insulation technologies including Kooltherm, Optim-R and QuadCore. We build integrated renewable energy systems including solar PV, solar thermal and small scale wind. We also manufacture water management products to facilitate adaption to changing climatic conditions. Our newest division, Kingspan Light & Air, develops solutions to save energy and deliver occupant comfort through optimised lighting and ventilation systems, which fully complement our other products and building envelope technologies.

In 2011 we set an ambitious target to achieve Net-Zero Energy across all of Kingspan's 90+ manufacturing sites around the world by 2020. Our actions to reduce carbon emissions mean that in 2016 our renewable energy use will be c. 57% of total consumption. Milestones achieved between 2012 and 2015 include a 23% reduction in energy costs and a 35% reduction in carbon intensity as a percentage of turnover, and the on-site generation of 24.1 GWh of renewable energy.

The climate change agenda is core to Kingspan's vision and activities and will continue as an integral part of our growth story.

Gene M Murtagh
Chief Executive Officer
Kingspan Group plc

Featured Profile

Profile: Stanley Black & Decker, Industrials

Stanley Black & Decker is the world's largest tools and storage company, the second largest commercial electronic security company, and a leading provider of engineered fastening systems. And we are ECOSMART™. That means that we foster a culture of ever-advancing sustainable practices in every thing we do, across our entire value chain.

We take our global responsibility seriously, and we seek to make the world a better place by focusing on environmental improvements within our manufacturing, distribution, and offices, while also embedding sustainable design and production into our market-leading products. We build homes in needed communities, we support STEM education, and we're there in times of natural disasters.

In an effort to address climate change, we have created battery-operated outdoor equipment which reduces greenhouse gas emissions for our customers. We facilitate "lawn mower exchange" events, which to date, has allowed us to remove more than 20,000 gasoline units from the marketplace. Our NeoBolt® fastening system makes ECOSMART™ inroads to solar field technology, thereby easing global dependency on fossil fuels and helping shape a renewable future. And now factoring in the Paris Agreement as both risk and opportunity, we will look to augment our progress on science-based targets and enact an internal carbon price. Post COP21, we will continue our ECOSMART™ actions towards climate change in an effort to drive to net zero emissions. We will ensure that the 2020 Nationally Determined Contribution aligns with Stanley Black & Decker's low greenhouse gas strategies.

We aspire to be one of the most sustainable companies in the world, and see our inclusion in CDP as an important step in that direction.

Deb Geyer
Vice President Environment
Health & Safety
Stanley Black & Decker



This profile is collaborative content supported by Stanley Black & Decker

Transition plans: The road to get there

If the rest of the century is not to be filled with catastrophic change, the next few decades must be filled with managed change as companies and economies transition to a low-carbon world. This report looks at how companies are approaching this change, what tools they are using and identifies various opportunities for improvement.

Among the most widely-used tools for emissions reduction are internal carbon pricing, participation in emissions trading schemes (ETSs) and emissions reduction initiatives.

Targets for replacing existing energy sources with renewable energy should form a large part of any transition strategy, but at the moment, few companies have set renewable energy targets in line with their emissions reduction targets.

Setting an internal price for carbon is a popular mechanism for helping companies internalise the external cost of carbon emissions.

Companies report that by assigning a financial value to both emitted and avoided emissions, it helps reveal hidden risks and opportunities. It is used in a variety of ways – from a tool to test strategy against future scenarios, to a mechanism that drives investment towards achieving climate-aligned corporate goals,

be it an emissions reduction target, an energy related challenge, or the creation of a new low-carbon product range.

Companies report that an internal price helps by providing an incentive or added reason to reallocate resources toward low-carbon activities; as a factor in the business case for R&D investments; and as a way to reveal hidden risks and opportunities in a company's operations and in its supply chains.

At the moment, internal carbon pricing should improve efficiency and allow better investment decisions to be made. Furthermore, the Paris Agreement, through Article 6, provides foundational building blocks which could, in time, deliver a globally linked carbon market and in effect, a global price.

In this "desirable event", as French oil company **Total** puts it, companies already using internal carbon pricing will be at an advantage, since their long term

Figure 23: Companies setting an internal price of carbon by sector. The total number of companies responded is presented in parentheses for each sector.

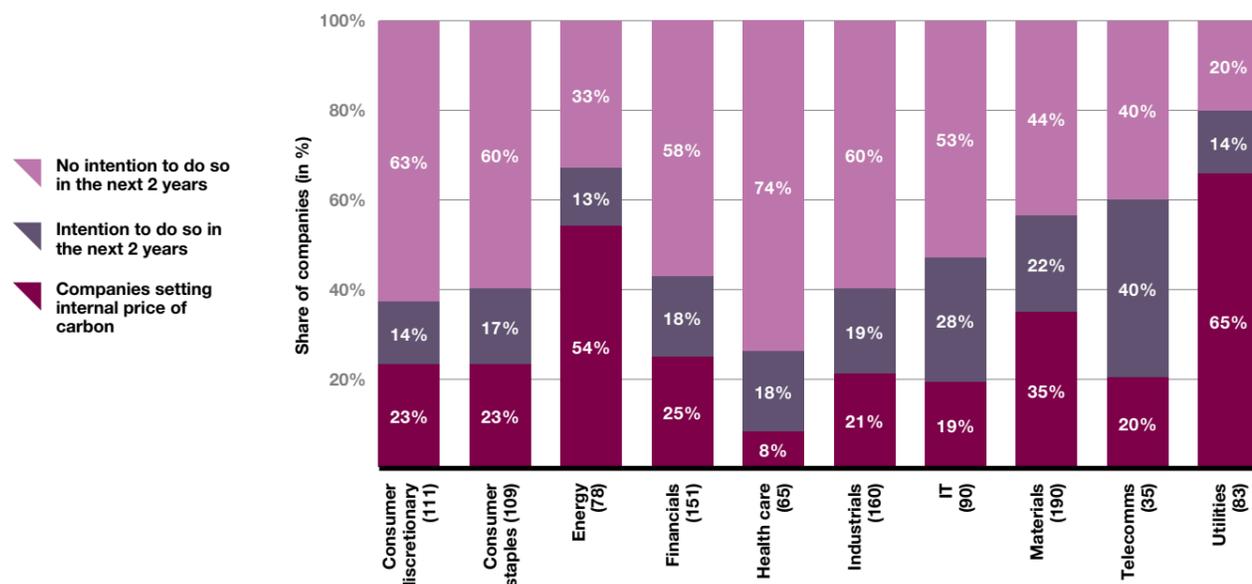
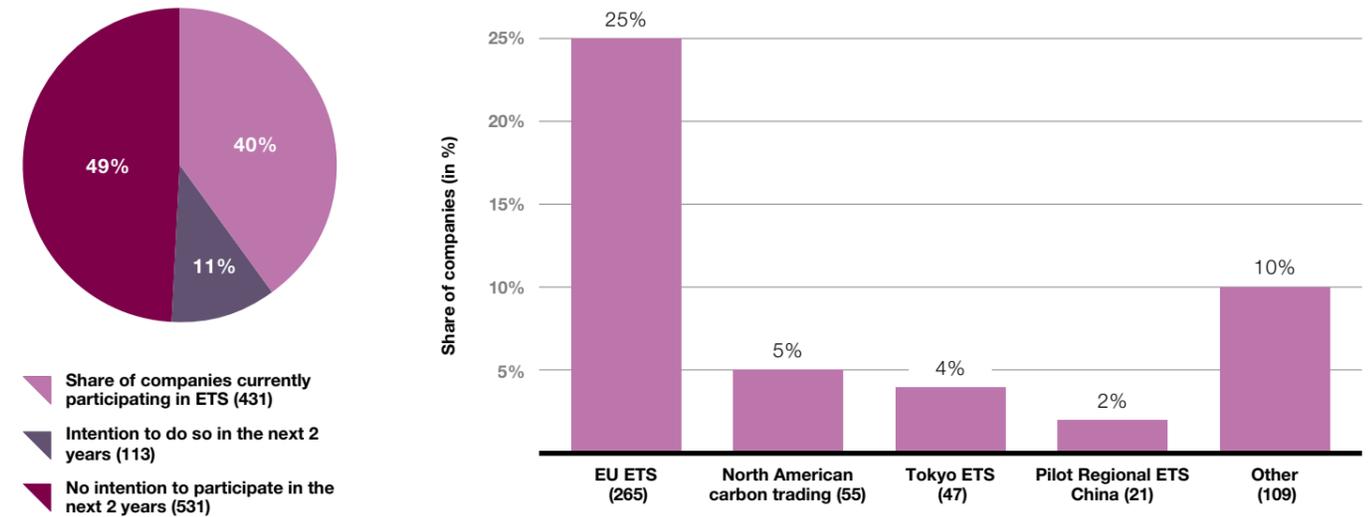


Figure 24: Share of companies participating in emissions trading schemes, overall (left) and regional ETS's (right). The number of companies participating in each scheme is presented in parentheses.



business decisions will have been made with an eye to profitability factoring in this cost.

Internal pricing of carbon has been introduced by 29% of the High Impact sample and a further 19% intend to do so in the upcoming two years. This may not be the strongest indicator of a company's commitment to climate change mitigation because in many cases carbon pricing is a regulatory requirement, while in others it does not have emissions reduction as an objective. However a recent report from CDP* found that a significant number of companies are starting to embed an internal price on carbon into corporate strategy and using it as a tool to meet their climate targets.

French utilities company **Engie** says: "The Group uses internal regional carbon price sensitivities to assess its investments projects... In 2015, the Group decided to no longer pursue new developments in coal, believing that a carbon price will steadily be established in the world's various regions and that coal-fired power plants will be adversely affected in the future."

Internal carbon pricing is particularly prevalent in some sectors: 65% of utilities companies use it, while the energy (54%) and materials sectors (35%) are also significant users.

This is probably due to the obligatory participation in emissions trading schemes, such as the EU ETS or Californian Cap-and-Trade Program, for many companies in these sectors.

In sectors where companies are not obliged to participate in ETSs or pay a carbon tax, a majority (60%) have no plans to introduce carbon pricing.

One exception is Brazilian chemicals company **Braskem**. It does not participate in an ETS as yet, but it does take part in an emissions trading simulation led by the Empresas pelo Clima (Companies for Climate) platform - an initiative from Getúlio Vargas Foundation (FGV). This not only introduces the member companies to the concept of carbon trading, Braskem hopes the experience will allow it "to support the Brazilian government on the definition of the future regulation".

In addition chief executive Fernando Musa says: "Braskem's strategy on development of renewable raw material based products has already demonstrated that it could bring solutions that not only reduce emissions, but also could capture CO₂ from the atmosphere.

"Therefore, we could say that Braskem is a global solution provider for many value chains for climate change mitigation and adaptation. For that reason, we see the ratification of the Paris Agreement in a very positive way."

Although internal carbon pricing is very useful in supporting participation in emissions trading schemes, not all companies that participate in ETSs have implemented internal carbon pricing.

* <https://www.cdp.net/en/reports/downloads/1132>

The number of ETSs and carbon taxing systems is expected to grow to allow market forces to support the need to reduce emissions. Companies that can reduce their emissions relatively cheaply can trade their permits with others that find it harder or more expensive to reduce their emissions.

About 40% of all companies in the sample are obliged to participate in at least one emissions trading scheme, while roughly half do not believe they will be. Given the speed with which carbon trading and taxing systems are increasingly coming online, this number is likely to change. Investors may question how prepared these companies are for this risk in the future.

Emissions reduction initiatives are a popular measure, with 97% of the tracking sample having at least one. Their popularity may in part be explained by the fact that many of them are already profitable under current investment conditions.

This is a win-win for companies; by improving their energy efficiency, they reduce costs. The payback time for two-thirds of projects implemented under "emission reduction initiatives" was less than three years.

While companies have found space for emissions reduction across all areas of business, the fields of process and building service efficiency provide most scope for improvement; each of these are mentioned in 28% of initiatives.

There is still a lot of work to be done in setting renewable energy targets, both on production and consumption. Although the numbers of companies setting these targets is increasing, absolute levels are still low. Just 5% of companies have set targets for generation of renewable energy and 11% for consumption, while even fewer have set targets that extend beyond 2020.

Some companies are starting to build renewables into their energy planning. **Sky**, the UK media company, says: "We've invested £7 million in the development of renewables at our main campuses in England and Scotland, which in 2014/15 accounted for 6% of our energy usage, achieving significant savings in avoided energy costs and worked to futureproof our energy supply at these key sites, reducing our reliance on fossil fuels."

Even utility companies, for whom electricity generation is often a core business, are lagging in this area. Less than a third (28%) have set renewable energy production targets. This is worrying in view of the long investment period these companies need to change their power generation portfolio. Power plants are huge investments and are expected to be productive for decades. Failing to incorporate renewable energy into planned generation portfolios now will make it hard to change later.

Figure 25: Share of companies with renewable electricity generation targets by sector. The total number of companies responded is presented in parentheses for each sector.

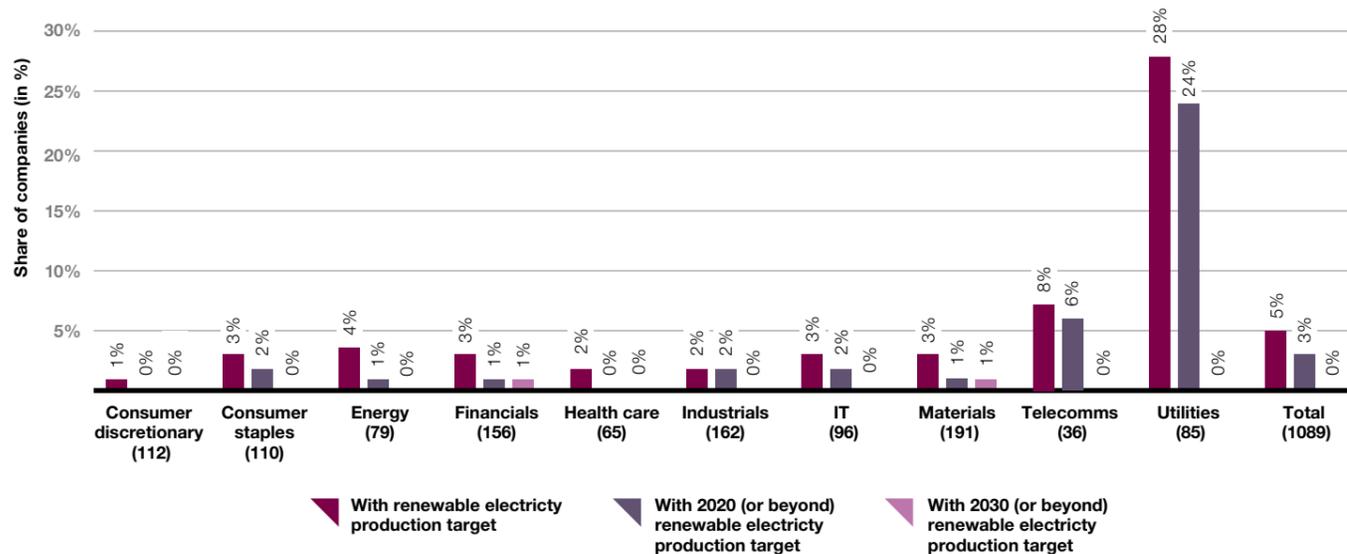


Figure 26: Type of initiatives launched by companies in the sample.

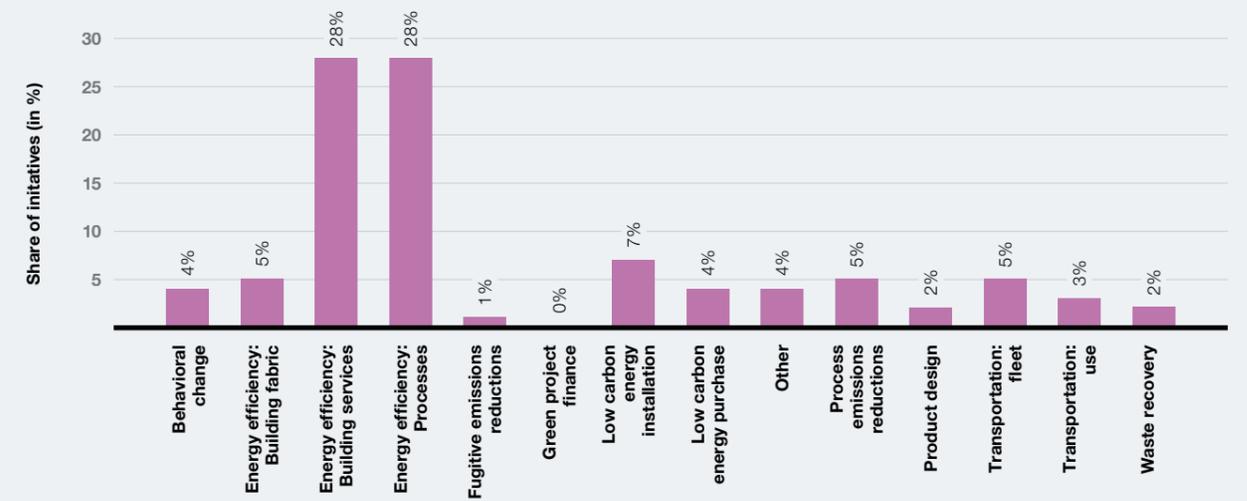


Figure 27: Mean payback period of initiatives. The number of total initiatives in the respective sector is presented in parentheses.

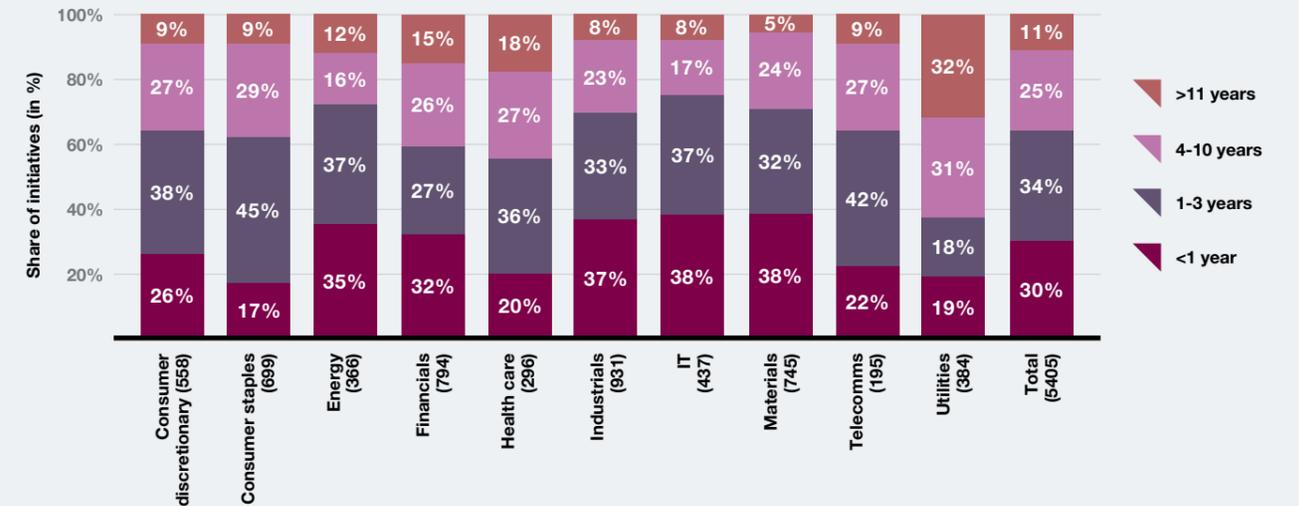
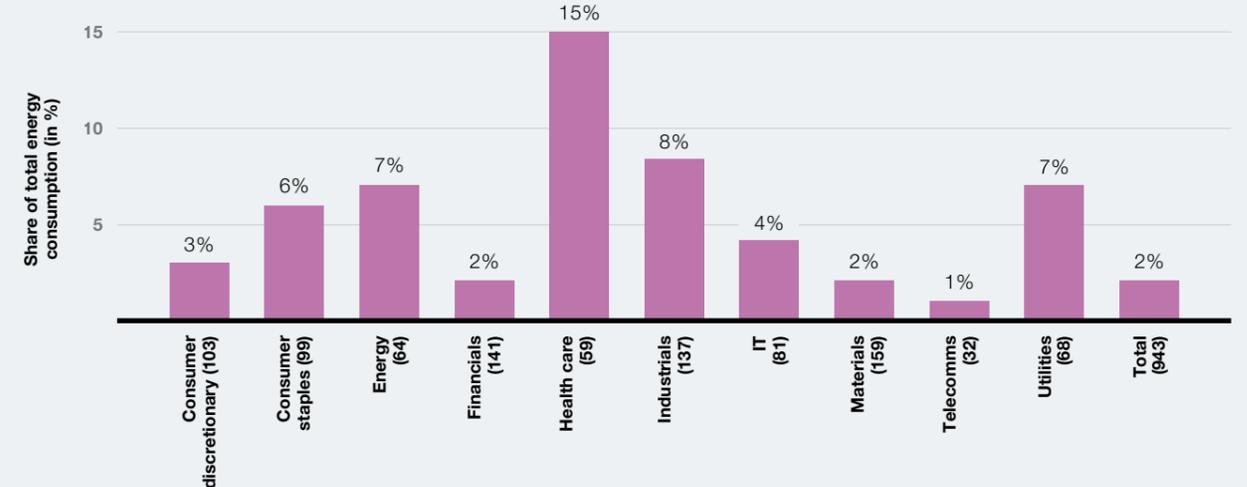


Figure 28: Share of low carbon energy consumption in total energy consumption. The number companies responded is presented in parentheses.



Featured Profile

Profile: China Mobile, Telecommunication Services



China has committed to cut its carbon emissions per unit of GDP by 60-65% from its 2005 baseline level by 2030, and will reach emission peak by 2030, or even earlier. In 2016, China has formally signed the Paris Agreement in Hangzhou G20 Summit.

Having the largest scale of networks and customer, China Mobile has been making great efforts to address climate change. By carrying out the Big Connectivity strategy and developing a green Internet of Everything, China Mobile contributes to a much more low-carbon, convenient and sustainable society.

In 2015, through the energy classification standards, free cooling, alternative energy and so on, China mobile reduce the power consumption of 4G network and data center sharply. Though 1.1 million 4G base stations were built, data traffic increased by 144%, the total energy consumption per unit of data traffic dropped by 17%, equivalent to saving 15 billion kwh of electricity and reducing 13 million tons CO2. To manage challenges of growing of users and network, China Mobile sets targets by 2020 based on its 2015 level: 45% reduction of total energy consumption per unit of data traffic.

China Mobile also works on innovative ICT solutions, assisting other industries such as power, logistics and construction to reduce emission. This contributes emissions savings that are 10 times China Mobile's own emissions which benefits wider society.

China Mobile



This profile is collaborative content supported by China Mobile

Featured Profile

Profile: Novartis, Health Care



Novartis has embedded climate change into its corporate strategy and set a *Vision 2030 for Environmental Sustainability*. In line with targets included in the United Nations Sustainable Development Goals and National Commitments for the Paris Agreement, we have set targets of reducing Scope1+2 GHG emissions by 30% by 2020, and 50% by 2030 (against 2010 baseline).

Governmental schemes can only succeed if private companies actively contribute with their own targets. Further, we have set an internal carbon price of USD100/tCO₂e, based on the World Bank's estimated cost of climate change to society. This will help us identify projects that can cost-effectively reduce our GHG emissions and drive investments into areas of higher energy efficiency and toward more renewable energy.

Urgent action is needed as climate change will result in increased prices for key inputs such as water and energy, and extreme weather events will significantly impact supply chains or damage facilities.

Markus Lehni
Global Head Environment and Energy
Novartis



This profile is collaborative content supported by Novartis

Low carbon, high revenue: Decoupling emissions from revenue

For too long, the assumption has been made that economic growth had to mean growth in carbon emissions, and the only reasonable aspiration was to lower the rate of growth of carbon emissions.

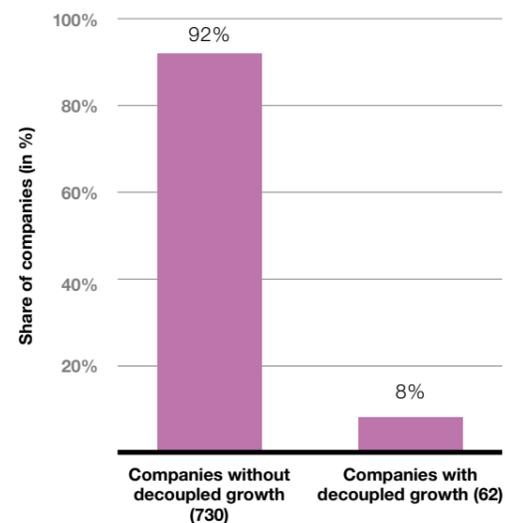
We can now demonstrate this is not universally true, as 62 companies in this report have racked up impressive growth figures while reducing their GHG emissions in absolute terms.

It is important to note that this analysis is limited by both availability and limitations of data: 792 companies had adequate time-series data on revenue and emissions for a 5-year period leading up to the last reporting year for each company and 62 of these had revenue growth greater than 10% and reduced emissions by more than 10% in the period.

Over the period, the revenues of the decoupled businesses grew by 29% and their emissions fell by 26%. This stands in contrast with the larger group of companies that did not make the cut. Their revenue declined by 6% while their GHG emissions grew by 6%. This implies the decoupled companies were more economically efficient, as well as being more energy-efficient.

Almost a quarter (22%) of the successfully decoupled businesses are in the financial services industry, a sector that finds it easier than others to achieve this

Figure 29: Share of companies with decoupled growth over period of five years (time-series sample)



because its business can grow without increasing its direct energy needs. This means economic growth in the sector is separate from its Scope 1 and 2 emissions. However, the list also includes a number of companies from the most energy-intensive, highest emitting sectors, for whom decoupling would require a definite shift in their operations.

This includes nine companies from the utilities sector, three from each of the industrials and energy sectors, and two from the materials sector. The healthcare sector and the consumer sectors also performed well.

A word of caution in relation to the energy sector in this context: the sector's revenue streams are heavily dependent on the fluctuation of energy prices, as well as external political factors, so they do not necessarily reflect successful GHG decoupling within the time period. In addition, there is the question of Scope 3 emissions, which are the most relevant, and not fully accounted within this sector.

Between 2011-2016 **J Sainsbury Plc**, a major UK retailer, reduced its emissions by 22% while increasing revenue by 18%, achieving a 28% drop in emissions intensity. During that period, the company introduced low-carbon energy technology at stores and depots, as well as liquid natural gas and liquid bio-methane in its dual-fuel vehicle fleet. Additional LED sales floor conversions, lighting controls and associated energy efficiency measures are estimated to deliver a total of 125,042 tCO₂e reductions per year over the course of an up to 30 year lifespan (depending on the initiative). Some initiatives are expected to pay for themselves in the short term (less than one year) while others have a longer payback time of up to 15 years.

Wipro, an Indian IT company, saw growth of 15% over the five-year period alongside a 24% drop in emissions, with overall emissions intensity falling by 33%. Among the emission reduction initiatives implemented, the company introduced server virtualization technologies and a number of building services energy conservation measures. It estimates that these measures alone will account for a 24,596 tCO₂e annual reduction over the course of a six to 15 year lifespan, with the initiatives paying for themselves within one year.

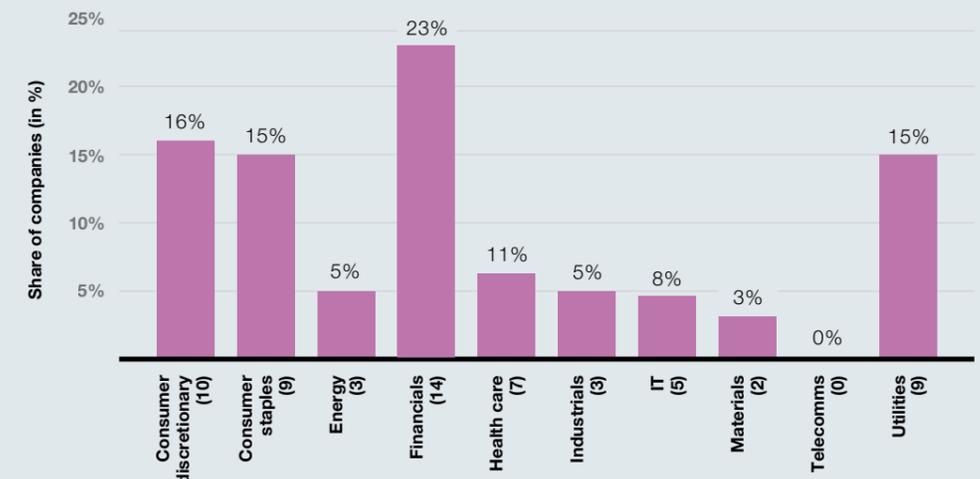
Figure 30: Comparison of the changes in revenues (left) and GHG emissions (right) over the 5-year period between companies that achieved decoupled growth and other companies.

Company group (no. companies)	Total revenue: (trillion current USD)		Total emissions covered for evaluation GtCO ₂ e	
	Year 1 of the 5-year period	Final year of the 5-year period	Year 1 of the 5-year period	Final year of the 5-year period
No decoupled growth (730)	17.7	16.6 (-6%)	4.82	5.08 (+6%)
Achieved decoupled growth (62)	1.31	1.70 (+29%)	0.468	0.345 (-26%)

Further analysis showed that there is no one path to decoupling economic growth from GHG emissions. Each company took its own route. The results of our preliminary analysis underline the existing difference in approaches by companies in reducing emissions while at the same time realizing an increase in corporate revenues. This shows the importance of looking at the opportunity side of the climate challenge and of finding creative solutions to benefit from them.

These companies have clearly demonstrated that carbon emissions and economic growth are not inextricably linked. Other companies must take notice and accept the challenge if they are not to be left behind during the global transition to a low-carbon economy.

Figure 31: Sectoral composition of company sample with decoupled growth.



Featured Profile

Profile: Braskem, Materials

During COP21, Braskem gave particular attention to the debate on a carbon-pricing model capable of encouraging companies to reduce their levels of greenhouse gas emissions. In addition, the Company has already created a platform to support its investment decisions that considers the potential cost of carbon, which may result from future regulatory requirements.

Braskem aims to be among the best large chemical companies in the world in terms of GHG emissions intensity and a major player in carbon sequestration. To achieve these goals, Braskem invests in innovation and technology focused on creating products with smaller carbon footprint, as well as supporting clients and partners when developing chemicals and plastics applications that reduce GHG emissions. For example, the *Braskem Maxio*® portfolio of resins was developed to offer reduced energy consumption and, consequently, environmental gains such as reductions in GHG emissions.

Moreover, Braskem has implemented a strategy to develop new products that capture CO₂ from the atmosphere. A good example is the *Green PE*, the first renewable-based polyethylene in the world produced on an industrial scale, which captures more than 2.5 t CO₂ per ton of product. Braskem has already announced two new products under development: Green Butadiene and Green Isoprene. Our strategy on development of renewable raw material based products has already demonstrated that is an important solution for climate change mitigation.

Jorge Soto
Sustainable Development Director
Braskem



This profile is collaborative content supported by Braskem

Featured Profile

Profile: Metsä Board, Materials

The year 2015 has every chance of becoming historically important in reducing global warming, thanks to the agreement reached in Paris at the end of the year. The forest industry plays a notable role by offering sustainable products and solutions to help with reaching the goals set. COP21 targets are also guiding Metsä Board's operations.

Our strategy for combating climate change concentrates on three areas: increasing the use of bioenergy, improving energy efficiency and lightweighting our paperboards. By investing in bioenergy, as well as energy and material efficiency, Metsä Board's CO₂ emissions have decreased by 42% since 2009 and in 2015 more than 80% of the fuels we used were bio-based. We are continuously looking for new areas of energy efficiency at our manufacturing units. When calculating the return of an investment project we also use an internal carbon price.

The investments in a chemical recovery plant and a low-consistency refining at Metsä Board Kaskinen mill in 2015 are good examples of our efforts. These investments together with earlier ones have allowed the mill to reduce its electric energy consumption by 28% compared to 2009. Kaskinen mill produces high-yield pulp that plays an important role in the lightweighting of our paperboards.

Metsä Board's lightweight and safe paperboards benefit the whole packaging value chain.

Mika Joukio
Chief Executive Officer
Metsä Board



This profile is collaborative content supported by Metsä Board

We Mean Business: Commit to Action

Companies are taking direct and ambitious action on climate change. More than 465 companies have made commitments to climate action via the We Mean Business commitments platform "Commit to Action," representing a **tenfold increase** in two years.

Progress in 2016 has remained strong, suggesting a positive response to the Paris Agreement and its universal commitment to a low-carbon economy.

Companies have **been adopting more aggressive targets**—around emissions reductions, renewable energy, deforestation, water, and energy productivity—**and improving operational or governance measures for climate risk** through use a price on carbon, more responsible policy engagement mechanisms, and greater transparency on climate governance in mainstream reports.

Corporate action has grown across all of these issues. The strongest growth has been in companies committing to **science-based emissions reduction targets**, from 50 companies in late 2015 to nearly 190 today.

Companies in 42 countries have taken action.

At the beginning of 2015 just 3 **US companies** had made commitments via this platform. By Paris, this number had grown to more than 50 companies. The fastest growing issue with US companies has been science-based targets, with 33 companies making that commitment. Climate action remains popular with **European companies**, with 237 taking action, predominantly in mainstream reporting on climate and science-based target setting.

Translating Paris into business strategy

Thirteen companies headquartered in **Brazil** have taken action, including materials company Braskem (price on carbon) and the consumer brand Natura (science-based targets, deforestation, policy engagement, and mainstream reporting on climate). In **India**, 17 companies, including Tata & Sons and Mahindra, have made bold commitments to renewable energy and energy productivity. Important first movers in **China**, like industrials company Broad Group, have made a range of commitments, importantly including setting science-based targets.

Sector trends show that companies in every industry are acting. Strongest growth in 2016 has been in the **industrials sector**. Together, this sector accounts for over 20% of corporate action via the We Mean Business platform, as well as more than 100 million metric tonnes CO₂e. **Consumer**

discretionary and consumer staples companies also represent 20% of committed companies, led by major brands like Walmart, The Coca-Cola Company and Honda Motor Company. **IT sector** participation has accelerated post-Paris, with companies including Apple and Facebook making 100% renewable power commitments.

By acting early and decisively, these companies are better able to manage their climate risk, gain competitive edge over their peers, and reap the reputational benefits that early leadership provides.

To find out more please visit www.cdp.net/commit.



Setting science based targets is the right thing to do, but also makes perfect business sense. Setting a science-based target directly answered the needs of our customers, all of whom are thinking about their own carbon footprints. It is also critical for investors who need to know that we are thinking of potential risks, in the short-, medium- and long-term.

Laurel Peacock
Senior Sustainability Manager
NRG Energy



465+
Companies



+\$10
Trillion USD



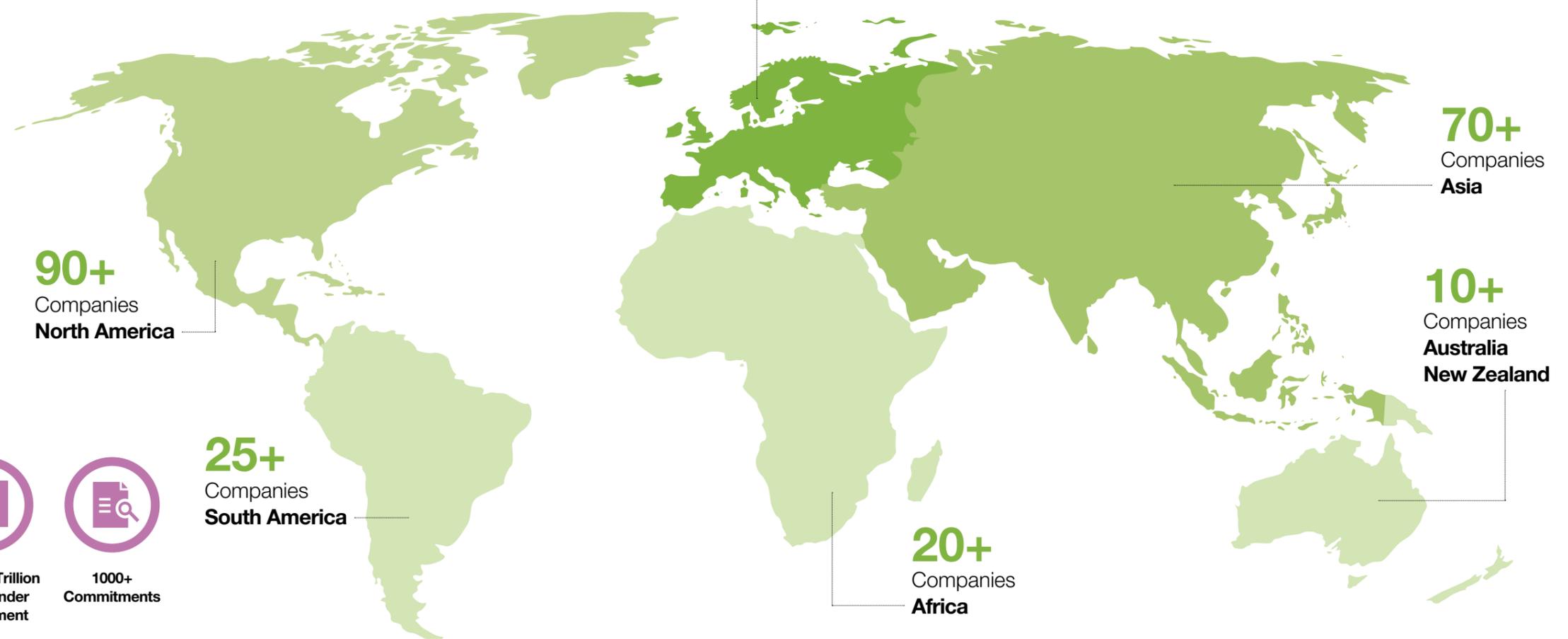
183
Investors



>US\$20.7 Trillion
Assets Under
Management



1000+
Commitments



WE MEAN BUSINESS
economic opportunity through bold climate action



The Climate A List 2016

Company	Country
Consumer Discretionary	
ARÇELİK A.Ş.	Turkey
BMW AG	Germany
Caesars Entertainment	USA
Daimler AG	Germany
Electrolux	Sweden
Fiat Chrysler Automobiles NV	Italy
Gap Inc.	USA
General Motors Company	USA
Groupe PSA	France
Hyundai Motor Co	South Korea
Inditex	Spain
Johnson Controls	USA
Las Vegas Sands Corporation	USA
LG Electronics	South Korea
Michelin	France
Nissan Motor Co., Ltd.	Japan
RELX Group	United Kingdom
Renault	France
Sky plc	United Kingdom
Sony Corporation	Japan
Sumitomo Forestry Co., Ltd.	Japan
Toyota Motor Corporation	Japan
TUI Group	United Kingdom
Yokohama Rubber Company, Limited	Japan

Company	Country
Consumer Staples	
Asahi Group Holdings, Ltd.	Japan
Coca-Cola European Partners*	United Kingdom
Coca-Cola HBC AG	Switzerland
Colgate Palmolive Company	USA
Diageo Plc	United Kingdom
General Mills	USA
J Sainsbury plc	United Kingdom
Japan Tobacco Inc.	Japan
Kirin Holdings Co Ltd	Japan
L'Oréal	France
Nestlé	Switzerland

Company	Country
Philip Morris International	USA
Pick 'n Pay Stores Ltd	South Africa
RCL Foods Ltd	South Africa
Reynolds American Inc.	USA
SCA	Sweden
Tesco	United Kingdom
Unilever plc	United Kingdom

Company	Country
Energy	
Compañía Española de Petróleos, S.A.U. CEPSA	Spain
Eni SpALimited	Italy
Galp Energia SGPS SA	Portugal
Neste Corporation	Finland
Vermilion Energy Inc.	Canada

Company	Country
Financials	
Bank Coop AG	Switzerland
Basler Kantonalbank	Switzerland
BEKB / BCBE	Switzerland
BNY Mellon	USA
British Land Company	United Kingdom
Caixa Geral de Depósitos	Portugal
CaixaBank	Spain
Daito Trust Construction Co., Ltd.	Japan
Dexus Property Group	Australia
Goldman Sachs Group Inc.	USA
Great-West Lifeco Inc.	Canada
Host Hotels & Resorts, Inc.	USA
HSBC Holdings plc	United Kingdom
ICADE	France
ING Group	Netherlands
Intesa Sanpaolo S.p.A	Italy
Klepierre	France
Lloyds Banking Group	United Kingdom
Macerich Co.	USA
MAPFRE	Spain
National Australia Bank	Australia
Nedbank Limited	South Africa

Company	Country
Raiffeisen Bank International AG	Austria
Remgro	South Africa
Shinhan Financial Group	South Korea
Sompo Japan Nipponkoa Holdings, Inc	Japan
Stockland	Australia
T.GARANTİ BANKASI A.Ş.	Turkey
The Dai-ichi Life Insurance Company, Limited	Japan
UBS	Switzerland
Westpac Banking Corporation	Australia

Company	Country
Health Care	
AstraZeneca	United Kingdom
Bayer AG	Germany
GlaxoSmithKline	United Kingdom
Lundbeck A/S	Denmark
Mediclinic International	South Africa
Novo Nordisk A/S	Denmark
Roche Holding AG	Switzerland

Company	Country
Industrials	
Abengoa	Spain
Abertis Infraestructuras	Spain
Bic	France
Bouygues	France
Canadian National Railway Company	Canada
CNH Industrial NV	United Kingdom
Ecorodovias Infraestruturas e Logística S.A	Brazil
FERROVIAL	Spain
Grupo Logista	Spain
Huber + Suhner AG	Switzerland
Hyundai E&C	South Korea
INDUS Holding AG	Germany
Kajima Corporation	Japan
Kawasaki Kisen Kaisha, Ltd.	Japan
Kingspan Group PLC	Ireland
Komatsu Ltd.	Japan
Kone Oyj	Finland
Lockheed Martin Corporation	USA

Company	Country
Mitsubishi Electric Corporation	Japan
Nabtesco Corporation	Japan
Obrascon Huarte Lain (OHL)	Spain
Owens Corning	USA
Qantas Airways	Australia
Republic Services, Inc.	USA
Royal BAM Group nv	Netherlands
Royal Philips	Netherlands
Salini Impregilo S.p.A.	Italy
Samsung C&T	South Korea
Samsung Engineering	South Korea
Schneider Electric	France
Secom Co., Ltd.	Japan
SGS SA	Switzerland
Siemens AG	Germany
Skanska AB	Sweden
Stanley Black & Decker, Inc.	USA
Taisei Corporation	Japan
Toda Corporation	Japan
Toshiba Corporation	Japan
Union Pacific Corporation	USA
Valmet	Finland
Waste Management, Inc.	USA

Company	Country
Information Technology	
Accenture	Ireland
Advanced Semiconductor Engineering	Taiwan
Alphabet, Inc.	USA
Amadeus IT Holding	Spain
Apple Inc.	USA
Atos SE	France
Autodesk, Inc.	USA
Canon Inc.	Japan
Cisco Systems, Inc.	USA
EMC Corporation	USA
EVERY ASA	Norway
Hewlett-Packard	USA
Konica Minolta, Inc.	Japan

* Data provided in response relates to Coca-Cola Enterprises, prior to merger to become Coca-Cola European Partners.

Investing in CDP's Global Climate A List: strong performance by climate change leaders

Company	Country
LG Display	South Korea
LG Innotek	South Korea
Microsoft Corporation	USA
Oracle Corporation	USA
Samsung Electronics	South Korea
Tech Mahindra	India
Wipro	India

Materials

AkzoNobel	Netherlands
Anglo American Platinum	South Africa
BillerudKorsnäs	Sweden
Braskem S/A	Brazil
Gold Fields Limited	South Africa
Harmony Gold Mining Co Ltd	South Africa
HeidelbergCement AG	Germany
International Flavors & Fragrances Inc.	USA
Koninklijke DSM	Netherlands
Kumba Iron Ore	South Africa
LANXESS AG	Germany
LG Chem Ltd	South Korea
Metsä Board	Finland
Mondi PLC	United Kingdom
Novozymes A/S	Denmark
Praxair, Inc.	USA
Sealed Air Corp.	USA
Sibanye Gold Ltd	South Africa
Stora Enso Oyj	Finland
Symrise AG	Germany
The Mosaic Company	USA

Company	Country
ThyssenKrupp AG	Germany
UPM-Kymmene Corporation	Finland

Telecommunication Services

China Mobile	China
Deutsche Telekom AG	Germany
Koninklijke KPN NV (Royal KPN)	Netherlands
KT Corporation	South Korea
LG Uplus	South Korea
Proximus	Belgium
Swisscom	Switzerland
Telefonica	Spain
Telstra Corporation	Australia

Utilities

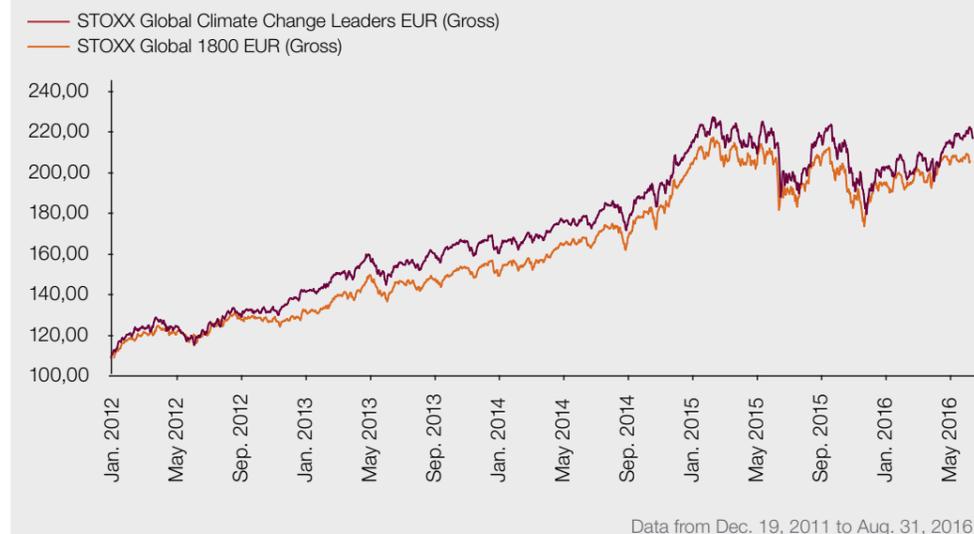
ACCIONA S.A.	Spain
Centrica	United Kingdom
EDF	France
EDP - Energias de Portugal S.A.	Portugal
ENAGAS	Spain
ENEL SpA	Italy
ENGIE	France
Gas Natural SDG SA	Spain
Iberdrola SA	Spain
Iren SpA	Italy
Korea District Heating Corp.	South Korea
Korea Electric Power Corp	South Korea
National Grid PLC	United Kingdom
PG&E Corporation	USA
R.E.E.	Spain
Snam S.P.A	Italy
Suez Environnement	France
VEOLIA	France
VERBUND AG	Austria

6%

higher returns
over past 4 years

STOXX® Low Carbon Indices provide easy new way to climate-friendly and attractive returns

Performance STOXX Global Climate Change Leaders vs. STOXX Global 1800



Our Climate A List
comprises a strong set of
companies who lead on
climate change mitigation
today and in the future.
It is exciting to see the
rising investor interest
in the STOXX® Global
Climate Change Leaders
Index.

This year CDP collaborated with STOXX® and South Pole Group on the development of a new series of low-carbon indices, one of which now makes investing in CDP's A List companies very easy: The STOXX® Global Climate Change Leaders Index.

STOXX® Climate Change Leaders Index is the first ever that tracks the CDP "A List" available to market participants offering a fully transparent and tailored solution to address long-term climate risks, while participating in the sustainable growth of a low-carbon economy.

The index has performed strongly against a global benchmark, outperforming by 6% over 4 years.

Being based on the CDP "A List" database, this unique index concept includes carbon leaders who are publicly committed to reducing their carbon footprint.¹

Key benefits for investors:

- Constituents are forward-looking leaders with superior climate change mitigation strategies and commitments to reducing carbon emissions
- In addition to Scope 1 & Scope 2, also incorporates Scope 3 data
- Significantly (80%) lower carbon footprint¹ while still containing high emitters
- Similar risk-return profiles compared to the benchmark
- Use reported carbon intensity data only

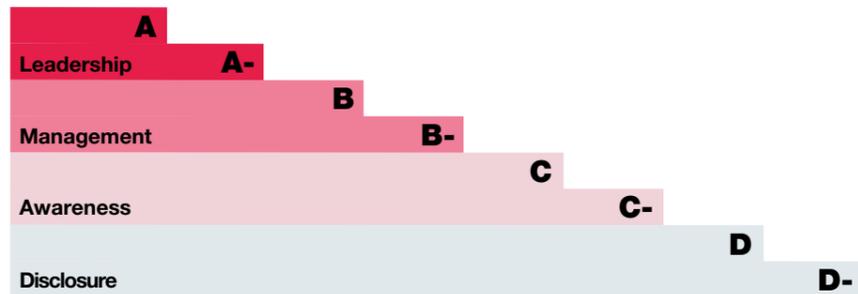
CDP is looking forward to contributing to innovative solutions that can add real value for investors in the future.

¹ The index is price weighted with a weight factor based on the free-float market cap multiplied by the corresponding Z-score carbon intensity factor of each constituent. Components with lower carbon intensities are overweighted, while those with higher carbon emission are underweighted.

Communicating progress

Central to CDP's mission is communicating the progress companies have made in addressing environmental issues, and highlighting where risks may be unmanaged. In order to do so in a more intuitive way, CDP has adopted a streamlined approach to presenting scores in 2016. This new way to present scores measures a company's progress towards leadership using a 4 step approach: **Disclosure** which measures the completeness of the company's response; **Awareness**

considers the extent to which the company has assessed environmental issues, risks and impacts in relation to its business; **Management** which is a measure of the extent to which the company has implemented actions, policies and strategies to address environmental issues; and **Leadership** which looks for particular steps a company has taken that represent best practice in the field of environmental management.



Leadership	75-100%	A
	0-74%	A-
Management	40-74%	B
	0-39%	B-
Awareness	40-74%	C
	0-39%	C-
Disclosure	40-74%	D
	0-39%	D-

F: Failure to provide sufficient information to CDP to be evaluated for this purpose¹

¹ Not all companies requested to respond to CDP do so. Companies who are requested to disclose their data and fail to do so, or fail to provide sufficient information to CDP to be evaluated will receive an F. An F does not indicate a failure in environmental stewardship.

The scoring methodology clearly outlines how many points are allocated for each question and at the end of scoring, the number of points a company has been awarded per level is divided by the maximum number that could have been awarded. The fraction is then converted to a percentage by multiplying by 100 and rounded to the nearest whole number. A minimum score of 75%, and/or the presence of a minimum number of indicators on one level will be required in order to be assessed on the next level. If the minimum score threshold is not achieved, the company will not be scored on the next level.

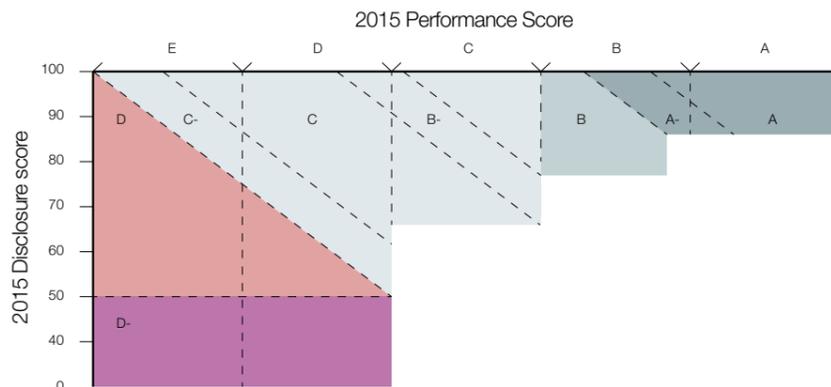
The final letter grade is awarded based on the score obtained in the highest achieved level. For example, Company XYZ achieved 88% in Disclosure level, 76% in Awareness and 65% in Management will receive a B. If a company obtains less than 40% in its highest achieved level, its letter score will have a minus. For

example, Company 123 achieved 76% in Disclosure level and 38% in Awareness level resulting in a C-. However, a company must achieve over 75% in Leadership to be eligible for an A and thus be part of the A List, which represents the highest scoring companies. In order to be part of the A-list a company must score 75% in Leadership, not report any significant exclusions in emissions and have at least 70% of its scope 1 and scope 2 emissions verified by a third party verifier using one of the accepted verification standards as outlined in the scoring methodology.

Public scores are available in CDP reports, through Bloomberg terminals, Google Finance and Deutsche Boerse's website. CDP operates a strict conflict of interest policy with regards to scoring and this can be viewed at <https://www.cdp.net/Documents/Guidance/2016/CDP-2016-Conflict-of-Interest-Policy.pdf>

Comparing scores from previous years.

It is important to note that the 2016 scoring approach is fundamentally different from 2015, and different information is requested, so 2015 and 2016 scores are not directly comparable. However we have developed a visual representation which provides some indication on how 2015 scores might translate into 2016 scores. To use this table a company can place its score in the table and see in which range it falls into in the current scoring levels. For more detailed instructions please refer to our webinar: <https://vimeo.com/162087170>.



Evolution of disclosure and scoring

Pedro Faria, CDP Technical Director

We welcome this initiative as the move to sector-based disclosure and reporting will enable investors to more easily compare environmental performance.

Bruce Duguid,
Director, EOS,
Hermes Investment Management

Reimagining Disclosure – sector strategy and TCFD recommendations

Our 2017-2020 strategy is to build on the momentum of the Paris Agreement to fulfil our mission to incorporate environmental stewardship into the economic system. We have been the catalyst for global disclosure over the past 15 years. We want to continue to drive the future of meaningful disclosure to help companies and investors better understand environmental risk and accelerate the transition to a more sustainable economy.

To deliver this, we have launched our Reimagining Disclosure initiative to work in consultation with you and our other key stakeholders. Our aims are to produce a step change in benefits for disclosers and users of disclosure information.

We are pleased to announce that the first deliveries from this initiative will be implemented by Q4 2017. We are evolving our climate, water and forests questionnaires to be more sector specific, and implement the Task Force on Climate-related Financial Disclosures (TCFD) recommendations. Our sector work will focus initially on the High Impact sectors in Energy, Transport, Materials and Agriculture.

We look forward to partnering with you on our Reimagining Disclosure initiative to increase the efficiency and relevance of our disclosure process. This way, we will continue to ensure we are the go-to disclosure platform for data and analysis to manage environmental risk, and to drive financial decision-making.

For a Government Agency such as ADEME, the ACT project presents the prospect of new ambitious climate programs that will distinguish companies that are genuinely on the path toward a low carbon economy as required by the Paris agreement.

Marie-Christine Premartin,
Executive Director of Programs of
the project partner Ademe

Assessing low-Carbon Transition project (ACT)

How do we measure the impact of the actions and commitments of companies as they move towards a low-carbon economy?

The Assessing low-Carbon Transition (ACT) project aims to answer this question by presenting a holistic assessment methodology which is future-oriented, comprehensive and aligned with reality of a low carbon world. This assessment looks at the range of commitments made by a company and how consistent they are with the company's previous trajectory, its current position and investments, and derives an appreciation of the future alignment of the company within the low-carbon transition. The project aims to map what a company is doing now and in the medium term to assess how it is prepared for the future.

This approach was tested in three key economic sectors with very different emission profiles: Electric utilities, Auto manufacturers and Retailers. The ACT project team has developed indicators taking into account the latest developments on climate science, and its application to corporate world through initiatives like Science-Based Targets. Some of the lessons learned from this advanced and sector-specific approach will also influence the future development of the CDP scoring methodology from 2018 onwards.

The methodologies were road tested with a group of pilot companies that represent some of the largest corporations in these sectors. The participants submitted information on targets, management practices, transition planning, scenario testing, portfolio emissions, R&D, supplier/customer engagement and their business model, which was supplemented with external data sources and public information to glean a complete picture of a company's situation.

In taking such a holistic viewpoint and testing it with company data across these different sectors, the ACT project has demonstrated that it is feasible to combine company information about company strategy and commitments with science-based benchmarks to create an advanced company rating. This, in turn, helps Government agencies plan for and implement the right policies, companies adopt the right business strategies and investors assess risk and opportunity in the long term.

The ACT Assessment gave very interesting and useful feedback on our carbon strategy. In particular, the quantitative assessment of emission reduction targets is a valuable input in our ongoing process of defining a new low-carbon strategy and management process.

Renault

Featured Profile

Profile: Carrefour, Consumer Staples

Within the framework of the COP21 agreement, the Carrefour group set a voluntary target of reducing CO₂ emissions by 40% by 2025 compared to 2010 levels. Carrefour has since joined the carbon pricing program of the UN's "Caring for Climate" initiative thus providing a further means by which to meet our targets. An internal carbon price enables Carrefour to include the impact of greenhouse gas emissions as part of our investment decision processes. We are the first European mass-merchandising retailer to do so.

Setting an internal carbon price is a means of accelerating change. Doing so will result in our giving preference to technologies which emit lower quantities of CO₂ and which require less energy in our stores. We are continuously testing new technologies such as bio methane, solar and wind power, and we are also creating partnerships with alternative energy providers.

The carbon price has been calculated on a country-by-country basis, factoring in each country's specific characteristics in terms of the energy mix and the level of technological development. Setting an internal carbon price ensures that our approach forms part of Carrefour's investment decision process in the long term.

Improving our non-financial performance also means acting in a responsible, profitable and sustainable way in coordination with the company's partners to help our customers. Quite simply, it means doing our job well.

Jérôme Bédier,
Deputy Chief Executive Officer, General Secretary
Carrefour Group



This profile is collaborative content supported by Carrefour "Smartflower" made up of photovoltaic panels. This trial system generates the production of electricity needed to run the service station at Carrefour's hypermarket in Villiers en Bière, France

CEO perspective

Richard Lancaster, Chief Executive Officer, CLP



CLP has been in business for more than a century, having established its roots in Hong Kong in 1901.

“We’re in an industry that needs very long term planning, so risk management is crucial,” says Richard Lancaster, chief executive officer of CLP. For this reason, he says, climate change mitigation appeared on CLP’s radar relatively early.

“Our risk assessment can take a very wide-ranging view,” he says. “We identified [around the turn of the century] that carbon risk was the biggest risk to our company and our industry.”

In 2002, after much internal debate, CLP made a commitment to transparency on its environmental performance and cutting its carbon emissions; in 2003, the company completed its first response to CDP’s investor-backed request for climate-related data and has disclosed to CDP every year since then. In 2007, CLP published Climate Vision 2050, a document based on the most up-to-date science from the Intergovernmental Panel on Climate Change (IPCC). This document included targets on renewable energy generation and energy carbon intensity, specifically the promise to lower its carbon intensity by 75% from 2007 levels by 2050.

The IPCC guidance is not the only input that can change: “Your view of the practical means to meet those targets changes,” says Mr Lancaster. For example, in 2005, CLP’s strategic vision assumed that carbon capture and storage technology would be available and cost-effective by 2025.

Ten years later, this seems less likely. On the other hand, no one foresaw the impressive fall in the cost of renewable energy technology, particularly solar power.

“The principle is fixed,” says Mr Lancaster. “We move in line with the consensus of scientific opinion. But your view of your practical means to meet those targets changes.”

The form of those targets is complex. Although absolute carbon emissions would seem to be the most reasonable target to the layperson, it could be unrealistic for an energy company to take that as its only goal.

In 2016 CLP disclosed to CDP that the ratio of carbon emissions to revenue was virtually unchanged, largely thanks to currency movements. Mr Lancaster says revenue carbon intensity may not be such a useful metric for CLP and other power generators with a mix of retail and wholesale business, because it captures too many different moving parts.

For example, revenue in its Australian business, largely as a retail distributor, includes costs of infrastructure and any sales taxes the government may impose, including carbon tax. These distortions on top of the currency movements mean revenue carbon intensity can be disconnected from emissions reduction.

Instead the targets CLP sets itself are the carbon intensity of the electricity it generates, the percentage of renewable energy in its production and the percentage of non-carbon energy, which includes nuclear power.

Because these are long term targets in an industry with long term planning requirements, Mr Lancaster says they cannot be updated every time some new data are published. This does not mean it will be allowed to fall completely out of step with the most recent advice, more that it changes only as part of significant reviews by the company.

Although the ultimate targets are for 2050, there are interim targets for 2025 and 2035 so CLP and shareholders can check its progress.

Shareholders are an important part of the discussion that has underpinned CLP’s strategic decisions. “For the management of a company to put out a target like this, we had to bring our board and shareholders along. It took a lot of preparatory work.”

For Mr Lancaster, this is a vital part of the process of moving a company to a low carbon world: “Board and management need to be aligned. You can have a strategic shift that’s not at board level, but there’s a risk it won’t be sustainable.”

An external piece of the puzzle has fallen into place recently with China’s ratification of the Paris agreement. For CLP, the benefit of this is that it removes a great deal of risk from the table.

“It’s a significant development in reducing the uncertainty and increasing predictability in government policy,” says Mr Lancaster. “The energy sector is so intertwined with government policy and politics, all these things put constraints on what the industry can do [for climate change mitigation].”

“Paris means there is a clear direction.”

Although the increased clarity on the regulatory environment is a benefit, it does mean the competition is likely to intensify, as other players become aware of the issues and start to work within the constraints CLP has already imposed on itself.

Mr Lancaster believes CLP needs to move at the pace the entire sector should be moving at, according to the most up-to-date science, to achieve the goal of well below 2°C. This means setting targets independently of what competitors are actually doing. This minimises the risk of stranded assets, assets that are no longer useable because of regulation or the direct impact of climate change.

While the focus for many climate change strategies has been on what companies can do to reduce emissions or on managing regulatory change, power generators are also vulnerable to the direct impact of climate change.

Increasingly extreme and unpredictable weather conditions are among the most obvious effects, alongside rising sea-levels. This introduces a need for “more resilient systems, more robust transmission equipment”, as plant has to withstand stronger storms.

Another reason CLP has to look hard at plans for its power stations is that many of them are still coal-fired. Although many campaigners (in particular those advocating divestment from the fossil fuel industry) would take a hard line on this, the reality for the chief executive officer taking the big decisions is less simple.

“It’s about managing the shut-down,” says Mr Lancaster. “It’s not just the carbon emissions that disappear, there are thousands of jobs too, at the plant and in the mines.” There is also the question of what will replace the power generated by the coal-fired plants. “You can’t just shut it down and say ‘what’s next?’”

For someone like Mr Lancaster, who has worked in the power industry all his life - “It runs in my veins” - this is just a rebalancing of a permanent trilemma. Power generators must balance energy security, cost and environmental impact.

The first and last have grown hugely important since Mr Lancaster’s early days at the Electricity Commission of New South Wales in Australia. Energy security is becoming steadily more critical as the dependence on technology in daily life grows.

Fortunately for the management team, investors are growing increasingly sophisticated about and appreciative of climate change mitigation. “I typically meet our big institutional investors twice a year, and at each round they are asking more questions.”

For Richard Lancaster, answering these questions and working on climate change mitigation is a personal commitment. “To have the means to have an impact and not to do it, I don’t know how I could justify that to my children.”



Investor CEO perspectives



Odd Arild,
Chief Executive, Storebrand

The investment landscape is changing rapidly: the Paris Agreement set out a clear direction of travel on climate change for global policy makers, while developments such as France's Article 173 and the forthcoming Task Force on Climate-related Disclosure are driving greater disclosure and accountability from investors. In the light of this, we ask CEOs from three leading financial institutions how their organisations are responding and where they see the key challenges over the next few years.

1. As an investor what are your top priorities in helping to realise the goals of the Paris agreement? And how do you plan to align with policy-makers' 2°C targets?

Odd Arild: We have the ambition to be a leading star when it comes to sustainable investments. In Storebrand, sustainability is not a niche, it is included in our main products and services. Which means that we literally have 570 billion NOK in carbon reduction programs. We are presently setting an overall group climate target which will assist us in reaching a 2°C world, and a 2°C regulatory ambition.

We have three priorities. The first is about measuring, reporting and lowering our carbon footprint through CDP, Portfolio Decarbonization Coalition (PDC), and Montreal Pledge. The second priority is to work with sustainability and carbon optimization in our main pension portfolios. We're also active in financial innovation – creating one of the world's first fossil free, sustainability optimized index near funds. Our third priority is to be able to report externally in our group communication to the market on our progress towards a 2°C world.

Philippe Desfosses: Since its inception, as part of fulfilling its fiduciary duty towards the Scheme's contributors and beneficiaries, ERAFP has been working to determine the impact of its investments on the economy, society and the environment. In coming years it will rely not only on the development of appropriate tools to manage climate challenges but also on the experience it has already accumulated, particularly in the area of de-carbonization, such as for the low-carbon equity mandate awarded to Amundi or the virtual platform, built with AM League and Cedrus AM, that managers can use to demonstrate their capacity to reduce the carbon intensity of a portfolio of international equities.

In keeping with its socially responsible investment approach, ERAFP will continue to make a major contribution, in collaboration with the various other stakeholders, to speeding up the financing of the energy transition and to exceeding the objectives laid down by the Paris treaty.

Peter Harrison: The physical impacts and social and political responses to climate change will be defining investment themes of the coming years and decades. We are focusing on building our understanding of the implications for economies, industries and companies; developing tools to support better investment decisions, and engaging companies to promote more transparent and forward-thinking responses.

2. As an investor what are your main drivers for incorporating climate change risks and opportunities in investment decision making? And what are the main barriers?

OA: The main drivers are the risks and opportunities facing the companies we invest in. We believe that a tilt in investments from sustainability laggards to leaders will create greater returns in our portfolios. We also have a mission to influence and support our entire sector to professionalize climate risk, through our different products, services and external engagements like the PDC. The main barrier is data access in two areas; lower quality and availability of data and lack of regulations requiring transparency and reporting on climate risk.

PD: In exchange for the contributions that it receives from its beneficiaries, the Scheme undertakes to pay them pension benefits. This is a promise that the youngest among us will benefit from following a very long period of time. It is through nothing other than observance



of our fiduciary duty that we have undertaken energy and climate-related initiatives, with a view to aligning our investment portfolios with international global warming containment objectives.

A strong barrier lies in research which still needs to be encouraged in order to develop robust indicators. It would provide at issuer level, a comprehensive picture of companies' environmental impacts and especially direct and indirect emissions. Most available methodologies only cover part of scope 3 emissions. Thus, in some sectors such as the automotive industry or the financial sector, global emissions tend to be underestimated.

PH: Hitting the commitments our global leaders made in Paris will mean changes on a far bigger scale than financial markets seem to be preparing for, spreading beyond the most obvious sectors or niche asset classes. We need new thinking to understand how large and far reaching the impacts will be. We need to accept that perfect clarity on policies looks unlikely and focus on what we can do: better thinking, better models, better data and a clearer view of how we adapt the portfolios we manage.

3. As an investor how do you balance the needs of the present against the longer term needs of delivering investment/business strategies that avoid dangerous levels of climate change and the associated impacts of these?

OA: As a pension company, we invest for customers who will stay with us for up to 50 years. Our mission is to create the best possible retirement for our customers, both in terms of financial return, but also to support the health of the society where our customers will retire.

PD: As the French public service additional pension scheme manager, ERAFP has a very long-term responsibility towards its contributors and beneficiaries. Driven by its fiduciary duty, ERAFP prioritizes long term investments and seeks to raise the awareness about the importance of changing economic structures with a view to de-carbonization.

PH: At Schroders we have a long tradition of long term, fundamental analysis. That experience convinces us that taking account of structural trends such as climate change does not have to mean compromising shorter term performance. In fact, we are not going to be able to help our

clients meet their goals, which are typically far longer than investment cycles, unless we establish long term views of critical structural trends such as climate change.

4. Environmental disclosure is a fast evolving field, how is better data, disclosure and research affecting investor decision-making?

OA: Better data is definitely improving our possibilities to make informed investments optimising return and climate risk. We supported a government bid in Sweden to standardise disclosure of carbon foot printing of mutual funds. We also support data development and availability in other areas, such as water or political instability where we in fact have developed our own system to predict a coup d'état in different countries.

PD: In 2015, with the help of a specialized organization, ERAFP have extended its perimeter and reported on the carbon footprint of 87% of its total assets. Beyond its carbon footprint, ERAFP made also a comparison of the energy mix attributable to ERAFP's equity portfolio with an energy generation breakdown for the International Energy Agency's '2°C' scenarios between 2030 and 2050. The fast evolving environmental disclosure tools allow ERAFP to expand and deepen its analyses in order to develop the most efficient de-carbonization strategies.

PH: Good investment decisions rely on analysis and analysis needs data. While climate science is awash with data, most of it is of little use in helping us choose one investment over another. Rigorous, relevant and consistent data at company and asset levels – like that CDP promotes and collates – is critical to our ability to get past quantifying the scale of the problem and into deciding how to navigate it.

5. What would you like to see from companies with regards to improved transparency on climate change relevant issues?

OA: We would like to see an increase in regulation when it comes to climate reporting, and higher taxes based on polluters pays principle. The real costs of operation have to be brought to the surface, so that we as investors better can adapt our investments to this.



In keeping with its socially responsible investment approach, ERAFP will continue to make a major contribution, in collaboration with the various other stakeholders, to speeding up the financing of the energy transition and to exceeding the objectives laid down by the Paris treaty.

Philippe Desfosses,
ERAFP



Ours is a forward looking industry and information that provides more insight into companies' future planning will be vital; how companies assess changes in their industries, the assumptions they make, the strategies they form and the products they develop.

Peter Harris,
Schroders

PD: As a member of the Institutional Investors Group on Climate Change (IIGCC), ERAFP takes part in engagement initiatives towards regulatory authorities but also companies in the most exposed sectors in order to improve their climate reporting. ERAFP is also involved into the extractive industries transparency initiative (EITI). ERAFP would like companies, especially the most exposed to climate change risks, communicate on strategic resilience and their efforts to manage environmental impacts.

PH: Ours is a forward looking industry and information that provides more insight into companies' future planning will be vital; how companies assess changes in their industries, the assumptions they make, the strategies they form and the products they develop. No one has all the answers and more frank discussion on how companies approach the challenge is more important than holding on for definitive answers.

6. What role can engagement play in driving corporate behavioural change in the climate change context and how do you measure its success?

OA: Engagement plays an important role as a complement to divestment and portfolio tilting. We focus engagement within the climate areas to group activities within PRI, often initiated by CDP. In this way we want to increase availability of data, which is our target of engagement. We can then use it to make decision on tilting and divestment.

PD: ERAFP is an extremely engaged asset owner, maintaining dialogue with many of the companies the Scheme invested in. Through its asset managers, in 2016, ERAFP supported more than 10 shareholder resolutions on climate change. ERAFP is also involved in engagement initiatives through Institutional Investors Group on Climate Change (IIGCC), ShareAction/RE100, Carbon Disclosure Project or alongside Mirova on oil exploration's themes. Forcing companies to discuss and think with a long term approach, ERAFP is convinced that asset owners' union, followed by their asset managers, will allow the acceleration of companies' change, among which the most advanced already oriented their development towards the energy transition.

PH: Engagement is a key part of our responsibilities as responsible, active investors. We regularly talk to management teams about why we think climate change is an important issue, as well as our expectations for disclosure

and transparency. That work is intrinsically tied up with how we approach investing and the benefits are evident in the decisions we make and the changes we see in companies.

7. If we were to have a similar conversation in three years time, what do you think would be some of the key successes for an investor in managing climate change risks and opportunities?

OA: Integration. Integration of competence, and tools. Managing climate risk must be at the core of the investment strategy covering all assets in all assets classes and not seen as a side activity for certain SRI funds. The global pension capital consists of the 40 000 billion USD – that is the money we need to get to work if we want to create a better, more sustainable future.

PD: Because you can't manage what you don't measure, ERAFP thinks that a crucial key of success consists in good measures of its investment climate related risks. ERAFP is working on it using and questioning current carbon foot-printing methodologies. Working with its asset managers on portfolio de-carbonization approaches, disclosing the results of its work on these areas and engaging with companies on carbon disclosure are other keys that ERAFP use to manage climate risks and opportunities.

PH: We have to build better tools to measure, quantify and analyse the risks and opportunities climate changes represents to companies and portfolios. Unless we can do that, we are going to struggle to know if we are on the right track. Progress has been made with things like carbon footprinting, but we are in the foothills of what needs to be done.

8. How are you engaging with the Sustainable Development Goals 2030 agenda?

OA: SDG sets a clear direction on what the focus should be to reach a more sustainable future. We now work to integrate the SDGs in our strategy and targets, so that we ensure that the company's strategy is in line with the goals of the world. Already in 2016 we will as a group start to report on our contribution to the SDGs.

PD: In line with its socially responsible investor's status since its beginning, ERAFP has developed a best in class strategy. This approach has had positive results since ERAFP's portfolio is globally more carbon efficient than its benchmark. By

selecting the most sustainable players but also being a strongly engaged investor on ESG issues, ERAFP aims to contribute to the Sustainable Development Goals agenda 2030. Its recent signing of the Energy Efficiency Investor Statement at COP 21 and of the 2016 global investor letter to the G20 are examples of its ongoing efforts to limit climate change and promote a Sustainable Development.

PH: The Sustainable Development Goals highlight the changes we are seeing in social and political awareness of the challenges facing many of the world's poorest countries and people. This backdrop of growing awareness and commitment will have direct implications for how we manage money. We are working hard to build an understanding of the potential changes into our decision making.

Custom questions

Storebrand is in the unique position of facing the risk of increased claims from climate change as well as the risks of decreased portfolio returns from it. How do your investment activities reduce the risk of increased claims from climate change?

OA: Companies with significant greenhouse gas emissions often make for poor financial investments. In order to make it easier to identify the companies we wish to invest in, we rate potential companies according to how sustainable they are. The environmental impact is a decisive factor when we make our assessment, which makes it easier to pinpoint which companies we do not wish to invest in. We also have an exclusion policy on negative environmental impact, with exclusion of for example more than 60 companies based on their poor climate record.

We also work in the area of financial innovation, and have launched a number of products recently. They are important not only to our customers, but also as examples to inspire and show our sector what is really possible. SPP/Storebrand presently have the world's largest green bond fund. We have also launched a unique series of products: a near index equity mutual fund that is fossil free, and optimised for a high sustainability level of the remaining companies. We are able to deliver a low tracking error in comparison to 'standard' indices, a low fee, and a substantially lower climate related risk.

In ERAFP's "Combating Climate Change" approach it says that in order to meet the ambitions of the SRI charter in limiting greenhouse gas emissions investors should "provide tangible evidence of their approaches impact". What is your view on the current state of Asset Manager's ability to provide this?

PD: ERAFP discusses with its asset managers to understand their portfolio companies' management and improves it. This year, ERAFP has entered into an agreement with Cedrus AM and AM League to establish a framework that asset managers can use to demonstrate their know-how in the reduction of carbon intensity by applying their expertise in the management of a notional portfolio of international equities. In the coming months, with the benefit of the Cedrus AM return of experience, ERAFP will be working on ways to extend its "low carbon" management approach, either through investment in open funds or through a call for tenders to select an asset manager to create a dedicated fund.

Schroder's Chief Economist recently published the findings of a survey of 18 Chief Economists. Its finding was pretty bleak in terms of the level of integration of climate change risk into their forecasting process. What impacts, in your opinion, do you think that this lack of macro-level analysis will have on the effective integration of climate change risks into the investment process?

PH: Although it was disappointing that more of the City's economists don't build climate trends into their forecasts, it was not altogether surprising. The problem lies with tools and models as much as awareness; most in our industry know the scale of the challenge and the impacts it will have, but the potential dislocation does not fit easily with models that are designed around linear trends. Unless we can come up with better ways of analysing the financial implications of climate change, we are going to find it hard to avoid being surprised down the line.

Featured Profile

Profile: Shinhan Financial Group, Financials



The floating photovoltaic project is an environment-friendly energy project that prevents forest damage that may occur on land. The generation facilities installed on a water surface serves as an advantageous environment for fish by blocking out light and creating shade, and decreases occurrence and expansion of algal bloom.

The Sangju Floating Photovoltaic Power Plant built in 2015 at the Otae and Jipyong reservoirs of Sangju, Gyeongsangbuk-do has a gross area of 64,000m², which is ten times the size of a soccer field, and can produce 8,600MWh of electricity every year, supplying electricity to 2,400 households.

Shinhan Bank and Jeju Bank provided approximately KRW 10 billion for this project, and Shinhan BNP Paribas Asset Management provided KRW 5.3 billion through investment shares and subordinated loans from a renewable energy fund.

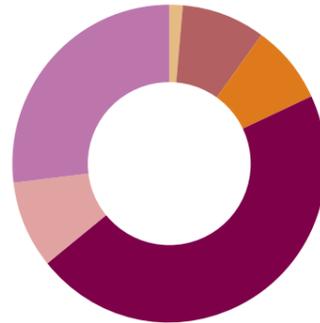
Shinhan Financial Group



Appendix I

Investor signatories and members

1. Investor signatories by location

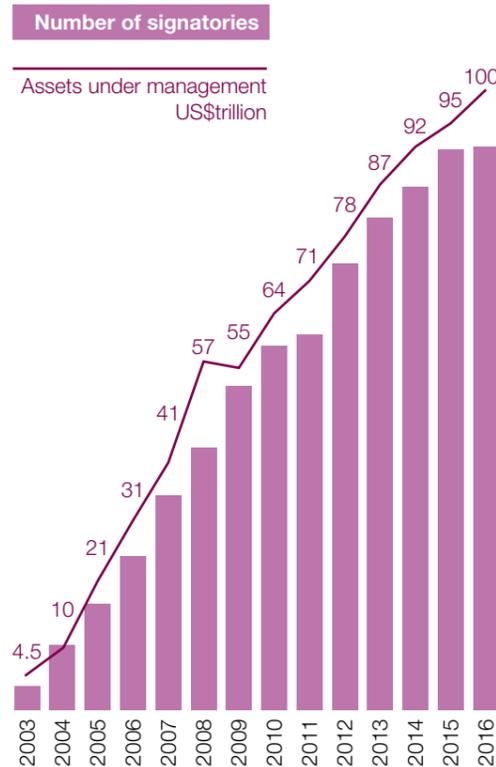


CDP's investor program – backed in 2016 by 827 institutional investor signatories representing in excess of US\$100 trillion in assets – works with investors to understand their data and analysis requirements and offers tools and solutions to help them.

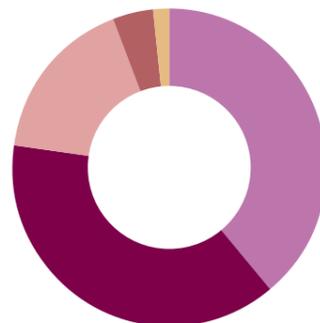
Our global data from companies and cities in response to climate change, water insecurity and deforestation and our award-winning investor research series is driving investor decision-making. Our analysis helps investors understand the risks they run in their portfolios. Our insights shape engagement and add value not only in financial returns but by building a more sustainable future.

For more information about the CDP investor program, including the benefits of becoming a signatory or member, and to see a full list of current signatories, please visit <https://www.cdp.net/en/investor/signatories-and-members>

3. Investor signatories over time



2. Investor signatories by type



Investor members

ACTIAM
AEGON N.V.
Allianz Global Investors
ATP Group
Aviva Investors
AXA Group
Bank of America Merrill Lynch
Bendigo and Adelaide Bank
BlackRock
Boston Common Asset Management, LLC
BP Investment Management Limited
British Columbia Investment Management Corporation
California Public Employees' Retirement System
California State Teachers' Retirement System
Calvert Investment Management, Inc
Capricorn Investment Group
Catholic Super
CCLA Investment Management Ltd
DEXUS Property Group
Etica SGR
Fachesf
FAPES
Fundação Itaú Unibanco
Generation Investment Management
Goldman Sachs Asset Management
Henderson Global Investors
Hermes Fund Managers
HSBC Holdings plc
Infraprev
KeyCorp
KLP
Legg Mason, Inc.
London Pensions Fund Authority
Maine Public Employees Retirement System
Morgan Stanley
National Australia Bank
NEI Investments
Neuberger Berman
New York State Common Retirement Fund
Nordea Investment Management
Norges Bank Investment Management
Overlook Investments Limited
PFA Pension
POSTALIS - Instituto de Seguridade Social dos Correios e Telégrafos
PREVI
Rathbone Greenbank Investments
Real Grandeza
Robeco
RobecoSAM AG
Rockefeller & Co.
Royal Bank of Canada
Sampension KP Livsforsikring A/S
Schroders
SEB AB
Sompo Japan Nipponkoa Holdings, Inc
Sustainable Insight Capital Management
TIAA
Terra Alpha Investments LLC
The Sustainability Group
The Wellcome Trust
UBS
University of California
University of Toronto
Whitley Asset Management

Appendix II

Largest non-responders by market capitalization

Consumer Discretionary	Country
Amazon.com Inc.	USA
Christian Dior	France
Hermes International	France
JD.com Inc	China
LVMH	France
Naspers	South Africa
Netflix, Inc.	USA
Saic Motor Corporation	China
Tesla Motors, Inc.	USA
The Priceline Group Inc	USA

Consumer Staples	Country
Alimentation Couche-Tard Inc.	Canada
CP ALL Pcl	Thailand
Hanjaya Mandala Sampoerna	Indonesia
Kimberly-Clark de México	Mexico
Magnit	Russia
Meiji Holdings Co Ltd	Japan
Monster Beverage Corporation	USA
President Chain Store Corp	Taiwan
Rite Aid Corp	USA
WH Group Ltd	China

Energy	Country
CNOOC	China
Coal India	India
Enterprise Products Partners L.P.	USA
Kinder Morgan Inc.	USA
Oil & Natural Gas	India
PETROCHINA Company Limited	China
Phillips 66	USA
Reliance Industries	India
Rosneft OAO	Russia
Valero Energy Corporation	USA

Financials	Country
Agricultural Bank of China Ltd	China
Bank of China	China
Bank of Communications	China
Berkshire Hathaway	USA
China Life Insurance Company Limited	China
China Merchants Bank	China
Industrial And Commercial Bank Of China Limited	China
Japan Post Bank	Japan
Japan Post Holdings	Japan
Ping An Insurance Company of China	China

Health Care	Country
Aetna Inc.	USA
Alexion Pharmaceuticals	USA
Boston Scientific Corporation	USA
Cerner Corp	USA
Gilead Sciences, Inc.	USA
HCA	USA
Intuitive Surgical Inc.	USA
Mylan Inc.	USA
Vertex Pharmaceuticals Inc	USA
Zoetis Inc	USA

Industrials	Country
Atlas Copco	Sweden
Caterpillar Inc.	USA
China Communications Construction	China
China Railway Group	China
China State Construction Engineering Corp. Ltd.	China
CRRC Corporation Limited	Hong Kong
General Dynamics Corporation	USA
Jardine Matheson	Hong Kong
Jardine Strategic	Hong Kong
Ryanair Holding PLC	Ireland

Information Technology	Country
Activision Blizzard	USA
Alibaba Group Holding Ltd	China
Avago Technologies	USA
Baidu Inc	China
Facebook	USA
Keyence Corporation	Japan
NXP Semiconductors	Netherlands
PayPal Holdings Inc	USA
Tencent Holdings	China
Yahoo Japan Corporation	Japan

Materials	Country
Formosa Chemicals & Fibre Corporation	Taiwan
Formosa Plastics Corp	Taiwan
Inner Mongolian Baotou Steel Union (A)	China
LyondellBasell Industries Cl A	Netherlands
MMC Norilsk Nickel OSJC	Russia
Nan Ya Plastics	Taiwan
Nucor Corporation	USA
Petronas Chemicals Group Berhad	Malaysia
Siam Cement	Thailand
Southern Copper Corporation	Peru

Telecommunication Services	Country
Axiata Group Berhad	Malaysia
Bharti Airtel	India
China Telecom	China
China Unicom	Hong Kong
China United Network Communications	China
Etisalat	United Arab Emirates
Iliad	France
SoftBank Corporation	Japan
Telekomunikasi Indonesia	Indonesia
TÜRK TELEKOMÜNİKASYON A.Ş.	Turkey

Utilities	Country
Cheung Kong Infrastructure Holdings	Hong Kong
Consolidated Edison, Inc.	USA
Dominion Resources, Inc.	USA
Edison International	USA
NextEra Energy, Inc.	USA
Power Assets Holdings Limited	Hong Kong
PPL Corporation	USA
Public Service Enterprise Group Inc.	USA
Tenaga Nasional	Malaysia
The Southern Company	USA

Appendix III 2016 Key trends

The statistics presented in this key trends table may differ from those in other CDP reports for two reasons: (1) the data in this table is based on all responses received by 13 September 2016; (2) it is based on binary data (e.g. Yes/No or other drop down menu selection) reported to CDP and does not incorporate any validation of the follow up information provided or reflect the scoring methodology. The latter, in particular, is likely to lead to an over-reporting of data in this key trends table.

Statistic	Hong Kong & SE Asia	Australia ASX 200	Benelux	Brazil	Canada	Central Eastern Europe	China	DACH (DE, AU, CH)	Emerging Markets
Number of companies in the sample	170	200	150	120	200	100	100	350	800
Number of companies answering CDP ¹	59	86	57	67	97	17	10	155	309
% of sample answering CDP 2016 ¹	35	43	38	56	49	17	10	45	39
% of sample market capitalization answering CDP 2016 ²	46	80	85	90	72	33	20	85	43
% of responders reporting Board or other senior management responsibility for climate change	100	100	96	85	91	50	100	93	97
% of responders with incentives for the management of climate change issues	75	70	86	67	73	37	80	70	80
% of responders reporting climate change as being integrated into their business strategy	96	89	88	78	88	87	100	84	96
% of responders reporting engagement with policymakers on climate issues to encourage mitigation or adaptation	90	79	90	82	90	75	90	80	90
% of responders with emissions reduction targets ³	77	60	81	60	64	37	50	68	80
% of responders reporting absolute emission reduction targets ³	50	36	58	40	37	25	40	41	49
% of responders reporting intensity emission reduction targets ³	56	37	48	38	38	25	30	51	52
% of responders reporting active emissions reduction initiatives in the reporting year	94	85	96	72	88	87	90	90	91
% of responders indicating that their products and services directly enable third parties to avoid GHG emissions	73	60	65	60	57	50	90	64	65
% of responders whose absolute emissions (Scope 1 and 2) have decreased compared to last year due to emission reduction activities	56	67	73	57	68	75	20	69	65
% of responders seeing regulatory risks	85	84	87	78	88	75	90	71	89
% of responders seeing regulatory opportunities	83	78	77	75	79	50	100	80	86
% of responders seeing physical risks	90	80	83	78	82	50	70	65	88
% of responders seeing physical opportunities	69	66	56	65	64	75	50	59	74
% of responders independently verifying any portion of Scope 1 emissions data ⁴	50	52	58	50	41	37	20	52	62
% of responders independently verifying any portion of Scope 2 emissions data ⁴	52	49	52	52	33	25	20	47	60
% of responders independently verifying least 70% of Scope 1 emissions data ⁴	42	47	54	48	30	37	20	48	56
% of responders independently verifying least 70% of Scope 2 emissions data ⁴	42	42	52	48	28	25	20	41	52
% of responders reporting Scope 2 location-based emissions data	90	93	86	78	94	87	50	79	89
% of responders reporting Scope 2 market-based emissions data	21	28	61	30	30	0	10	54	31
% of responders reporting emissions data for 2 or more named Scope 3 categories ⁵	38	59	69	75	50	25	30	65	65
% of responders using CDSB framework to report climate change data in mainstream financial report	8	13	25	10	7	12	20	13	18

1 This statistic includes those companies that respond by referencing a parent or holding company's response. However the remaining statistics presented do not include these responses.

2 This refers to the total market capitalization of that sample group of companies. Market cap data sourced from Bloomberg.

3 Companies may report multiple targets. However, in these statistics a company will only be counted once.

4 This takes into account companies reporting that verification is complete or underway, but does not include any evaluation of the verification statement provided.

5 Only companies reporting Scope 3 emissions using the Greenhouse Gas Protocol Scope 3 Standard named categories have been included below. Whilst in some cases "Other upstream" or "Other downstream" are legitimate selections, in most circumstances the data contained in these categories should be allocated to one of the named categories. In addition, only those categories for which emissions figures have been provided have been included.

6 Includes responses across all samples as well as responses submitted by companies not included in specific geographic or industry samples in 2016.

Statistic	Euro 300	France	UK FTSE 350	Iberia (ES, PT)	India	Ireland	Italy	Japan	Korea	Latin America	New Zealand NZX 50	Nordic	Portugal	Russia	US S&P 500	South Africa	Spain	Turkey	Overall Figure ⁶
Number of companies in the sample	300	250	350	125	200	30	100	500	200	80	50	260	40	30	500	100	85	100	N/A
Number of companies answering CDP ¹	262	97	224	53	48	9	45	261	77	41	15	143	10	7	332	77	43	38	2268
% of sample answering CDP 2016 ¹	88	40	64	42	24	30	45	52	38	51	30	55	25	23	67	78	50	38	N/A
% of sample market capitalization answering CDP 2016 ²	92	83	92	89	46	65	69	72	67	61	79	79	76	39	78	85	91	50	68
% of responders reporting Board or other senior management responsibility for climate change	99	96	99	98	96	100	93	98	100	97	93	97	100	71	94	100	98	94	95
% of responders with incentives for the management of climate change issues	90	83	80	90	79	89	83	89	88	59	60	73	78	57	82	81	93	82	78
% of responders reporting climate change as being integrated into their business strategy	96	93	91	94	96	100	90	96	97	85	93	93	89	100	92	96	95	91	91
% of responders reporting engagement with policymakers on climate issues to encourage mitigation or adaptation	94	91	84	96	85	100	88	94	87	79	80	84	89	86	86	92	98	82	86
% of responders with emissions reduction targets ³	92	78	80	94	81	78	83	95	90	50	73	80	89	71	80	79	95	76	77
% of responders reporting absolute emission reduction targets ³	60	40	40	77	23	44	71	68	65	26	33	43	56	43	49	41	81	41	47
% of responders reporting intensity emission reduction targets ³	69	67	57	65	70	33	52	68	42	35	47	61	67	71	46	51	65	56	52
% of responders reporting active emissions reduction initiatives in the reporting year	98	95	93	100	96	89	98	97	90	82	93	89	100	100	97	93	100	85	92
% of responders indicating that their products and services directly enable third parties to avoid GHG emissions	77	73	56	81	57	56	76	81	65	44	47	73	78	57	61	52	81	50	64
% of responders whose absolute emissions (Scope 1 and 2) have decreased compared to last year due to emission reduction activities	87	72	83	92	60	100	76	84	71	44	60	80	89	43	79	74	93	62	86
% of responders seeing regulatory risks	90	87	95	98	94	89	90	95	99	74	73	89	100	86	81	95	98	85	86
% of responders seeing regulatory opportunities	94	91	92	94	89	100	83	93	90	71	73	87	89	71	80	93	95	82	85
% of responders seeing physical risks	89	83	87	89	87	100	81	88	86	88	80	84	89	71	79	96	88	85	82
% of responders seeing physical opportunities	79	71	75	81	77	89	69	82	78	47	73	82	67	43	65	89	84	71	70
% of responders independently verifying any portion of Scope 1 emissions data ⁴	85	80	64	79	53	89	69	37	77	41	47	58	78	0	55	73	79	38	55
% of responders independently verifying any portion of Scope 2 emissions data ⁴	83	82	61	71	51	89	62	37	74	41	40	54	78	0	52	70	70	38	52
% of responders independently verifying least 70% of Scope 1 emissions data ⁴	81	71	59	75	51	89	69	31	67	41	13	56	78	0	51	64	74	35	49
% of responders independently verifying least 70% of Scope 2 emissions data ⁴	78	71	54	67	45	89	62	29	57	38	20	51	78	0	51	63	65	35	46
% of responders reporting Scope 2 location-based emissions data	92	93	97	79	96	89	88	76	88	85	80	88	56	43	94	97	84	85	88
% of responders reporting Scope 2 market-based emissions data	63	33	47	54	28	56	45	50	30	18	27	58	78	14	48	48	49	23	42
% of responders reporting emissions data for 2 or more named Scope 3 categories ⁵	87	70	69	81	68	78	55	82	58	62	73	68	89	0	65	85	79	65	65
% of responders using CDSB framework to report climate change data in mainstream financial report	23	21	26	23	19	0	7	9	29	6	7	16	22	0	7	33	23	3	14

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NewClimate Institute is an independent research institute founded in 2014. It supports research and implementation of action against climate change around the globe. It generates and shares knowledge on international climate negotiations, tracking climate action, climate and development, climate finance, carbon market mechanisms and sustainable energy policy.

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