

CDP Climate Change Report 2016 China Edition

Environmental Information Disclosure Promotes Green Finance

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



CDP foreword: Paul Simpson**Abstract****1 Environmental Information Disclosure Promotes Green Finance****2 How Chinese Enterprises Address Climate Change****3 Global Executive Summary****4 Communicating Progress****5 Application and Practice of the Environmental Data****Appendix 1 CDP 2016 China respondent list****Appendix 2 The Climate A List 2016****Appendix 3 Investor signatories and members****Important Notice**

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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 disclo-

sure into the mainstream. Today some 5,800 companies, representing close to 60% of global market capitalization, disclose through CDP.

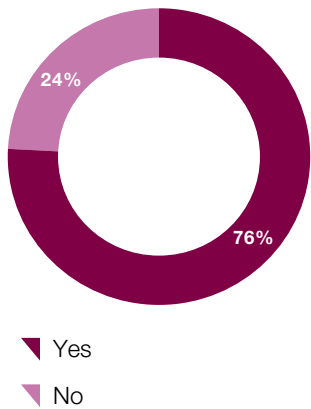
Now, we are poised to fill the glass. We welcome the FSB's new Task Force on Climate-related Financial Disclosures, building on CDP's work and preparing the way for mandatory climate-related disclosure across all G20 nations. We look forward to integrating the Task Force recommendations into our tried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

Figure 1: Is climate change integrated into companies' business strategy?



Green Finance has been receiving unprecedented attention in the context of the Integrated Reform Plan for Promoting Ecological Progress adopted since 2015 and in the Guidance on Building Green Financial System issued by a total of seven ministries and commissions on G20. However, environmental information disclosure, as the fundamental and important component of the development of green finance, is still lacking and yet to be encouraged and promoted.

In 2016, CDP wrote to companies in China on behalf of investors to request them to provide environmental information via a questionnaire. Companies were selected on the basis of market capitalization and environmental impact. In addition to this, some Chinese companies also chose to respond voluntarily as “self-selected companies”. This report provides an analysis of the 21 com-

panies that responded to the CDP 2016 climate change questionnaire by September 20 2016. Of the companies requested to respond on the basis of market capitalization, there is a group of 100 largest companies in China referred to in this report “China 100”. This sample of companies includes companies based in Shanghai, Shenzhen and Hong Kong and companies in ten different sectors.

In 2016,

- ▶ 21 Chinese enterprises have disclosed climate change data to the CDP.
- ▶ Over 5800 companies globally have disclosed climate change data to CDP.
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Overview of the responses of 21 Chinese companies

Figure 2: The highest level of direct responsibility for climate change within the organization

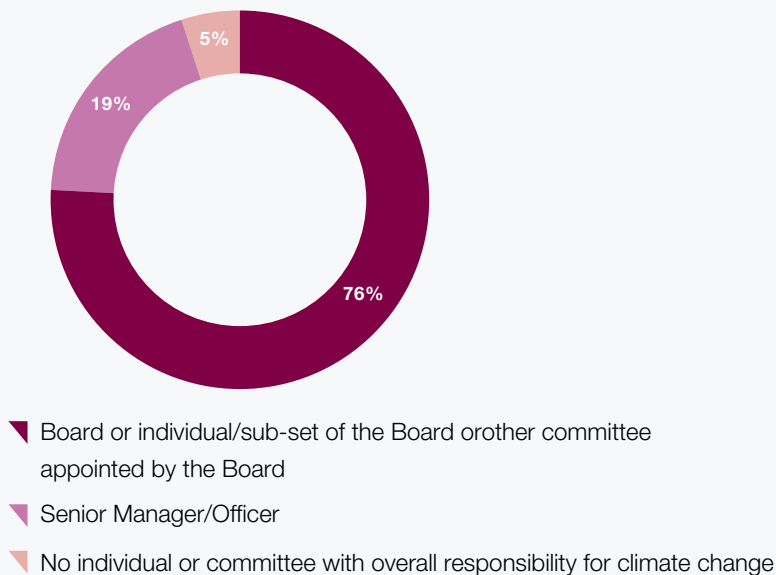
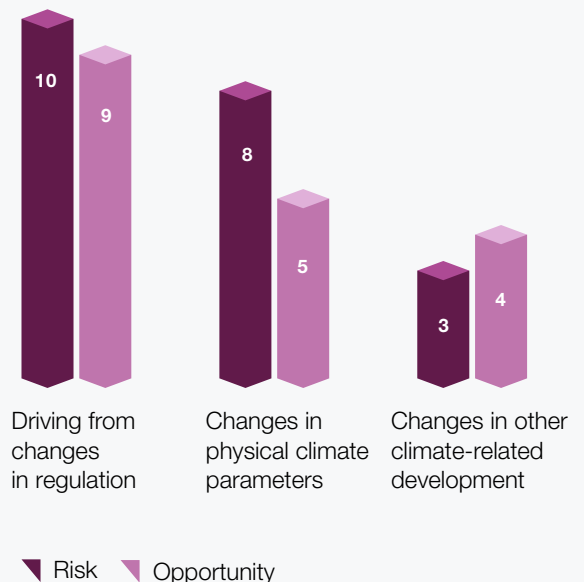


Figure 3: Risk and opportunity identified by companies



Environmental Information Disclosure Promotes Green Finance

From the release of ecological civilization reform program last year, to the recent release of reform program by the seven ministries and commissions¹, green finance has received unprecedented interest. In March 2016, the National People's Congress approved the "13th Five-Year Plan for National Economic and Social Development" (hereinafter referred to as the "13th Five-Year Plan") and further clarified China's plan to fight climate change for the next five years. This plan emphasized that the establishment of a green financial system will be an effective mechanism for pollution control and addressing climate change, and also proposed the development of green finance and the establishment of green financial development fund. In addition, the date the Paris Agreement enters into force is drawing near. Thus, green finance and sustainable development have actually become the theme of our times. However, the disclosure of environmental information, which is an important component of the development of green finance, is still a weak link requiring urgent resolution for continued green finance development.

Regulators have included environmental information disclosure into strategic considerations. The communique of the G20 summit in Hangzhou explicitly mentioned that environmental information asymmetry is the major challenge for the 20 countries in expanding green investment and financing. Environmental information is an essential basis and prerequisite for environmental risk quantification. The lack of relevant information will lead to difficulties

in aspects such as the internalization of environmental externalities, maturity mismatches, and lack of clear definition of the word "green", information asymmetry and lack of analytical ability. In the subsequent "Guidance" issued by the seven ministries and commissions, it is clearly stated that "a mandatory environmental information disclosure system shall be gradually established and improved for listed companies and bond issuers" and "investors shall also be encouraged to publish green investment responsibility reports". These statements have encouraged investors to disclose their investees' environmental performances through publishing different forms of green investment responsibility reports (such as corporate sustainable development reports and corporate social responsibility reports)². Investors are also concerned with green finance based on corporate environmental information disclosure because green finance will not only accelerate China's economic transition to a green economy and support the construction of ecological civilization, but will also facilitate progress in areas such as the promotion of environmental protection, new energy utilization and energy saving, which will accelerate the cultivation of new economic growth points and enhance economic growth potential. Green low-carbon index products with environmental data as the impact factor are also favored by investors because of their high stability in long-term benefits, low volatility, and combination of both environmental and investment returns. Banks and brokers are also taking active steps to mobilize more social capital for investment in green industries and limiting polluting

Main Policies of Green Finance

- ▼ In September of 2015, the Ecological Civilization Reform Program, for the first time, explicitly put forward the strategy to establish China's green financial system and top-level design.
- ▼ In December of 2015, the TCFD, established by the FSB, committed to the disclosure of climate-related financial risks which allow companies to measure and tackle the risks of climate change.
- ▼ In December of 2015, through the Paris Agreement, the response to climate change was escalated to the level of global cooperation.
- ▼ China's "13th Five-Year Plan" emphasizes that the establishment of a green financial system shall be deemed as an important mechanism to effectively control pollution and address climate change.
- ▼ In August of 2016, the People's Bank of China, Ministry of Finance and the seven ministries and commissions jointly issued Guidance on the Construction of Green Financial System (hereinafter referred to as "Guidance") to stimulate green investment and financing and to develop innovative financing tools and mechanisms.
- ▼ On November 4, 2016, the Paris Agreement will come into effect.

1. People Bank of China, Ministry of Finance, National Development and Reform Commission, Ministry of Environmental Protection, China Banking Regulatory Commission, China Securities Regulatory Commission, China Insurance Regulatory Commission.

2. <http://www.pbc.gov.cn/goutongjiaolu/113456/113469/3131687/index.html>

investment through various means such as developing green credit, promoting green investment in securities markets, improving the environmental rights trading market and enriching financing instruments According to the "Social Responsibility Report on China's Banking Industry in 2015" released by China Banking Association in June 2016, the green credit balance of the banking sector accounted for 10% of the balance of all loans by 2015 and the proportion is still rising.³

Internationally, following countries like United States and Australia, the French Climate Conference last year passed the "Energy Conversion Act" to escalate France's green growth to the legal level⁴. Germany, who will hold the G20 presidency of 2017, announced that green finance will continue to be an important discussion topic in the next year and environmental information disclosure will also become an important concern⁵. This is in line with the work of the Financial Stability Board (FSB) in announcing the establishment of the Task Force on Climate-related Financial Disclosures (TCFD), aiming at providing a consistent, accessible, clear and useful climate-related financial information disclosure framework to increase information disclosure.

The framework is designed to help companies identify risks and opportunities associated with climate change and explicitly disclose climate-related risks and opportunities. Then, based on these opportunities, enterprises are able to explore ways of adjusting their strategic positioning, accurately recognize, measure, evaluate and manage climate risks to truly achieve corporate climate risk management with the help of various means such as stress testing⁶. CDP, as the only environmental database in the world and the earliest founder of environmental reporting system, has been committed to assisting TCFD in strategic development and put forward five principles to be followed in corporate environmental information disclosure. According to practical experience, we believe these five principles can help climate disclosure to meet business objectives and reduce investors' portfolio risks. At the same time, they can also help regulators to effectively guard against systemic risks.

First of all, the Climate Disclosure Guidelines

should be prepared at the management level.

TCFD's recommendations are voluntary in nature and we understand the need to address administrative deficiencies as a voluntary organization by applying autonomous practices. However, voluntary recommendations require a clear regulatory framework, which means adequate law enforcement, consistence with judicial conventions, and compatibility with current mainstream reporting models.

Second, the disclosure should be beneficial to the disclosing party.

If an environmental disclosure framework was properly built, the disclosing parties would benefit from it. Disclosure helps companies to highlight opportunities while setting goals to integrate sustainable objectives into corporate strategies. If an enterprise can discover the benefits of information disclosure, the disclosure ratio will increase and the objection to mandatory disclosure will also be reduced.

Third, current financial and non-financial disclosures usually focus on past performances.

Such retrospective approaches cannot provide appropriate guidance for climate crises given the changing climate, economy, regulation and markets. Accounting standard setters and regulators shall bear the special responsibility to help overcome future challenges.

Fourth, considering climate risks are rapidly changing, relevant guidelines, recommendations and policies should include climate-related new types.

Regulators, investors and companies themselves need to concentrate on long-term goals, i.e. on economic-level carbon reduction programs rather than only on those micro-level goals.

Ultimately, the disclosure of climate-related information can help investors in effectively influencing corporate behavior, thus contributing to climate risk minimization.

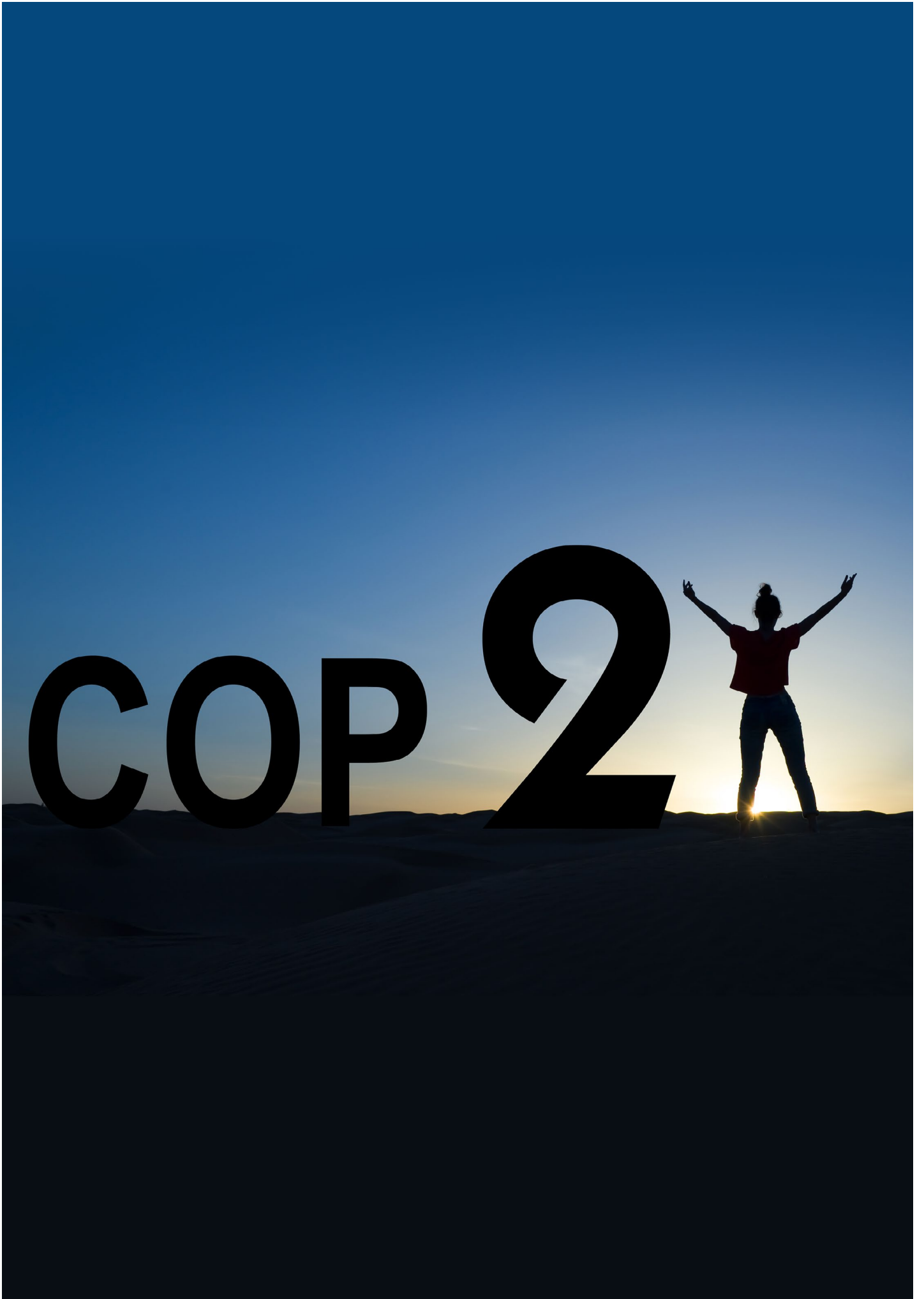
Climate-related information or environmental information disclosure should help investors understand whether they need to engage with other companies, in order to achieve the emission targets below 2°C and withdraw investment from high-risk stocks or increase investment in solution-oriented services and sustainable business models.

3. http://finance.ce.cn/rolling/201606/24/t20160624_13170531.shtml

4. <http://energy.people.com.cn/n/2015/0725/c71661-27359139.html>

5. <http://www.yicai.com/news/5130878.html>

6. <https://www.fsb-tcfid.org/>



“We will unswervingly implement the strategy of sustainable development, adhere to the low-carbon green cycle development and stick to the basic national policy of conserving resources and protecting environment. Our effort to promote green development is also to take initiative actions to address climate change and production overcapacity. In the next five years, China’s water consumption, energy consumption and carbon dioxide emission per unit of GDP will decrease by 23%, 15% and 18% respectively.

— —From the keynote speech given by President Xi Jinping on September 3rd of 2016 in the opening ceremony of the Business Summit of G20.

The signing of the Paris Agreement also provides a fundamental driving force for the development of green finance. The Paris Agreement is the third milestone international legal text on climate change since the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and the Kyoto Protocol in 1997. It has become the most important achievement in the multilateral process of climate change⁷.

This Agreement makes a framework arrangement for actions addressing climate change after 2020 and is of great significance for the formation of the structure of global climate governance. It sets the long-term goal of limiting the global average temperature rise to within 2°C and aims to control the temperature rise to within 1.5°C. In accordance with the Agreement, the parties will, in the way of “national self-contribution”⁸, participate in global action to address climate change. Developed countries will continue to take the lead in reducing emissions and increase their financial, technical and capacity-building support to developing countries to help them mitigate and adapt to climate change.

As an active participant in the global cause of addressing climate change, China officially submitted the Strengthening Actions to Climate Change – China’s National Autonomous Contribution on June 30, 2015. China has set its own action targets for 2030 taking into account national circumstances, development, sustainable development strategy, and international responsibility. China will also continue to proactively adapt to climate change, and develop mechanisms and capabilities to effectively combat climate change risks in key areas such as agriculture, forests, water resources, urban areas, coastal areas and ecologically fragile areas while gradually improving its system of forecasting and early warning, as well as that of disaster prevention and reduction. In order to achieve

this goal, China has put forward 15 proposals to strengthen policies and measures. The proposals include such aspects as climate change legal system construction, climate change regional strategy formulation, low - carbon energy system construction, energy-saving and low-carbon industrial system development, emission control in construction and transportation, construction of carbon emission rights trading markets, construction of statistical accounting system for greenhouse gas emission, and financial and policy support.

China is the largest developing country, and also a major emitter of carbon. China signed the Paris Agreement to develop green finance and solemnly demonstrated to the international community China’s responsibility as a large country and its determination to jointly address climate change with the international community. However, China still faces enormous challenges in environmental matters, for example, the PM2.5 pollution level is 20 times that in Australia, and 75% of water and one fifth of the arable land has been contaminated. Ma Jun, chief economist of the People’s Bank of China, said that 85% of the money needed to tackle major environmental problems and significantly reduce carbon emissions needs to come from private capital⁹. It is clear that private capital is an indispensable part in addressing climate change. Companies should fully identify the risks and opportunities associated with climate change, formulate corresponding emission reduction targets, and adopt positive and effective measures to reduce carbon emissions and actively control their energy efficiency. They should also, starting from reporting environmental information, actively develop and improve a sound risk-control system after negotiation with investors, suppliers and other stakeholders, and formulate effective low-carbon development strategies to promote green financial development.

7. http://qhs.ndrc.gov.cn/gwdt/201512/t20151218_767996.html

8. The “Intended Nationally Determined Contributions (INDCs)” is a national action plan for post-2020 action to address climate change, as requested by the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC).

9. <http://www.nbd.com.cn/articles/2016-09-27/1041616.html>

How Chinese Enterprises Address Climate Change

In 2016, CDP wrote to companies in China on behalf of investors to request them to provide environmental information via a questionnaire. Companies were selected on the basis of market capitalization and environmental impact¹⁰. In addition to this, some Chinese companies also chose to respond voluntarily as “self-selected companies”. This report provides an analysis of the 21 companies that responded to the CDP 2016 climate change questionnaire by September 20 2016. Of the companies requested to respond on the basis of market capitaliza-

tion, there is a group of 100 largest companies in China referred to in this report “China 100”. This sample of companies includes companies based in Shanghai, Shenzhen and Hong Kong and companies in ten different sectors¹¹.

Of the 21 companies analysed for this report, 76% have already integrated climate change into their company business strategies and recognized the risks and opportunities associated with climate change.

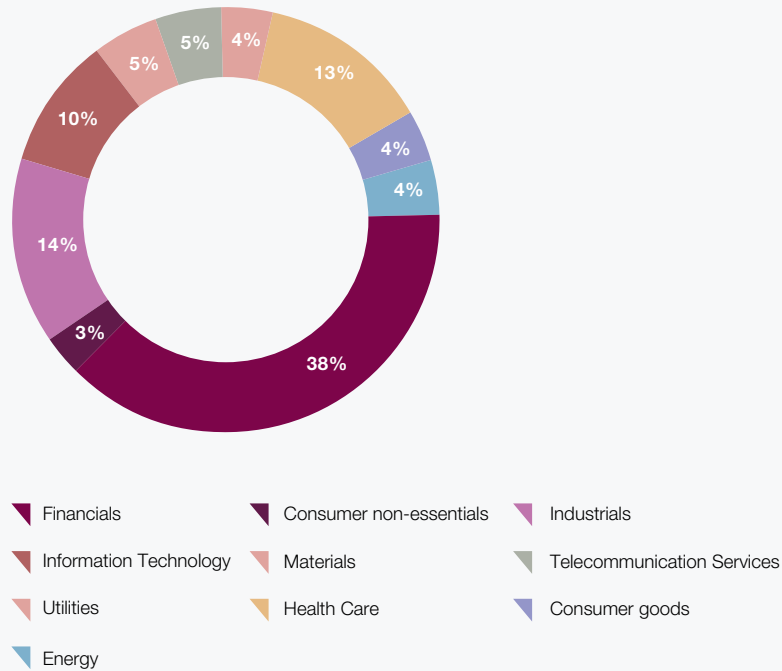
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Figure 1: Distribution of China 100 enterprises' listing locations



Figure 2: Sectors of China 100 enterprises



10. Selection for inclusion varies between samples, but will either be based on an index or stock exchange. Where the number of companies listed in the index or stock exchange is larger than the CDP sample size, the largest companies by market capitalization are selected.

11. For the China 100, the method for selection is, on single date, the FTSE China A 600 and FTSE All World Asia Pacific filtered for Chinese companies: largest 100 from these two lists combined, AFTER Investibility weighting

Emission Reduction Targets

In the “Strengthening Actions to Climate Change - China’s National Autonomous Contribution”, China has made clear its autonomous action target for 2030: China’s carbon dioxide emissions will peak as early as possible around 2030; carbon dioxide emission per unit of GDP is 60%–65% will be lower than that of 2005; the consumption of non-fossil energy will account for about 20% of primary energy consumption, and the volume of forest reserves increases by about 4.5 billion cubic meters compared with that in 2005¹².

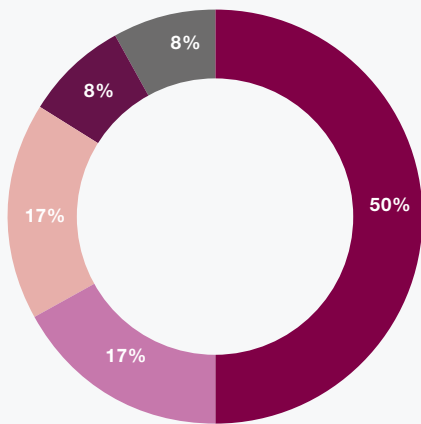
60% of the enterprises that responded to the questionnaire have set emissions-reduction targets, among which ten enterprises have disclosed their absolute reduction targets in detail, six have disclosed their intensive reduc-

tion targets, five have set their emissions-reduction targets until 2015, two have set their emissions-reduction targets until 2020, and two have set their emissions-reduction targets beyond 2020.

Emission-Reduction Actions

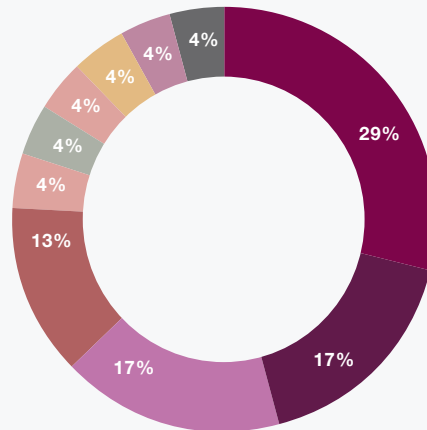
The “13th Five Year Plan” has clearly put forward the promotion of economical and intensive use of energies, the implementation of the nationwide campaign of energy conservation, the comprehensive promotion of energy conservation in industry, construction, transportation, public institution and other fields, the implementation of major projects of energy conservation, energy-saving technologies and products, the establishment of energy management system, measuring system and on-line monitoring system of energy consumption and the launch

Figure 3: Type proportion of enterprises’ emission reduction targets



- ▲ Absolute emission reduction targets
- ▲ Intensity emissions reduction targets
- ▲ Absolute emission reduction targets and intensity emissions reduction targets
- ▲ Absolute emission reduction targets and renewable energy consumption or production
- ▲ Absolute emission reduction targets, intensity emissions reduction targets, renewable energy consumption or production

Figure 4: Types of projects completing emission reduction measures



- ▲ Energy efficiency in construction equipment
- ▲ Others
- ▲ Energy efficiency in processes
- ▲ Energy efficiency in buildings
- ▲ recycling programs
- ▲ Product design
- ▲ Process reduction
- ▲ Low-carbon energy purchase
- ▲ Escape emissions decreased

12. http://zys.ndrc.gov.cn/xwfb/201506/t20150630_710182.html

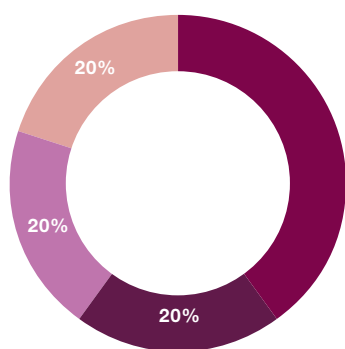
Figure 1: Implementations of emission reduction measures and chart of emissions reductions

	Number of projects	CO2e savings in metric tonnes CO2e
Under investigation	10	2090
To be implemented	79	38500
Implementation commenced	132	12131561
Implemented	94	625207.46

decrease respectively by more than 3.9%, 2%, 2%, 2% and 5%, and the carbon dioxide emissions per unit of GDP increased by above 4% and 3.5% respectively in 2014 and 2015. The “Action Plan” made clear the 30 specific measures from eight aspects to promote energy conservation, emission reduction, and carbon dioxide reduction¹³.

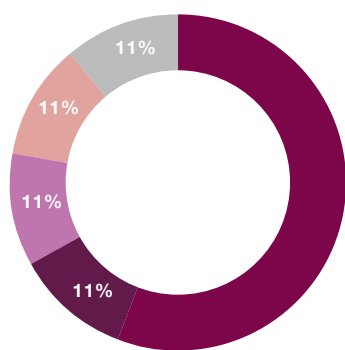
Figure 5: Reasons for change in GHG emissions

Reducing



- CO2e saving actions
- Output changes
- Divestment
- Methodology changes

Increasing



- Output changes
- Boundary changes
- Acquisition
- Physical operating conditions changes
- Methodology changes

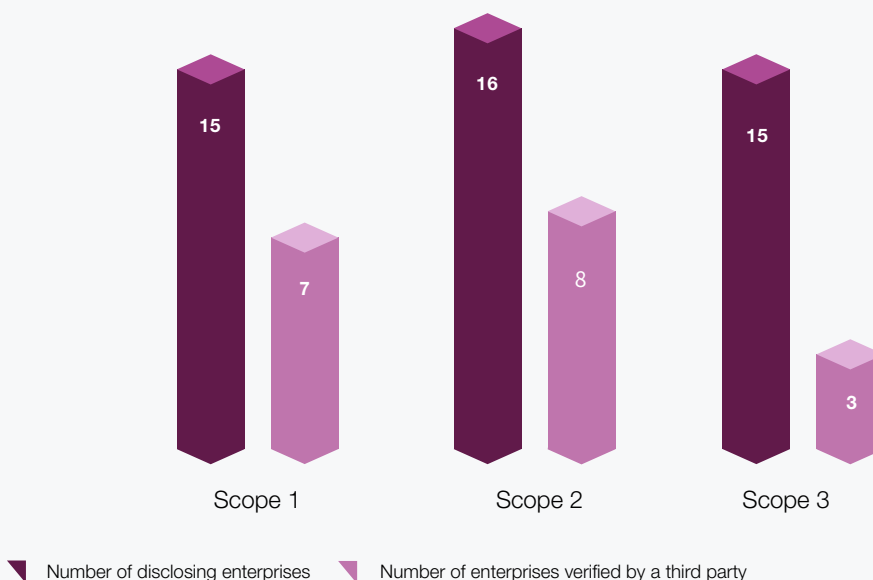
of energy review and performance evaluation. Earlier, the General Office of the State Council issued the “Energy Conservation and Emission Reduction Action Plan in 2014-2015” (hereinafter referred to as “Action Plan”) to further solidify the carbon dioxide reduction index of energy conservation and emission reduction, quantify emissions-reduction tasks, strengthen emissions reduction measures, and make specific requirements for the carbon dioxide reduction, energy conservation, and emission reduction work over the next two years.

The “Action Plan” puts forward the specific goals of carbon dioxide reduction, energy conservation and emissions reduction. In 2014-2015, energy consumption per unit of GDP, chemical oxygen demand, and emissions of sulfur dioxide, nitrogen & ammonia, and nitrogen oxide

Among the responding enterprises, 15 companies have carried out or planned to carry out carbon reduction measures this year, eight enterprises have disclosed the number of projects that have been completed, 13 enterprises have revealed the project types and numbers and 15 enterprises have disclosed the measures to promote the investments in emissions-reduction projects, which can be seen in Figure 1.

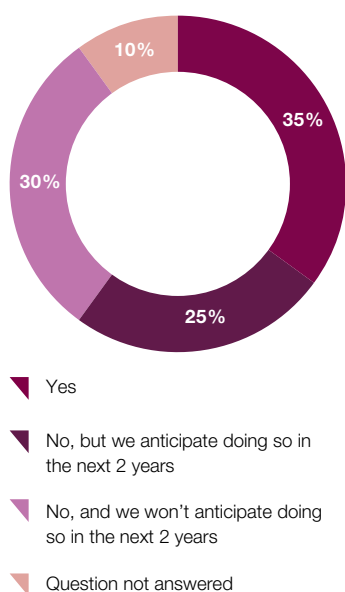
Among the reported measures for carbon emissions reduction, 46% are related to energy efficiency (building structure, construction equipment and process) and 21% are related to low-carbon energies. Compared with responding enterprises in 2014, the responding enterprises in 2016 have taken more specific emissions-reduction measures: 41% of the emissions reductions measures

Figure 6: Carbon disclosure and numbers of enterprises with certificated emissions



13. http://www.gov.cn/xinwen/2014-05/26/content_2686898.htm

Figure 7: Participation in carbon emissions trading schemes



in 2014 are about other aspects and 16% are about behavior change. The enterprises have actively implemented some emissions-reduction measures to reduce carbon emissions during company operations, including improvement of energy efficiency in buildings, installation and purchase of low carbon energy, waste recycling.

Disclosure and Certification of Carbon Dioxide Emissions

Among the responding enterprises, 14 disclosed their worldwide total Scope 1 carbon emissions, accounting for 67% of the responding companies; 11 enterprises disclosed their total worldwide Scope 2 carbon emissions, accounting for 52% of the responding companies; 13 enterprises disclosed the degree of uncertainty on carbon emissions data and explained the main source of the uncertainty in which six enterprises expounded in detail the reasons of the uncertainty. Additionally, the Scope 1 emissions of seven enterprises, Scope 2 emissions of eight enterprises, and the Scope 3 emissions of three enterprises have been certified and verified by a third party. Of these, five enterprises have provided a detailed breakdown of their Scope 1 emissions and six have provided a detailed breakdown of their Scope 2 emissions. Meanwhile, 13 enterprises have disclosed the changes of global total greenhouse gas emissions (Scope 1 and Scope 2), among which eight enterprises have increased the total global emissions and five enterprises have decreased, and three of them made a detailed explanation for the increase and decrease.

Production and Consumption of Renewable Electricity

In the first half of 2016, China's electricity consumption situation has improved: the social electricity consumption was 2.78 trillion kwh, up 2.7% year on year, and the year on year growth rate increased by 1.4 percentage points. The main characteristics were that the electricity consumption in secondary industry and its industrial power consumption achieved positive growth; the effects of industrial structure adjustment and transformation and upgrading become apparent; the living electricity consumption of third industry and urban and rural residents increased faster; the growth momentum of power consumption kept changing, and the adjustment of con-

sumption structure continued; the difference of electricity consumption between regions was obvious, and the electricity consumption situations of eastern and central regions were relatively good¹⁴. However, because China's electric power is deployed uniformly by the State Grid Corporation of China, enterprises cannot choose their own source of electricity which makes it difficult for them to determine whether their consumption of electricity is from renewable energy or low-carbon energy. In their CDP responses, two enterprises reported their production and consumption of renewable electricity among which the total production of renewable electricity is 750,989.6 MWH and the total consumption volume of it is 87,254.55 MWH, and the source of renewable electricity mainly comes from solar and wind power.

In recent years, as China vigorously advocates the use of distributed energies, especially the promotion of distributed photovoltaic power projects, enterprises with distributed photovoltaic power available can increase their use of renewable energy and decrease the proportion of non-renewable energy by implementing distributed photovoltaic power projects.

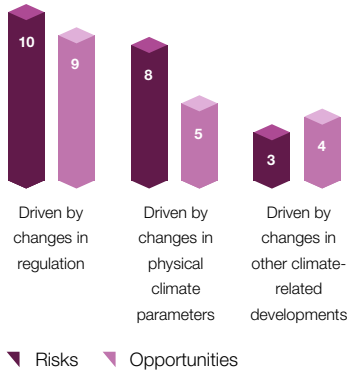
Carbon Trading

The "13th Five-Year Plan" outlines that China shall:

- 1) Effectively control the carbon emissions of key industries, as well as support and optimize the development area to be the first to achieve the carbon emissions peak.
- 2) Deepen low-carbon pilots in various areas, control emissions of non-carbon dioxide GHG, promote the construction of a single unified carbon emission trading market nationwide, and implement the systems of carbon emissions reporting, carbon check, certification and quota management in key units.
- 3) Perfect statistical calculation, evaluation, and accountability systems to improve the carbon emissions standard system.

Previously, the National Development and Reform Commission issued the paper "Notice about the Pilot Project of Carbon Emission Trading", which determined seven cities, including Beijing and Shanghai, as pilot provinces and municipalities. In 2014, these seven pilot regions all started on-line transactions, and a total of more than

Figure 8: Risks and opportunities identified by enterprises



2000 enterprises and units have been included. About 1.2 billion tons of carbon emissions quota are allocated. At the beginning of 2016, the National Development and Reform Commission promulgated the “Notice of Priority Work on Starting Carbon Emission Trading Market Nationwide” to summarize and implement the learnings of the pilot, which designates eight industries including petrochemical, chemical, building materials, steel, non-ferrous metals, papermaking, power and aviation into the first stage of Carbon Emissions Trading Market. During this period, supportive documents like “The Accounting Methods and Reporting Guidelines of Enterprise Greenhouse Gas Emissions” (three batches), “The Interim Measures for the Management of Voluntary Emission Reduction Trading of Greenhouse Gases”, and “The Interim Measures for the Management of Carbon Emission Rights Trading” are issued. The purpose of documents is to promote the construction of carbon emission trading market nationwide, and to ensure a smooth start in 2017¹⁵.

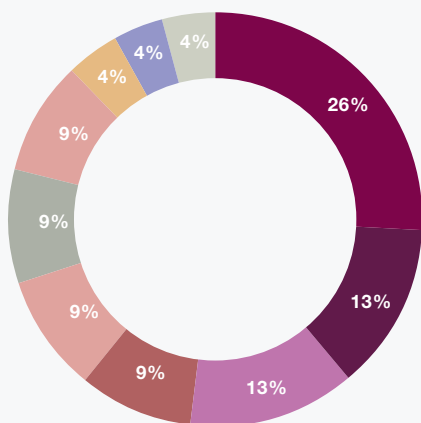
trading market has entered the final stages. According to the prediction from the National Development and Reform Commission Climate Division, about 7–8 thousand enterprises will be included in the carbon emission trading market in the first stage. By the time this report is finished, most provinces and cities will have completed or are implementing related work.

This means that in order to win market opportunities, enterprises must be familiar with policies and regulations on carbon market as soon as possible, and skilfully undertake the submission, registration and operation of trading systems as well as enhance their ability to reduce carbon emissions. For enterprises that are under the national control of carbon market, they should manage carbon emissions according to market conditions, in order to reduce the cost of compliance. For enterprises not included in the control, on the one hand, they can use carbon as a tool to recognize and reduce internal costs (such as energy consumption), and on the other, the cost of carbon emissions can be incorporated as a factor in their

15. http://bgj.ndrc.gov.cn/zcfb/201311/t20131101_568921.html
http://www.sdpc.gov.cn/gzdt/201502/t20150209_663600.html
http://qhs.ndrc.gov.cn/zcfg/201511/t20151111_758282.html
http://qhs.ndrc.gov.cn/zcfg/201206/t20120621_487133.html
http://qhs.ndrc.gov.cn/zcfg/201412/t20141212_652007.html

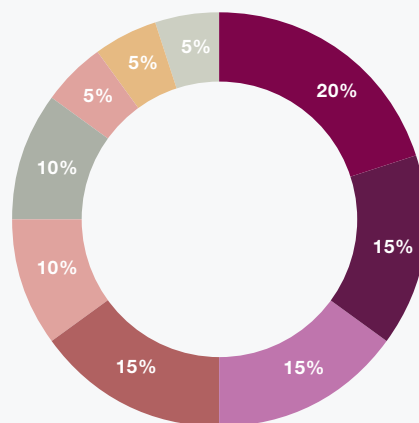
At present, the initiation of the national carbon emission

Figure 9: Risks of policy changes identified by enterprises



- Carbon tax
- Air pollution limits
- International agreements
- Product labeling policies and standards
- Aggregate control and trading mechanism
- Emissions reporting system
- Fuel / energy taxes and policies
- Product efficiency policies / standards
- New policy uncertainties
- General policy environment, including planning

Figure 10: Opportunities of policy changes identified by enterprises



- Product labeling policies and standards
- Air pollution limits
- Emissions reporting system
- General policy environment, including planning
- Carbon tax
- International agreements
- Product efficiency policies / standards
- Aggregate control and trading mechanism
- Fuel / energy taxes and policies

internal management system or decision-making, or into planning and hedging tools so as to help decision-makers determine the potential and risks of business investment or future revenue. Only in this way can enterprises convert challenges into opportunities, and transform passivity into initiative, and help to ensure the smooth realization of long-term goals.

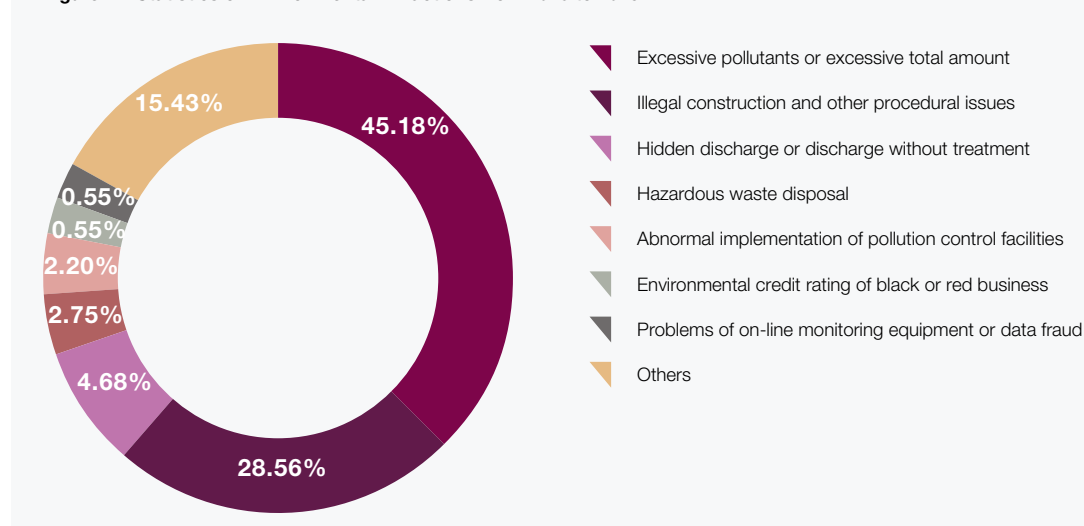
Risks and Opportunities

Faced with the impacts of climate change, enterprises are not only concerned about negative effects, but are also considering its possible opportunities. Climate change brings business risks, and at the same time brings opportunities. In 2016, responding enterprises identified 21 risks of climate change, and 18 opportunities at the same time, so we can see that there is 1 opportunity to 1.17 risks on average. The risks and opportunities identified by enterprises overlap to a great extent, that is to say, the majority of the risks identified by the enterprises are actually also identified as potential opportunities for the development of the enterprises. For example, carbon tax policy is seen as a policy risk by 30% of the responding enterprises, but 10% of enterprises see it as a business opportunity. The enterprises' understanding of risks and opportunities reflects that they can be more resilient to climate change. With this positive attitude, they can actively find new development opportunities. Enterprises identify ten risks resulting from policy changes

including the carbon tax, air pollution limits, international agreements, product labeling policies and standards. (Figure 9). However, they also identify nine opportunities brought by policy change, carbon taxes, air pollution restrictions, international treaties, product labeling policies and standards (Figure 10). New development opportunities for enterprises are hidden in these risks. If enterprises take the right measures, those risks can be transformed to opportunities.

In addition, China's efforts to punish environmental violations are gradually strengthening¹⁶. Since the start of 2015 when the new "Environmental Protection Law" and its supporting measures came into force, environmental law-breaking enterprises were punished according to the daily penalty and other new penalties. In the whole society, a strong crackdown on environmental violations has resulted in greatly increased costs of corporates who have environmental administrative illegal activities. Enterprises continuing excessive discharge behavior will face greater risks. The up-to-standard release of pollutants is still the biggest environmental challenge faced by the sample enterprises. The pollutant discharge exceeding the standard or the total amount is the main reason for the punishment, accounting for 45.18%. The serious pollutant discharge incidents such as hidden discharge, discharge leakage, and abnormal implementation of pollution prevention measures account for 4.68%. Construc-

Figure 11: Statistics of Environmental Infractions from 2015 to 2016



16. This section of the report is based on the group of 100 companies making up the China100, and does not include all 21 companies analysed in the rest of this report.

tion without approval, not implementing the regulation of “three simultaneous”, and other illegal construction problems accounted for 28.65%.

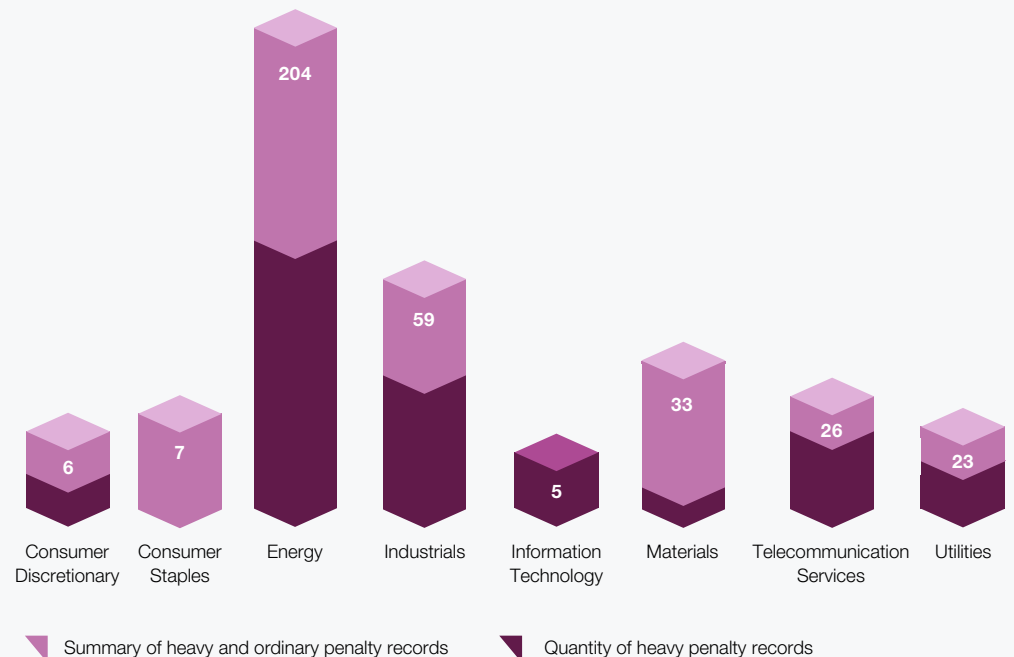
Under the environmental regulation, the distribution of illegal activities of listed enterprises and affiliated parties within the range of China 100 enterprises from 2015-2016 are shown in Figure 11 (based on the distribution of infractions and regulatory records which are consolidated by the Public Environmental Research Center IPE Database¹⁷). The distribution of industries having environmental regulatory records among China 100 listed enterprises and their affiliated parties from 2015-2016 is shown in Figure 12. (The heavier regulatory records include general fines, continuous penalties on a daily basis, listing for supervision, administrative detention, suspension of production, and closure).

According to statistics, environmental violations committed by companies in the energy sector are more serious, including China National Petroleum Corporation’s Subsidiaries –the Dalian Petrochemical Company and Jilin Petrochemical Company which have been fined penalties

on a daily basis several times, among which the highest amount of fine was 7.13 million RMB and 3 million RMB respectively. While for the industrial and basic materials industry, excessive pollutant or excessive total amount has is a more common infraction, including by Inner Mongolia Baotou Steel Union Co., Ltd. and other listed enterprises as well as their affiliated parties, which consistently fail to reach expected standards on environmental supervision¹⁸.

The climate change risks identified by enterprises also include the risk of changes in physical parameters and other climate change risks. Among them, the reported risks include changes in physical parameters include extreme temperature changes, tropical cyclones (hurricanes and typhoons), average temperature changes, sea level rise and so on. Other climate change risks include reputational risk, changing consumer behavior and uncertainties of social factors. Likewise, opportunities of change in physical parameters and other climate change opportunities identified by firms also include extreme temperature changes, changes in average temperature, and changes in consumer behavior, and reputation.

Figure 12: Industry Distribution of Environmental Regulatory Records from 2015 to 2016



17. Based on the Public Environmental Research Center IPE Database. The Institute of Public & Environmental Affairs (IPE) is an environmental public interest research organization founded in 2006 and based in Beijing, China. Since 2006, IPE has continuously collected, researched and published enterprise environmental information, forming the Blue Map environmental data platform. The platform provides third-party data services for different stakeholders, including Fortune 500 global enterprises. As of October 2016, the database includes over 290,000 violation records of enterprises violating standards, and stores around one million units of real-time data per day.

18. Based on the Public Environmental Research Center IPE Database.



Global 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, the report establishes the baseline for corporate action on climate change. In future reports, CDP will track companies' progress on reducing greenhouse gas emissions in line with the goals of the Paris Agreement against this benchmark.

The report presents analysis 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. Of close to 2,000 companies in this global tracking sample, only just over a thousand responded with data within the deadline. We hope the remaining 700 odd companies will start to engage during the course of the next five years.

The 1,089 companies that provided the data for the global report will be tracked over the next five years to see how they are performing. Between them these companies account for 12 per cent of global greenhouse gas emissions, and 85 per cent of them have already set targets to reduce their emissions.

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

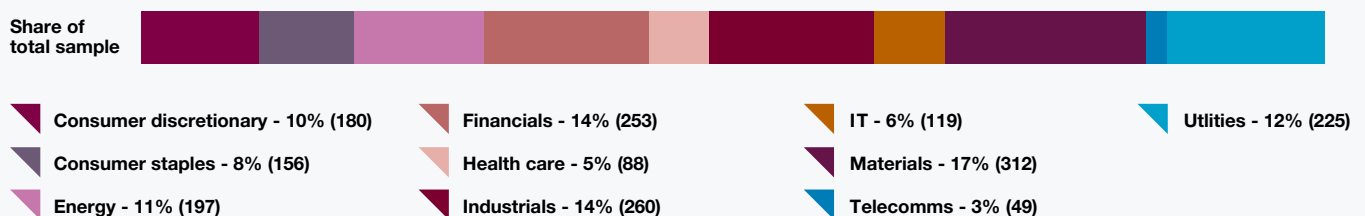


Figure 2: Global company tracking sample by region. The total number of companies is presented in parentheses.

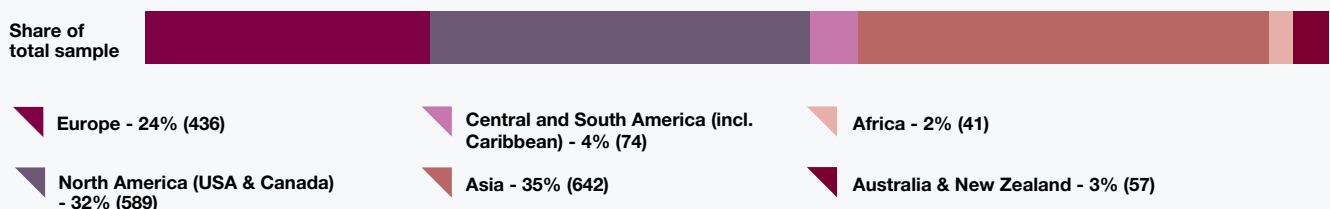


Figure 3: Companies responded and not-responded by sector. The total number of companies in each sector is presented in parentheses.

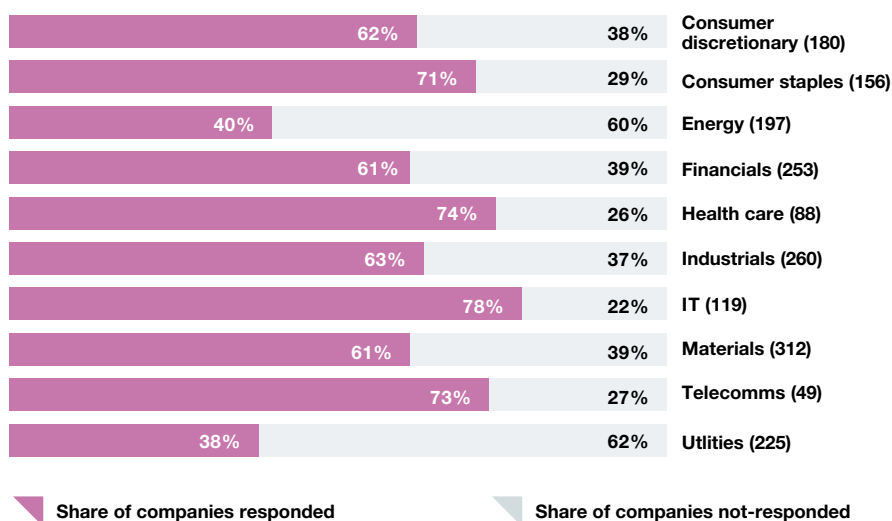
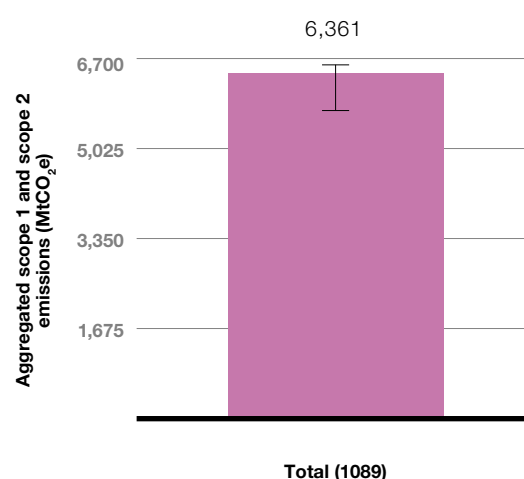


Figure 4: Aggregated scope 1 and scope 2 emissions for total sample. The total number of companies responded is presented in parentheses.



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.

Given that only 62 per cent of companies contacted by CDP for the report were able to provide data on their own emissions, many businesses have yet to grasp the importance of this challenge. However, the number disclosing is increasing, and the Paris Agreement should provide a greater incentive to engage.

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

Eighty-five per cent of companies that provided data 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 emis-

sions reductions, but these targets are in many cases unambitious in their time horizon. While 55 per cent of companies have targets for 2020 and beyond, just 14 per cent set goals for 2030 or beyond, a situation that must change to achieve a transition to well-below 2°C.

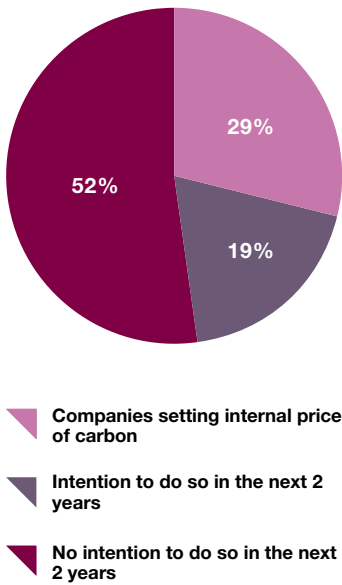
The headline figures from this report mask wide variance in performance both at company level and at sector level. Perhaps inevitably, the energy sector has a lower share of companies with emissions reduction targets, in particular for 2020 and beyond. This should not surprise us, because fossil fuel 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; this report and its successors will monitor how many companies are setting targets in line with the latest climate science.

From the 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.

Figure 5: Share of companies setting an internal price of carbon



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.

We found that if the companies in the sample were to achieve their current targets, they could realise 1Gt CO₂e (1,000 MtCO₂e) of reductions by 2030. This is about one quarter of the 4GtCO₂e (4,145 MtCO₂e) 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 (3,145 MtCO₂e) between where companies' current targets take them, and where they should be. This gap is equal to nearly 50 per cent 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.

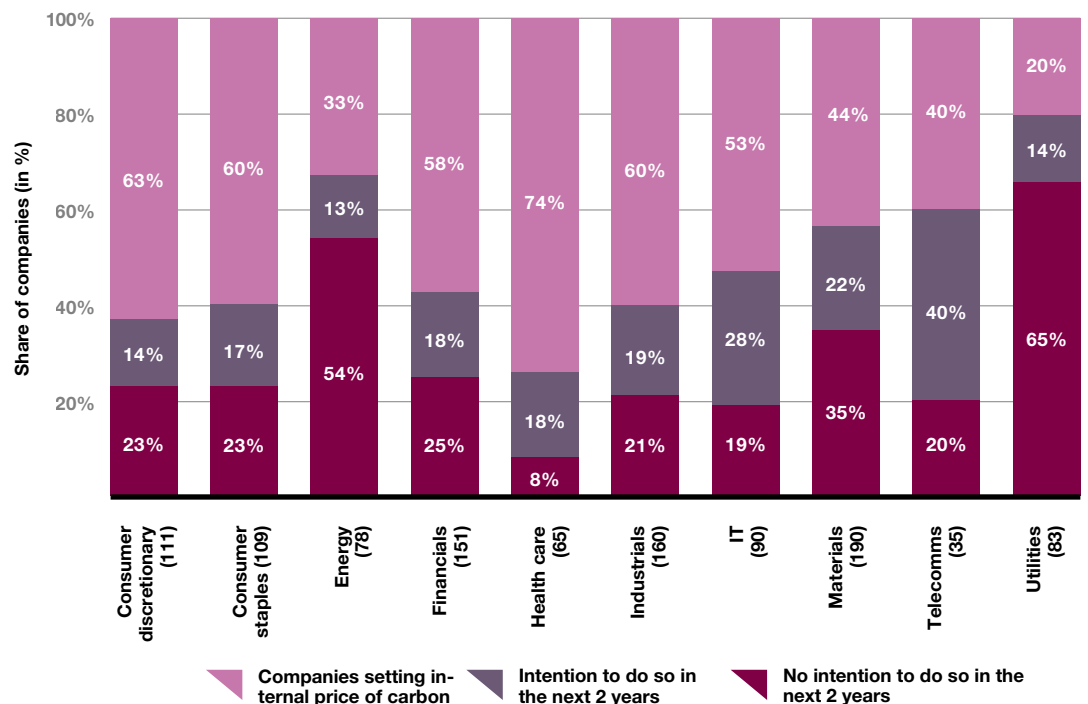
Transition planning: carbon pricing on the rise, yet companies lag in renewable energy production and consumption

Even those companies that have not set themselves targets have almost all established emissions reduction initiatives (97 per cent 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 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 per cent of responding companies use internal carbon pricing, while a further 19 per cent plan to do so in the near future. By 2017, about half of this sample should have introduced carbon pricing.

Figure 6: Companies setting an internal price of carbon by sector. The total number of companies responded is presented in parentheses for each sector.



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 mean low profit

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

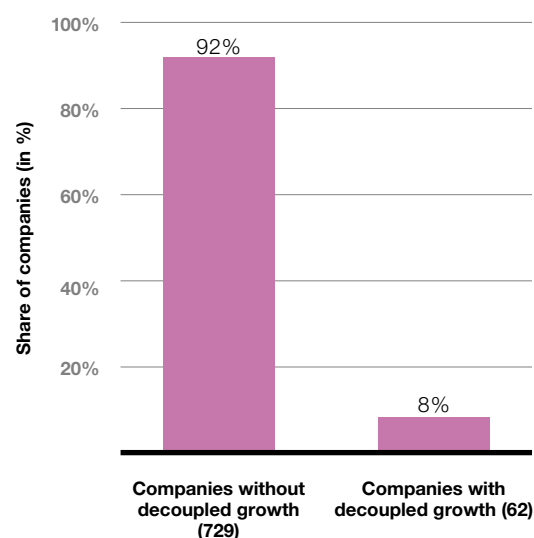
We report on the 62 companies in the sample that can be shown to have made impressive and consistent year on year achievements both in reducing emissions and decoupling growth of revenue from growth of emissions.

They include consumer staples companies such as J. Sainsbury and Walmart de Mexico, as well as utilities companies like Eversource Energy and 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 per cent or more over five years, while simultaneously growing revenue by 10 per cent.

The success of these leaders points the way for others to realise the opportunity for innovative companies to turn the challenge of emissions reduction from risk management to business success.

Figure 7: Share of companies with decoupled growth over period of five years (time-series sample)



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 per cent over the five-year period of measurement, while reducing GHG emissions by 26 per cent. For the rest of the companies in the tracking sample, revenue decreased by 6 per cent while GHG emissions increased by 6 per cent.

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.

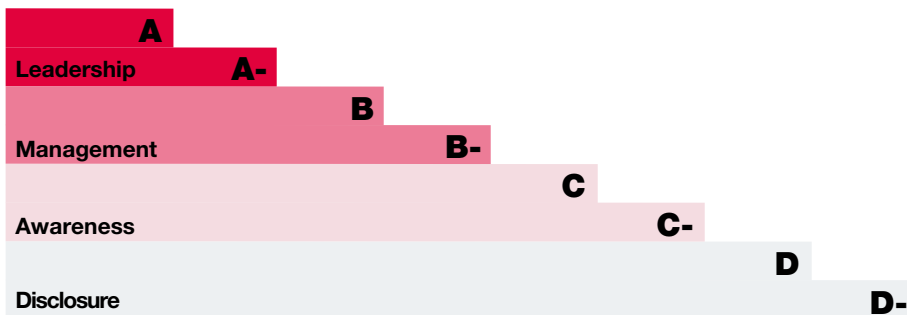
Figure 8: Comparison of the changes in revenues (left) and GHG emissions (right) over the 5-year period between companies that achieved decoupled growth and other companies.

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%)

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 which 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 purpose¹⁶

16. 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.

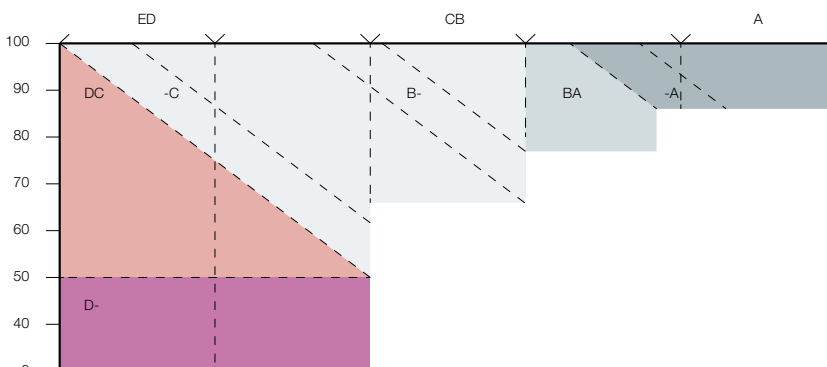
The scoring methodology clearly outlines how many points are allocated for each question and at the end of scoring, the number of points a company has been awarded per level is divided by the maximum number that could have been awarded. The fraction is then converted to a percentage by multiplying by 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.

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>

2015 Performance Score



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>.

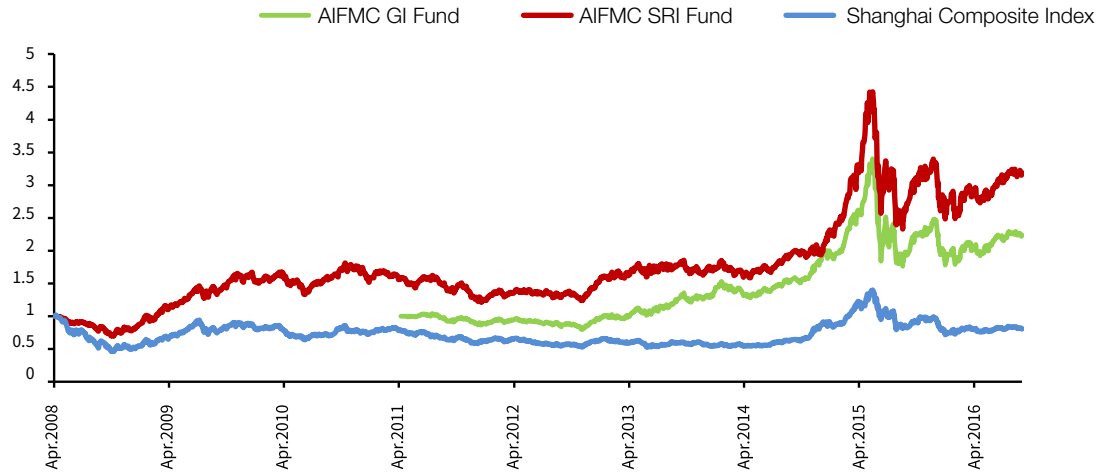


Application and Practice of the Environmental Data



As the first SRI fund in Mainland China, AIFMC Social Responsibility Investment Fund (AIFMC SRI Fund) was established in April 2008. Its goal is to pursue investment gain as well as emphasize companies' social responsibility at the same time. As of September 2016, AIFMC SRI Fund had more than RMB 6.5 billion assets under management (AuM), with accumulated NAV (AccuNAV) of 3.1872 and compound annual growth rate (CAGR) of 15.52%. On the success of first SRI fund product, we set up AIFMC Green Investment Fund (AIFMC GI Fund) in May 2011, which focuses on green technology industries and companies, and looks for companies in traditional area while actively carry out environmental responsibilities. As of September 2016, AIFMC GI Fund had nearly RMB 1.2 billion AuM, with AccuNAV of 2.2374 and CAGR of 18.27%.

Performance comparison



Case of New Energy Vehicle Investment

For the year of 2015, AIFMC achieves great investment return under the guidance of SRI, especially for the investment in China New Energy Vehicle leader BYD (002594.SZ). Our research in New Energy Vehicle industry began far earlier than the market, which has been a successful SRI implementation in AIFMC. In recent years, Chinese government has gone a long way in spurring the production and sales of new energy vehicles for economic transformation. According to China Association of Automobile Manufacturers (CAAM), the production volume achieves triple growth for the second consecutive year to more than 340,000 units in 2015, making China the biggest new energy vehicle market around the world. As the leading player, BYD takes 18.73% domestic market share. Our investment in BYD can be traced to its initial public offering in 2011, when it raised a less-than-expected amount due to weak investor sentiment and worries over its poor performance. Supported by in-depth research of BYD's battery technology and the belief in domestic new energy prospect, AIFMC was able to move against the market and share BYD's subsequent success.

The SRI-driven research also helped AIFMC seize other investment opportunities in new energy industry, including Yutong Group (600066.SH), Tianqi Lithium (002466.SZ), Cangzhou Mingzhu (002108.SZ), etc.

Environmental information disclosure promotes green finance

The environmental information disclosure in China is still insufficient and presents many challenges till now. Owing to CDP's persistent effort to drive disclosure, its investor project and environmental database offered a chance to understand the international advanced green investment concept and practice, and also an effective quantitative tool for our research. Joined with CDP, AIFMC will keep embracing overseas SRI philosophy and practices, and implement it with China's economic transformation to draw companies' attention to their social responsibility through capital allocation. AIFMC will further combine positive selecting and passive selecting to exclude companies with poor CSR record and put more attention on emerging industries. AIFMC is dedicated to integrate SRI factor into sector allocation and stock selection to promote the initiation and practice of SRI as well as the development of green finance in China.

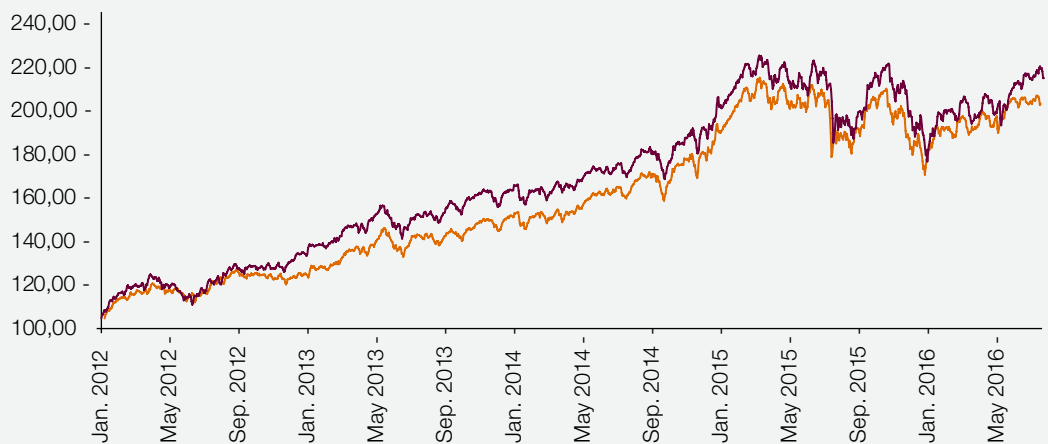
6%

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

— STOXX Global Climate Change Leaders EUR (Gross)
— STOXX Global 1800 EUR (Gross)



Data from Dec. 19, 2011 to Aug. 31, 2016

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.¹⁹

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 lower carbon footprint¹⁾ (>80%) 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.

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.

19. 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.

Green Action Plan



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



Driving Changes For A Better Climate

Lenovo's practices

"We hope our contributions to mitigating climate change will improve the environment where our employees and customers live and work. Every little success counts, as many small successes can reap big accomplishments and drive changes for better." ----
-- Rob J. Taylor, Director of Regulatory Affairs, Sustainability & Corporate Safety and Standards, Lenovo

Sustainability at Lenovo

Lenovo is a global Fortune 500 company with a unique heritage of having roots in both the East and the West. It serves customers in more than 160 countries and is differentiated in the market with our high-quality products and services covering PCs, workstations, servers, storage, smart TVs and family of mobile products.

Mitigating Lenovo's impact on climate change is one of Lenovo's most important sustainability goals and is supported at the highest levels of the company. Lenovo's Board of Directors is annually updated on Lenovo's progress towards meeting a 40% goal scope 1 and 2 emissions reduction goal by 2020 (vs. a 2009 baseline) and second goal to achieve 30 MW of on or near site renewable power generation by 2020. Consistent with the adage, "what gets measured gets

done," Lenovo understands that to drive reductions in our greenhouse gas (GHG) emissions, we must measure them. Seven years ago, our journey towards minimizing our GHG emissions began with establishing a limited GHG inventory which focused on major manufacturing and development sites and matured in having the comprehensive inventory across the global organizations of Lenovo and its subsidiaries.

Responding to CDP is one of main channels for communicating climate change information to our interested stakeholders, which also demonstrate our commitment to transparency and sustainable development. Lenovo has been disclosing our GHG emissions inventory and climate change management and strategy at CDP reporting platform for several years. Over those years, Lenovo and CDP have developed a truly collaborative partnership that is based upon open two ways communication and is beneficial to both entities. Our partnership with CDP and specifically CDP China, represents a very valuable resource for evaluating and strengthening our climate change strategies, programs and performance. Some examples of benefits, actions and program improvements initiated by our responses to and discussion of CDP inquiries include:

- Increased profile and understanding of sustainability risks in our corporate risk management process. Preparation for the CDP responses has fostered increased communication and better understanding of respective processes and associated risks between our sustainability and risk management teams. As a result, climate change aspects are now part of Lenovo's sustainability risks criteria list.
- Evaluation and understanding of the financial implications of climate change opportunities and risks is vastly improved.
- Exploration of the Scope 3 impacts of Lenovo's operations have resulted in a better understanding of the upstream and downstream impacts of the procurement, manufacture, distribution and end of life management of Lenovo products.
- Creation of EMS objectives and targets for driving energy efficiency improvements in our products generation by generation.
- Assessment of science-based target setting methodology for establishing Lenovo's GHG emissions reduction targets.
- Assessment of near and long term impacts of climate change management on Lenovo's environmental and overall business strategy.
- Early awareness of potential impacts of climate related activities such as emissions trading schemes, low carbon products claims and integrated reporting.
- Driving continual performance improvement and benchmarking of our performance against peers and other organizations responding to CDP.

Our participation in CDP also provides a foundation for Lenovo to promote a low carbon model among our suppliers and support a transition to a low carbon economy worldwide. In addition to continuously im-

proving our energy efficiency and investing in renewable projects, we will explore other options including emission trading systems in China and how best to use our ISO 50001 Energy Management System and potentially expand it out of EU locations.

Lenovo™

Appendix 1

CDP 2016 China Respondent List

Company	Sector
BOE Technology Group Co.,Ltd	Information Technology
BYD	Consumer Discretionary
China Agri-industries Holdings Ltd	Consumer Staples
China Construction Bank	Financials
China Mobile	Telecommunication Services
China Petroleum & Chemical Corporation	Energy
China Shenhua Energy	Energy
China State Construction International Holdings Ltd	Industrials
China Vanke	Financials
Huatai Securities	Financials
Lenovo Group	Information Technology
Mindray Medical Intl Ltd-Adr	Health Care
Minth Group Ltd	Consumer Discretionary
Oplink Communications, LLC	Information Technology
People's Insurance Co Group of China Ltd	Financials
Shanghai Electric Group (H)	Industrials
SINOTRANS Limited	Industrials
Suzhou RAKEN Technology LTD	Information Technology
TCL Corporation	Consumer Discretionary
Universal Global Technology(Shenzhen)Co.,Ltd	Industrials
ZTE	Information Technology

Appendix 2

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
Consumer Staples	
Asahi Group Holdings, Ltd.	Japan
Coca-Cola European Partners*	USA
Coca-Cola HBC AG	Switzerland
Colgate Palmolive Company	USA
Diageo Plc	United Kingdom
Japan Tobacco Inc.	Japan
Kirin Holdings Co Ltd	Japan
L'Oréal	France
Nestlé	Switzerland
Philip Morris International	USA
Pick 'n Pay Stores Ltd	South Africa
RCL Foods Ltd	South Africa

Company	Country
Reynolds American Inc.	USA
SCA	Sweden
Tesco	United Kingdom
Unilever plc	United Kingdom
Energy	
Compañía Española de Petróleos, S.A.U. CEPSA	Spain
Eni SpALimited	Italy
Galp Energia SGPS SA	Portugal
Neste Corporation	Finland
Vermillion Energy Inc.	Canada
Financials	
Bank Coop AG	Switzerland
Basler Kantonalbank	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
Raiffeisen Bank International AG	Austria
Remgro	South Africa
Shinhan Financial Group	South Korea
Sompo Japan Nipponkoa Holdings, Inc	Japan
Stockland	Australia

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

Company	Country
T.GARANTİ BANKASI A.Ş.	Turkey
The Dai-ichi Life Insurance Company, Limited	Japan
UBS	Switzerland
Westpac Banking Corporation	Australia

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

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
Mitsubishi Electric Corporation	Japan
Nabtesco Corporation	Japan
Obrascon Huarte Lain (OHL)	Spain
Owens Corning	USA
Qantas Airways	Australia
Republic Services, Inc.	USA

Company	Country
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
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

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

Company	Country
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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
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

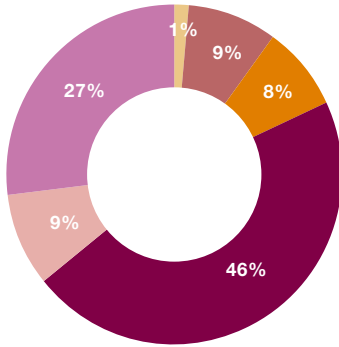
Company	Country
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EDF	France
EDP - Energias de Portugal S.A.	Portugal
ENAGAS	Spain
ENEL SpA	Italy
ENGIE	France
Gas Natural SDG SA	Spain
Iberdrola SA	Spain
Iren SpA	Italy
Korea District Heating Corp.	South Korea
Korea Electric Power Corp	South Korea
National 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

Appendix 3

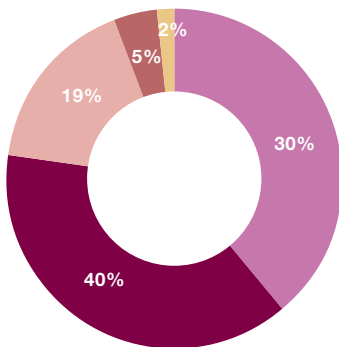
Investor Signatories and Members

1. Investor signatories by location



- ▼ **Europe**
 - 382 = 46%
- ▼ **North America**
 - 223 = 27%
- ▼ **Latin America & Caribbean**
 - 73 = 9%
- ▼ **Asia**
 - 71 = 9%
- ▼ **Australia and NZ**
 - 67 = 8%
- ▼ **Africa**
 - 13 = 1%

2. Investor signatories by type



- ▼ **Asset Managers**
 - 363 = 40%
- ▼ **Asset Owners**
 - 256 = 30%
- ▼ **Banks**
 - 158 = 19%
- ▼ **Insurance**
 - 39 = 5%
- ▼ **Others**
 - 13 = 2%

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.

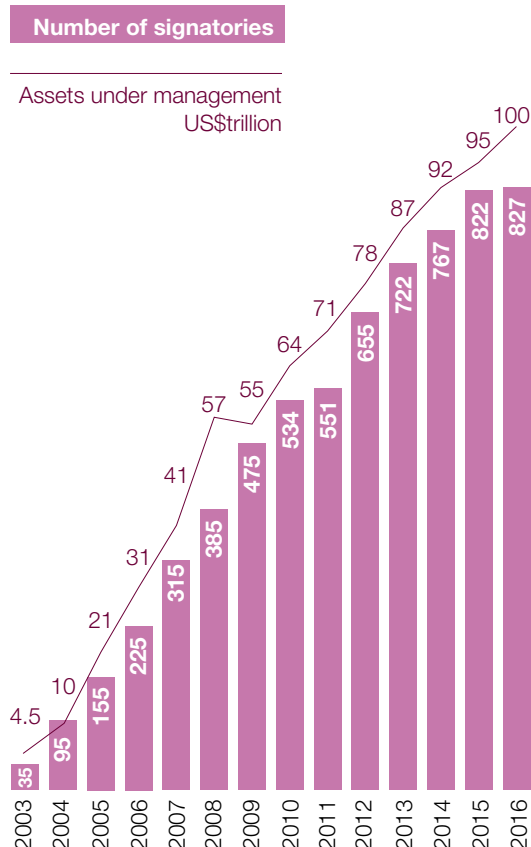
For more information about the CDP investor program, including the benefits of becoming a signatory or member please visit: <https://www.cdp.net/Documents/Brochures/investor-initiatives-brochure-2016.pdf>

To view the full list of investor signatories please visit: <https://www.cdp.net/en-US/Programmes/Pages/Sig-Investor-List.aspx>

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

3. Investor signatories over time



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