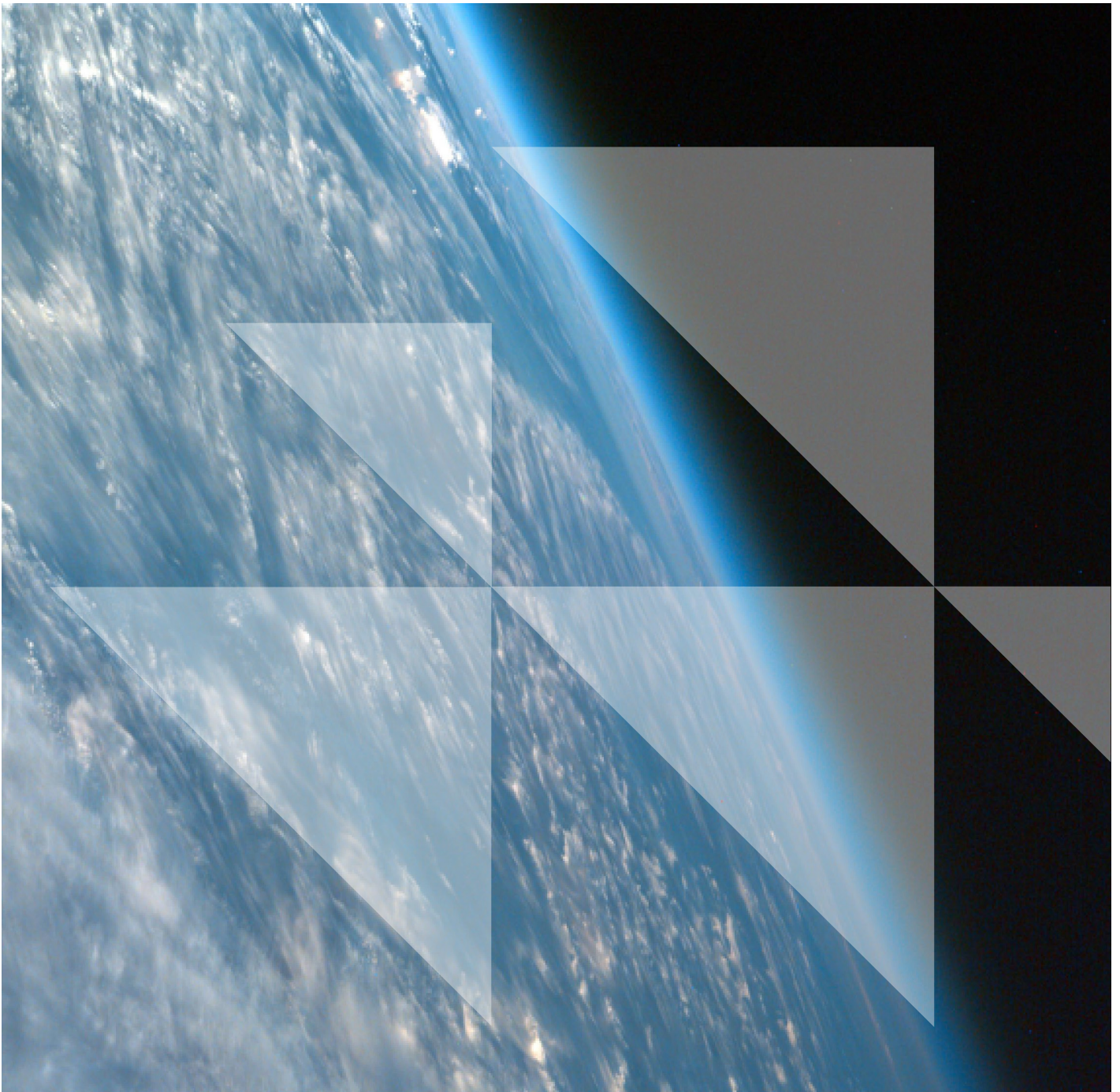

Use of internal carbon price by companies as incentive and strategic planning tool

A review of findings from CDP 2013 disclosure

December 2013



Summary

Many major companies using carbon price

According to findings from CDP's annual disclosure process in 2013, many major publicly traded companies operating or based in the United States have integrated an "internal carbon price" as a core element in their ongoing business strategies. Such carbon pricing has become standard operating practice in business planning, in that the companies acknowledge the process of ongoing climate change - including extreme and unpredictable weather events - as a key relevant business factor for which they wish to be prepared.

Preparedness includes use of an internal carbon price, based on the business assumption that addressing climate change will be both a business cost and possible business opportunity, regardless of the regulatory environment.

Most companies covered in this report state they expect an eventual regulatory approach in some form to address climate change. Therefore, companies cite use of a carbon price as a planning tool to help identify revenue opportunities, risks, and as an incentive to drive maximum energy efficiencies to reduce costs and guide capital investment decisions.

Prices used range from US \$6-60 per metric ton¹ of CO₂e, and companies use varying terminology, such as "internal carbon price"; "shadow price"; "internal carbon fee"; "carbon adder" or "carbon cost." The companies covered in this report state that they find it prudent and useful to use the concept of a carbon price as part of their planning for achieving reductions in greenhouse gas (GHG) emissions.

Companies that have international operations are especially astute to carbon pricing as a response to the regulatory environments in which they operate, such as Europe or Australia, where GHG emissions reductions are mandatory and covered by mandatory cap-and-trade programs or carbon taxes.

Many companies have also set internal targets for GHG emissions reductions either in terms of absolute tons or carbon intensity, and use an internal carbon price or gauge to evaluate return on related investments, or to incentivize employees to meet established corporate targets.

In 2013, 29 companies - based or operating in the US - disclosed that they use an internal price of carbon in their business planning (see Figure 1 on p. 3).

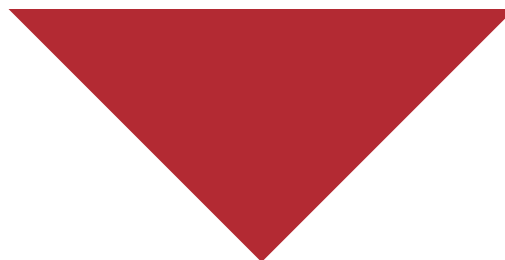
Utility and energy companies are the most likely to employ internal carbon prices for strategic operational decision-making, as they make long-term plans to meet energy and electricity needs, load factors, and amortization of plant investments and costs.

For example, ExxonMobil is assuming a cost of \$60 per metric ton by 2030. BP currently uses \$40 per metric ton. Royal Dutch Shell uses a price of \$40 per ton. Xcel Energy cites use of \$20 per ton. Devon Energy established a carbon price of \$15 per ton of CO₂e to account for the cost or benefits associated with any change in GHG emissions resulting from proposed projects. Ameren uses \$30 per ton in future planning (2025) in its power generation and distributed energy businesses and includes that price in its mandatory Integrated Resource Plan for 2011-2014.

However, companies across all sectors of the economy also cite use of carbon prices. For example, in 2012 Google based its planning on a carbon price of \$30 per metric ton. Currently it estimates using \$14 per ton based upon an actual auction price in California's cap-and-trade regime (AB32). Walt Disney, which has set a corporate wide long term goal of "zero net direct greenhouse gas emissions", uses \$10-20 per ton currently. Walmart, though keeping its specific shadow price confidential, said the price is set flexibly "to allow it to change with time as external prices evolve and thus ensure our appraisal model remains world class." Microsoft has used an "internal carbon fee," cited publicly as \$6-7 per ton, subject to ongoing review.

Prices used by companies

In figure 1 on page 3, where no price is shown, companies have stated that the specific price used is confidential business information. However, in responding to pertinent questions in the annual CDP disclosure questionnaire all cited an "internal carbon price" as a planning tool.



¹ Companies are requested to disclose their GHG emissions to CDP in metric tons.

Figure 1: 29 Companies disclose using an internal price on carbon*

Consumer Discretionary	
▼	Delphi Automotive Plc
▼	Walt Disney Company, \$10-20 **
Consumer Staples	
▼	ConAgra Foods, Inc.
▼	Wal-Mart Stores, Inc.
Energy	
▼	Apache Corporation
▼	BP, \$40
▼	Chevron Corporation
▼	ConocoPhillips, \$8 – 46
▼	Devon Energy Corporation, \$15
▼	Exxon Mobil Corporation, \$60
▼	Hess Corporation
▼	Royal Dutch Shell, \$40
▼	Total, \$34
Financials	
▼	Wells Fargo & Company
Industrials	
▼	Cummins Inc.
▼	Delta Air Lines
▼	General Electric Company
Information Technology	
▼	Google Inc., \$14
▼	Jabil Circuit, Inc.
▼	Microsoft Corporation, \$6-7 **
Materials	
▼	E.I. du Pont de Nemours and Company
Utilities	
▼	Ameren Corporation, \$30
▼	American Electric Power Company, Inc.
▼	CMS Energy Corporation
▼	Duke Energy Corporation
▼	Entergy Corporation
▼	Integrus Energy Group
▼	PG&E Corporation
▼	Xcel Energy Inc., \$20

* \$ figures refer to the price per ton

** Source of prices: Gunther, Marc. (March 2013). Disney, Microsoft and Shell opt for self-imposed carbon emissions taxes. Retrieved from The Guardian on October 17, 2013: <http://www.theguardian.com/sustainable-business/carbon-emissions-tax-microsoft-disney-shell>

Using an internal price on carbon

Excerpts on pricing from GDP 2013 disclosures

In Canada all Apache GHG reduction projects are assessed against the current carbon price of \$15 per tonne of CO₂-e” whereas [where “no local process drives a comparable price evaluation against a carbon obligation”), GHG reduction projects... are primarily driven by adherence to meeting the annual corporate wide GHG reduction target, based on an evaluation of each projects price (cheaper priced GHG reduction projects are undertaken first).

In the UK, Apache cites the UK government floor carbon price established to encourage investment in clean-energy projects: “The minimum price of £4.94 (US\$7.95) per ton of emissions is predicted to climb to £18.08 pounds (US\$29.10) for the year through March 2016. The region will now have to include the UK floor price for carbon on top of the EUETS price i.e., above 13.39 Euros ~US\$9.71 as the upper limit evaluation price to cost GHG reduction projects against.

Apache

AEP has stated that it assumes a price on carbon (either through regulation or EPA requirement) will begin in the United States by roughly 2020. In the absence of clear price signals in the US, AEP uses a projected price and expects its pricing approach to evolve over time.

American Electric Power Company, Inc.

We factor a carbon cost into our investment appraisals and engineering designs for some new projects. We do this by requiring larger projects, and those for which emissions costs would be a material part of the project, to apply a standard carbon cost to the projected GHG emissions over the life of the project. The standard cost is based on our estimate of the carbon price that might realistically be expected in particular parts of the world. In industrialized countries, this standard cost assumption is currently \$40 per tonne of CO₂ equivalent.

BP

For major capital-project development and approval, we estimate a project’s incremental emissions profile, assess the financial impact of GHG regulations, and describe the emissions reduction options considered and implemented. We developed tools to identify, assess and rank emissions reduction methods; conduct economic analysis; and integrate GHG factors into decision making and overall project development and management. All capital projects of more than \$5 million must conduct an initial analysis to estimate emissions and their potential range of carbon costs and benefits. Analyses are then integrated into the capital projects planning process.

Chevron Corporation

Climate change has also influenced our long term strategies through our capacity planning process. In this process we evaluate a number of factors including a carbon price for CO₂ emissions in our generation capacity planning. Future generation planning incorporates this business strategy to make sound business decisions. The most substantial business decision made in 2012 influenced by this capacity planning process was the decision to begin development of a new natural gas-fired electric generating facility. This facility is scheduled to begin serving our electric customers in 2017. Furthermore, the Company continues to work toward the late 2011 decision to cease operations at several small coal-fired generating facilities in the 2015-2016 timeframe which will reduce the Company’s carbon footprint.

CMS Energy Corporation

Integrating the Cost of Carbon into Project Economics: In countries with existing or imminent GHG regulation, the cost of regulatory compliance is evaluated based on specific regulation and local carbon pricing information and is incorporated into the base-case economic analysis for ongoing and new capital expenditures. For operations in countries without existing or imminent GHG regulation, all capital projects costing more than \$75 million, or impacting annual emissions by more than 25,000 metric tons of CO₂e, must use the corporate cost of carbon forecast to provide sensitivity to project economics for management review...ConocoPhillips incorporates the impact of carbon cost on business operating expense during its long range planning process.

Conoco Phillips

Excerpts on pricing from CDP 2013 disclosures

In addition to the cost of fuel, Delta has incorporated current CO₂ emissions costs into business decisions regarding routes to/from the EU in anticipation of compliance with EU ETS and regarding future expectations of CO₂ emissions costs into decisions for future aircraft purchases.

Delta Air Lines

An internal carbon price is one of several methods that we use to guide investment in emission reduction and other capital investment activities...The way that we use this tool is to embed a high/medium/low carbon price scenario into our process for evaluating the economics of capital investments over \$7 million (USD) and others with potentially significant GHG emissions impacts. The intended use of the internal carbon price related to significant new investments is to encourage consideration of existing or future scenarios where there may be a price on carbon (e.g. in a scenario with a high price on carbon a more expensive but less energy intensive technology or process improvement would have a more favorable return on investment compared to a scenario with a low or no price on carbon). The illustrative use of an internal carbon price to alternatively assess comparative economic impact of different investment scenarios is one factor that helps inform capital decision making.

E.I. du Pont de Nemours and Company

Jabil has gone beyond assigning ownership of carbon reduction initiatives to the Corporate Environmental Team. The effort involves driving energy expense reduction targets at each factory, which is a key catalyst to engage operations and drive resulting reduction efforts that directly reduce carbon emissions. Driving down the cost of energy directly correlates and translates into driving down the cost of carbon. This is embraced as a new approach to achieve a competitive edge in the manufacturing process.

Jabil Circuit, Inc.

To the extent climate change presents regulatory risks, GE has been preparing for, and complying with, related requirements for years. For example, GE complies with cap and trade regulations covering a number of its facilities in the EU. Each of these facilities has developed and, where necessary, is implementing a strategy to ensure compliance. GE is required to complete reporting for several facilities in the US under the US GHG Mandatory Reporting regulations...GE also conducts due diligence on climate risks and opportunities as part of its environmental review of all property and business transactions. GE's Energy Financial Services business models a reasonable price of carbon into its transactions. Other GE businesses are encouraged to do the same.

General Electric Company

PG&E uses a "carbon adder" to incorporate a carbon price proxy for planning analyses. This mechanism ascribes a cost to emitting CO₂ when weighing competitive bids for renewable electricity supply from power generators and in our all-source Request For Offer for new generation facilities. This adder changes annually according to Appendix A of CPUC Resolution E-4118. Our use of a carbon adder helps drive more investment towards lower emissions electricity.

PG&E Corporation

Using an internal price on carbon

Excerpts on pricing from CDP 2013 disclosures

Disney's business strategy, including both our internal tax on carbon and the Environmental Assessment Statement for Capital Authorization Requests, promote Disney's publicly-stated long term target of achieving zero net direct emissions and reducing energy consumption....The most important components of our short term business strategy that have been influenced by climate change include the Company's internal carbon tax on direct emissions and our supplier Environmental Responsibility Index (ERI) survey...This program has encouraged business units to take on various fuel efficiency projects and to change the types of refrigerant used in HVAC systems to help Disney progress towards our Scope 1 emission reduction goal.

To achieve our long-term goal of "zero net direct GHG emissions," the Company strives to reduce direct emissions and invest in high-quality carbon offset projects. The costs of the carbon offset projects are charged back to individual business units at a rate proportional to their contribution to the Company's overall direct emissions footprint. Thus, our businesses are now exposed to an internal carbon price. The "Climate Solutions Fund" is the name given to the Company's internal carbon pricing program. This program essentially places an internal tax on carbon emissions, giving business units an incentive to reduce their carbon emissions. The program also places a known cost on carbon emissions, which allows the business segments to more accurately determine cost effective efficiency projects to undertake.

Walt Disney Company

When we were making key environmental business decisions, the existing simple payback model of a specified number of years had to be rethought to ensure we were making the right investments. ASDA {Wal-mart affiliate} was one of the first U.K. retailers to embed a shadow cost of carbon in all carbon mitigation investment decisions. The actual price we set is confidential, but flexible, to allow it to change with time as external factors evolve, and thus ensure our appraisal model remains world class.

The specific financial implications of an international agreement on climate change depend greatly on the structure (taxation versus cap-and-trade schemes) and scope (which industries are regulated) of the agreement and the way it is carried out in each of the markets where we operate. If comprehensive carbon pricing systems were applied across all of our markets and covered the entire retail industry, and we assume a price of USD \$18 per ton, the potential direct cost to Walmart is approximately \$104 million, based on our Scope 1 emissions. This is conservative estimate because some of these emissions are already covered by existing carbon schemes and would not be included. While this additional cost is primarily seen as a risk, Walmart's early action on emission reductions represents a competitive advantage over other retailers that have not performed such projects.

Wal-Mart Stores, Inc.

The scope of our risk management procedures with regard to climate change risks and opportunities includes consideration of the impacts of regulation, customer behavior changes and needs, reputational risks, and weather risks within the next five years – i.e. a timeframe that is in alignment with the average length commercial loans in our portfolios. We use carbon shadow pricing in our power and utilities group to consider how potential carbon regulation could affect our customers' ability to repay their loan

In 2007 (and the findings are still relevant as of 2012), Wells Fargo commissioned an internal assessment, working with consultants Sustainable Finance Ltd., to examine potential risks associated with our lending activities to commercial customers in carbon intensive industries. In addition, we began "shadow pricing" carbon in our assessment of potential credit commitments to utility industry companies.

Wells Fargo & Company



...When examining future resources to meet our customers' needs, the company includes a "carbon proxy cost" to project the expected future costs of carbon dioxide emissions. This helps us evaluate the future energy resources we would acquire to meet our customers' needs, and compares both operational and climate policy costs among fossil-based, renewable, and other low-carbon sources of electricity. The Environmental Policy group works closely in developing key corporate strategies with Resource Planning (which is accountable for determining the company's future energy resource needs), Finance, the Chief Risk Officer, the CEO and CFO, and the renewable energy planning business development group. Our utility companies operating in Minnesota, Colorado, and New Mexico use a carbon proxy cost mandated by the state commissions as part of its evaluation of the impact of potential GHG regulation on its future resource acquisition plans and various scenario analysis. The carbon proxy costs are in the range of approximately \$20/ton.

Xcel Energy Inc.



Other Findings on Carbon Pricing

The 2013 CDP findings are consistent with a 2011 survey conducted by the Royal Dutch Shell Company based upon CDP data that found electric utilities, oil and gas companies and major energy consumers were particularly active in employing internal CO₂ prices. The report cited \$20 per ton as the average among electric utilities in North America and \$40 per ton among international oil companies. The overall range in price to drive energy efficiency was \$5-70 per ton.

In its 2013 CDP Disclosure, Royal Dutch Shell said, "we consider the potential cost of projects CO₂ emissions in all major investment decisions, using a cost of \$40 per ton of CO₂." In addition to its CDP disclosure, Shell makes this figure public in its annual sustainability report.

In its annual report, the Puma company in 2010 used a price of \$87 per ton in its financial and energy cost planning⁴.

Relationship of Corporate Prices to Government Estimates

In striving to establish a workable and credible carbon price, companies look to various governmental initiatives that link carbon pricing to social development. The range in pricing used by companies reflects consistency with those governmental initiatives. Throughout the world, various policies involve carbon pricing, with significant range in price.

On the next page is a summary of these ranges, based upon the World Bank's May, 2013 report entitled "Mapping Carbon Pricing Initiatives: Developments and Prospects"⁵

In California, where a sub-national carbon market has been established, according to a May 2013 survey conducted by the International Emission Trading Association and PWC⁶, prices have ranged between \$14-15 per metric ton.

In Canada, according to a March 2013 Policy Brief by Sustainable Prosperity⁷, a national research and policy network based at the University of Ottawa, which surveyed ten energy sector companies operating in Canada (BP, Shell, Suncor, Statoil, Devon, Cenovus, Penn West, Enbridge, Ontario Power Generation, and SaskPower), all ten companies had some experience in using shadow carbon pricing; seven formally, and three informally. Among the seven companies that formally use a shadow carbon price, the price ranged from CN\$15 per ton to CN\$68 per ton. The top of the range represents a price projection for future years: CN\$48-\$68 per ton for 2020 and up to 2040.

A price of \$25 per ton was used as a benchmark reference by the staff of the International Monetary Fund (IMF) in a 2011 background report for reference by finance Ministers at the G20 entitled "Promising Domestic Fiscal Instruments for Climate Finance"⁸. In this case, the price was used to estimate potential revenue that might ensue from a carbon tax. Further studies by the IMF on carbon pricing were due in early 2014.

⁴ http://about.puma.com/wp-content/themes/aboutPUMA_theme/financial-report/pdf/EPL080212final.pdf

⁵ www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2013/05/23/000350881_20130523172114/Rendered/PDF/779550WP0Mappi0ti050290130morning0.pdf

Sample international prices

Country	Price of carbon and unit	Euros US Dollars	Applies to
Australia	Current price is A\$23	€15.985 \$21.116 USD	
British Columbia, Canada	CN\$30 per tCO ₂	€22.058 \$29.146 USD	All consumers of fossils fuels
Costa Rica	Set as 3.5% of the market value of fossil fuels		
Denmark	150 DKK per metric ton	€20.115 \$26.579 USD	Operators covered by EU ETS
European Union	€4.50 per tCO ₂	\$5.938 USD	
Finland	For liquid traffic fuels equivalent to €60 per tCO ₂ For heating traffic fuels equivalent to €30 per tCO ₂ For coal and natural gas equivalent to €30 per tCO ₂	\$78.00 USD \$39.00 USD \$39.00 USD	All consumers of fossil fuels
Ireland	For natural gas and mineral oil equivalent to €20 per tCO ₂ For solid fuels equivalent to €20 per tCO ₂	\$26 per tCO ₂ \$26 per tCO ₂	All consumers of fossil fuels in the Republic of Ireland Operators covered by EU ETS
India	50 rupees per tCO ₂	€0.641 \$0.846 USD	
Japan	¥289 per tCO ₂	€2.195	All consumers of fossil fuels
Norway	Rates range of Nkr.25-410 per tCO ₂	€3.195-9.07 per tCO ₂ \$4-71 per tCO ₂	Operators covered by EU ETS
South Africa	From 2013 to introduce a R120 per tCO ₂	€9.262 \$12.222 USD	Comprehensive coverage of all economic sectors
Sweden	Equivalent to Skr1050 per tCO ₂	€121.945 \$161.132 USD	Households and services in full
Switzerland	CHF 36 per metric ton	€29.106 \$38.408 USD	
United Kingdom	Equivalent to £4.94 per tCO ₂	€5.718 \$7.556 USD	Electricity generators

Conclusion

Carbon pricing: prudent and useful

The widespread use of carbon pricing as a planning tool suggests that, despite the absence of global regulation of GHG emissions, mainstream businesses find the use of carbon pricing to be realistic, prudent and useful. Though many companies using an internal carbon price referred to potential increased costs should a carbon price become more formalized or mandatory, no company cited major business disruption as an effect of either achieving GHG reductions or planning for costs of carbon as regulatory regimes evolve.

About CDP and CDP Disclosure:

Each year CDP, launched in 2000 and formerly known as the Carbon Disclosure Project, administers a questionnaire to public companies on behalf of its signatories and makes the disclosure results public in annual reports. CDP signatories are banks, investors, wealth advisors, pension funds, and other entities in the financial services sector. In 2013, CDP collected disclosure data on behalf of 722 investor signatories controlling \$87 trillion through its climate change program. In 2013, 1000 US companies disclosed through CDP, including 334 companies from the Standard & Poor's 500. Fifty-four percent of world market capital now discloses through CDP.

Investors become signatories to CDP's questionnaires to secure disclosure of environmental data across four separate programs—climate, water, forests and Carbon Action. The resulting data provides the financial community with information to help drive investment toward a low-carbon and more sustainable economy.

Disclosure data and information on corporate use of "internal price on carbon", and included in this report, is gathered from responses to CDP's climate change questionnaire in the section that requests companies to disclose their risk management and business development strategies that relate to climate change.

To read 2013 company disclosures in full please go to www.cdp.net/en-US/results/pages/responses.aspx

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