

**Module: Introduction****Page: Introduction****CC0.1 Introduction: Please give a general description and introduction to your organization.**

Praxair, Inc. (Praxair or the company) was founded in 1907 and became an independent publicly traded company in 1992. Praxair was the first company in the United States to produce oxygen from air using a cryogenic process and continues to be a major technological innovator in the industrial gases industry.

Praxair is the largest industrial gas supplier in North and South America, is rapidly growing in Asia, and has strong, well-established businesses in Europe. Praxair's primary products in its industrial gases business are atmospheric gases (oxygen, nitrogen, argon, rare gases) and process gases (carbon dioxide, helium, hydrogen, electronic gases, specialty gases, acetylene). The company also designs, engineers, and builds equipment that produces industrial gases primarily for internal use. The company's surface technologies segment, operated through Praxair Surface Technologies, Inc., supplies wear-resistant and high-temperature corrosion-resistant metallic and ceramic coatings and powders. Praxair's sales were \$11,925 million, \$11,224 million, and \$11,252 million for 2013, 2012, and 2011, respectively.

Praxair serves approximately 25 industries as diverse as healthcare, petroleum refining, computer-chip manufacturing, beverage carbonation, fiber-optics, steel making, aerospace, chemicals and water treatment. In 2013, 95% of sales were generated in four geographic segments (North America, Europe, South America and Asia) primarily from the sale of industrial gases, with the balance generated from the surface technologies segment. Praxair provides a competitive advantage to its customers by continuously developing new products and applications, which allow them to improve their productivity, energy efficiency and environmental performance.

Atmospheric gases are the highest volume products produced by Praxair. Using air as its raw material, Praxair produces oxygen, nitrogen and argon through several air separation processes of which cryogenic air separation is the most prevalent. As a pioneer in the industrial gases industry, Praxair is a leader in developing a wide range of proprietary and patented applications and supply systems technology. Praxair also led the development and commercialization of non-cryogenic air separation technologies for the production of industrial gases. These technologies open important new markets and optimize production capacity for the company by lowering the cost of supplying industrial gases.

Process gases, including carbon dioxide, hydrogen, carbon monoxide, helium, specialty gases and acetylene are produced by methods other than air separation. Most carbon dioxide is purchased from by-product sources, including chemical plants, refineries and industrial processes and is recovered from carbon dioxide wells. Carbon dioxide is processed in Praxair's plants to produce commercial and food-grade carbon dioxide. Hydrogen and carbon monoxide are produced by either steam methane reforming of natural gas or by purifying by-product sources obtained from the chemical and petrochemical industries. Most of the helium sold by Praxair is sourced from certain helium-rich natural gas streams in the United States, with additional supplies being acquired from outside the United States. Acetylene can be produced from calcium carbide and water. Praxair purchases a significant percentage as a chemical by-product.

There are three basic distribution methods for industrial gases: (i) on-site or tonnage; (ii) merchant or bulk liquid; and (iii) packaged or cylinder gases. These distribution methods are often integrated, with products from all three supply modes coming from the same plant. The method of supply is generally determined by the lowest cost means of meeting the customer's needs, depending upon factors such as volume requirements, purity, pattern of usage, and the form in which the product is used (as a gas or as a cryogenic liquid).

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## CC0.2 Reporting Year

Please state the start and end date of the year for which you are reporting data.

The current reporting year is the latest/most recent 12-month period for which data is reported. Enter the dates of this year first.

We request data for more than one reporting period for some emission accounting questions. Please provide data for the three years prior to the current reporting year if you have not provided this information before, or if this is the first time you have answered a CDP information request. (This does not apply if you have been offered and selected the option of answering the shorter questionnaire). If you are going to provide additional years of data, please give the dates of those reporting periods here. Work backwards from the most recent reporting year.

Please enter dates in following format: day(DD)/month(MM)/year(YYYY) (i.e. 31/01/2001).

**Enter Periods that will be disclosed**

Tue 01 Jan 2013 - Tue 31 Dec 2013

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## CC0.3 Country list configuration

Please select the countries for which you will be supplying data. This selection will be carried forward to assist you in completing your response.

Select country

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## CC0.4 Currency selection

Please select the currency in which you would like to submit your response. All financial information contained in the response should be in this currency.

USD(\$)

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## CC0.6 Modules

As part of the request for information on behalf of investors, electric utilities, companies with electric utility activities or assets, companies in the automobile or auto component manufacture sectors, companies in the oil and gas industry, companies in the information technology and telecommunications sectors and companies in the food, beverage and tobacco sectors should complete supplementary questions in addition to the main questionnaire.

If you are in these sectors (according to the Global Industry Classification Standard (GICS)), the corresponding sector modules will not appear below but will automatically appear in the navigation bar when you save this page. If you want to query your classification, please email [respond@cdp.net](mailto:respond@cdp.net).

If you have not been presented with a sector module that you consider would be appropriate for your company to answer, please select the module below. If you wish to view the questions first, please see <https://www.cdp.net/en-US/Programmes/Pages/More-questionnaires.aspx>.

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## Further Information

**Module: Management**

**CC1.1 Where is the highest level of direct responsibility for climate change within your organization?**

Individual/Sub-set of the Board or other committee appointed by the Board

**CC1.1a Please identify the position of the individual or name of the committee with this responsibility**

The name of the Board Committee is the Committee on Governance and Nominating; they are responsible for "(Reviewing) periodically the Corporation's guidelines and policies governing the Corporation's response to important broad public policy issues in the areas of corporate social responsibility, corporate citizenship and sustainable development." This includes climate change policy and activity, as well as emerging issues in the sustainability area. The Committee reports to the full Board of Directors five times per year on all of these issues. The Chair of the Committee is Robert L. Wood.

**CC1.2 Do you provide incentives for the management of climate change issues, including the attainment of targets?**

Yes

**CC1.2a Please provide further details on the incentives provided for the management of climate change issues**

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator
Chief Executive Officer (CEO)	Monetary reward	Examples of incentivized performance indicators include meeting corporate or business or functional energy and/or GHG emission reduction targets, which are linked to Praxair's climate change strategy. Strong performance in this area can be rewarded by increased variable compensation benefits. The 2013 Praxair Proxy Statement (filed April 22, 2014) p 39 notes that the Compensation Committee applied a positive adjustment to the variable compensation payout in 2013 in recognition of the Company's favorable performance relative to non-financial goals. "The Compensation Committee also established those non-financial elements that were considered most important to long term sustainable success and established annual non-financial goals with respect to those elements [including]... strategic positioning of the business for long term performance, ... environmental performance ... and performance in sustainable development." (Praxair Proxy Statement p. 38) At Praxair, sustainable development performance is measured by achieving sustainable development targets, including our corporate energy and GHG targets. For example, the Compensation Committee noted that the Company ... "(iii) was selected for the Dow Jones Sustainability World Index for the eleventh year in a row." (Praxair Proxy Statement page 39)
Corporate executive team	Monetary reward	Examples of incentivized performance indicators include meeting corporate or business or functional energy and/or GHG emission reduction targets, which are linked to Praxair's climate change strategy. Strong performance in this area can be rewarded by increased variable compensation benefits. The 2013 Praxair Proxy Statement (filed April 22, 2014) p 39 notes that the Compensation Committee applied a positive adjustment to the variable compensation payout in 2013 in recognition of the Company's favorable performance relative to non-financial goals. "The Compensation Committee also established those non-financial elements that were considered most important to long term sustainable success and established annual

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Management group	Monetary reward	Examples of incentivized performance indicators include: Meeting corporate or business or functional energy and/or GHG emission reduction targets, which are linked to Praxair's climate change strategy. As these are part of management performance metrics, good performance in this area can be rewarded by improved variable compensation benefits.
All employees	Monetary reward	Examples of incentivized performance indicators include: Meeting corporate or business or functional energy and/or GHG emission reduction targets, which are linked to Praxair's climate change strategy. These can be rewarded by improved variable compensation benefits and/or a Special Recognition Award (SRA), for employees below the variable compensation level.

**Further Information**

**Page: CC2. Strategy**

**CC2.1 Please select the option that best describes your risk management procedures with regard to climate change risks and opportunities**

Integrated into multi-disciplinary company wide risk management processes

**CC2.1a Please provide further details on your risk management procedures with regard to climate change risks and opportunities**

Frequency of monitoring	To whom are results reported	Geographical areas considered	How far into the future are risks considered?	Comment
Annually	Individual/Sub-set of the Board or committee appointed by the Board	North America, South America, Europe, Asia	3 to 6 years	The VP of Sustainable Development annually reports to the Board Committee on Governance and Nominating on Praxair's sustainable development programs, targets and risks and opportunities, including those related to Praxair's climate change strategy.

**CC2.1b Please describe how your risk and opportunity identification processes are applied at both company and asset level**

COMPANY RISK/OPPORTUNITY ASSESSMENT: Responses are collected in an annual survey to business management worldwide and functional leads, including sustainable development. Respondents identify risks in their area against an incidence/ severity index. The results are subjected to a range of analyses to establish priority concerns. Risks and opportunities are evaluated based on their potential financial implications (on a scale up to several million dollars), up to the highest consequence, i.e., loss of life, as well as the probability of occurrence.

ASSET LEVEL RISK/OPPORTUNITY ASSESSMENT: Risks also take into account information from the field. In addition, risks to physical assets are monitored with periodic and at least annual evaluations from external risk assessors. These risk assessments evaluate each facility worldwide over a certain size, its vulnerability to risks from severe weather, and the potential monetary risk. The data is analyzed to help determine the scope and limit of Praxair's catastrophic insurance coverage. Risk maps are also developed to identify areas prone to severe weather events, where Praxair also has assets.

**CC2.1c How do you prioritize the risks and opportunities identified?**

During Praxair's risk assessment process, all respondents to the annual risk survey identify risks in their area against an incidence/ severity index. The results are subjected to a range of analyses to establish priority concerns. Those risks considered most significant are identified and reported at least annually to executive management and to the Board, and then to shareholders in Praxair's Annual Report, see ITEM1A RISK.

The 2013 list of risks in Praxair's 10k identified climate change risk in the areas of (1) rising energy prices; (2) emerging environmental and GHG regulation; (3) risks of catastrophic events such as extreme weather; and (4) the risk of not bringing new technologies to market.

Because climate change risks were identified by the corporate risk assessment process, they are automatically considered top priorities in the annual sustainable development materiality assessment (SDMA). As part of the SDMA process, Praxair reviews all the issues potentially applicable to the company, and ranks the materiality of these issues. For the most recent SDMA performed in early 2014, a subgroup of senior Praxair leadership narrowed the list from 46 to 23 issues. Then, an electronic survey was issued to 60 Praxair leaders from 14 countries, who ranked the issues in terms of relative priority. A handful of major customers in Mexico and Central America were also surveyed to determine whether their priorities were aligned with Praxair's.

A final list of 14 material issues was ultimately identified, which are mapped to Praxair's core values, strategy and growth drivers. Four of the 14 material issues identified in Praxair's SDMA and nine of the 19 KPIs and targets relate to the climate change risks and opportunities noted in Praxair's 10k, including energy & GHG efficiency, sustainable transportation and product stewardship.

**CC2.1d** Please explain why you do not have a process in place for assessing and managing risks and opportunities from climate change, and whether you plan to introduce such a process in future

Main reason for not having a process	Do you plan to introduce a process?	Comment
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**CC2.2 Is climate change integrated into your business strategy?**

Yes

**CC2.2a Please describe the process of how climate change is integrated into your business strategy and any outcomes of this process**

i. Influence: Climate Change falls under Sustainable Development (SD). The Vice President, SD, reports regularly to the CEO and annually to the Board Committee on Governance & Nominating. Environmental and Social Responsibility are Core Values for Praxair. We help customers worldwide improve their environmental performance and carbon footprint, while minimizing our own environmental resource intensity and maximizing our social and community contributions. Since 2011, the SD VP has integrated corporate SD strategy with climate-related initiatives, goals and targets into the business strategies of all Praxair divisions. The integrated strategy is influenced by performance against these goals and targets, as well as risks identified during Praxair's annual risk assessment process, including those risks related to climate change and opportunities presented by climate change. Performance against targets, including energy and GHG targets, is reviewed quarterly by executive management.

The corporate SD Council, comprised of leaders from corporate functions and the business units, reviews emerging issues, determines materiality and makes recommendations to the SD Executive Steering Committee. The Executive Steering Committee defines and executes Praxair's SD strategy (which includes climate change). Information is collected by the Council through the SD Management System process, including progress against targets.

ii. Aspects: Praxair's climate change strategy has been influenced by final and proposed regulations in the U.S. and around the world that require GHG reporting and/or cap and trade; the identified regulatory, physical and reputational risks; as well as the opportunities driven by climate change to Praxair's business.

iii. Short-Term Strategy: The most important component of Praxair's short-term (one to five years) strategy that has been influenced by climate change is the development of 10 new corporate GHG goals in 2010, the achievement of which became part of the management variable compensation goals – the company's climate change strategy is now closely tied to our commitments to demonstrate operational GHG intensity improvement and customer carbon productivity. Many of these are annual energy and GHG intensity improvement targets that reinforce our commitment to energy efficiency improvements. This focus has also revealed an opportunity in the short term for cost savings. Praxair has developed environmental KPIs to understand environmental and GHG costs in operations. Our productivity organization saves over 5% off our cost stack each year. In 2010 we started to also report the environmental savings from productivity projects. In 2013 this grew to more than \$120 million gross savings, and more than 475,000 MT CO<sub>2</sub>e saved. We anticipate there will be additional value from these results as they allow us to see the relationship between different activities, such as reducing energy and reducing waste.

iv. Long-Term Strategy: Defined as more than five years in the future; we see long-term business opportunity from innovation that takes advantage of opportunities presented by climate change. Praxair has created measurement systems in operations and in R&D that allow us to explore the GHG costs and benefits of any operational improvement or innovation project. We have a target that at least 30% revenue should come from "eco-innovation," by 2015, i.e. from products that bring environmental benefit (22% in 2009; 27.2% in 2013). With Praxair's business model, much of the environmental benefit we provide customers is energy efficiency. Climate change has also influenced our long-term risk mitigation practices. In order to protect our financial results against the potential increase in the price of energy, and as part of operational eco-efficiency, Praxair continues to invest aggressively in energy efficiency. We have a long-term target: From 2009–2020, achieve a minimum annual energy savings (vs. baseline) of 1.8 million MWh of electricity and 2.5 million MMBtu of natural gas, delivering anticipated cumulative savings in excess of \$600 million and 6 million MT CO<sub>2</sub>e by the end of the goal period.

v. Strategic Advantage: The focus on energy efficiency and GHG emissions reductions reduces Praxair's risk from higher energy costs, and is a significant contributor to our operational and financial results and Praxair's industry leading operating margin and return on capital. In addition: EMPLOYEE ENGAGEMENT has become a core value for Praxair. GHG targets cover everyone: from administrative assistants, truck drivers, facility managers to the CEO. Employee environmental engagement is a core part of our employee engagement strategy. Praxair is using environmental data and analytics to connect with employee values and the company mission, and to drive results in productivity and eco-efficiency, improve decision making, and gain competitive advantage. Employee environmental engagement is helping save money, save energy and GHG emissions, reduce other resource consumption, improve safety and operational discipline, and is driving environmental innovation.

COMPETITIVE ADVANTAGE: GHG goals are a clear sign of leadership in our sector – evidenced by recognition received from CDP and others. Energy efficiency directly drives business results by providing Praxair's customers with a lower cost solution to industrial gas production, typically than they can generate/supply on their own, which allows us to win more customers.

BUSINESS DEVELOPMENT: Praxair invested in the calculation of the carbon productivity of our major products & applications (hydrogen [H<sub>2</sub>] for refining and oxygen [O<sub>2</sub>] in the steel industry), and the validation and communication of this information to our customers. We invested in research on climate change mitigation

technologies that include industrial energy efficiency, 2nd generation biofuels and applications for solar cells. This information is very valuable to our customers and differentiates us in our sector.

vi. Business Decisions: With input from the SD organization, and based on our climate change assessment and our energy and GHG targets, Praxair made a business decision to develop and launch a strategy of “sustainable productivity” in Jan. 2012. Environmental metrics (particularly energy, GHG, water) are used to measure and validate sustainable productivity for the organization. These SD metrics were added to the productivity mgt. system database; projects are tagged as “SD”, entered with their environmental and cost savings, tracked monthly and reported quarterly to executive management. In parallel, “sustainable productivity” was supported by training (“Lean and Green”) and aligned with the strengthening of our brand communications (“Making our Planet More Productive”). In 2013, Praxair realized more than \$120 in gross cost savings and more than 475,000 MT GHG emissions avoided through sustainable productivity projects.

**CC2.2b** Please explain why climate change is not integrated into your business strategy

**CC2.3** Do you engage in activities that could either directly or indirectly influence public policy on climate change through any of the following? (tick all that apply)

Direct engagement with policy makers  
Trade associations

**CC2.3a** On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
Energy efficiency	Support	Praxair actively supports the Shaheen-Portman Senate Bill 1000, the Energy Savings and Industrial Competitiveness Act, currently pending before the U.S. Congress. This bi-partisan bill contains a broad package of low-cost tools that would reduce barriers for businesses, homeowners and consumers in the U.S. looking to adopt off-the-shelf energy efficiency technologies that will help them save money from advances in better insulation, computer-controlled thermostats and more efficient electric motors. Our engagement includes frequent, direct interaction with U.S. government officials to educate policy makers on the importance of energy efficiency and managing resources sustainably, and on the business opportunities presented by increased commitments to energy efficiency.	Praxair supports this legislation with no exceptions. We support the overall objective of the bill, which is to drive energy efficiency in manufacturing.

**CC2.3b** Are you on the Board of any trade associations or provide funding beyond membership?

No

**CC2.3c** Please enter the details of those trade associations that are likely to take a position on climate change legislation

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
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**CC2.3d** Do you publically disclose a list of all the research organizations that you fund?

**CC2.3e** Do you fund any research organizations to produce or disseminate public work on climate change?

**CC2.3f** Please describe the work and how it aligns with your own strategy on climate change

**CC2.3g** Please provide details of the other engagement activities that you undertake

**CC2.3h** **What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?**

Praxair maintains a detailed oversight process to ensure our activities are conducted in a legal, ethical and transparent manner. This includes oversight by the chief compliance officer and an annual program review by the Board of Directors. Praxair's Government Relations department reports to the Chief Compliance Officer. In addition, our employees participate in annual training regarding issues related to doing business with the government, complying with anti-trust and competition laws, and the FCPA. Finally, there is coordination with the VP/Chief Sustainability Officer to ensure consistency of public policy advocacy with Praxair's sustainability strategy, including our energy and GHG strategy.

**CC2.3i** Please explain why you do not engage with policy makers

**Further Information**

**Page: CC3. Targets and Initiatives**

**CC3.1** **Did you have an emissions reduction target that was active (ongoing or reached completion) in the reporting year?**

Absolute and intensity targets

**CC3.1a** **Please provide details of your absolute target**

ID	Scope	% of emissions in scope	% reduction from base year	Base year	Base year emissions (metric tonnes CO2e)	Target year	Comment
Abs1	Scope 1	3%	5%	2012	235000	2013	Praxair's trucking target for Praxair drivers is to improve GHG emissions from driving by 5% by 2013. This builds on the bulk and

ID	Scope	% of emissions in scope	% reduction from base year	Base year	Base year emissions (metric tonnes CO2e)	Target year	Comment
							packaged gas GHG intensity driving targets that have applied to Praxair drivers since 2010.

**CC3.1b Please provide details of your intensity target**

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions	Target year	Comment
Int1	Scope 2	85%	4%	metric tonnes CO2e per metric tonne of product	2009	0.19	2013	Praxair has a target to improve energy intensity from Air Separation Units by 1% per year through 2015. ASUs are our largest users of electricity, and therefore our largest source of Scope 2 emissions. We have translated this target into a GHG target by using a constant average global emission factor. We recognize that emission factors vary greatly across regions and change over time, but because energy intensity is our business metric, we followed CDP's guidance in the use of this methodology for the purposes of calculating performance against this target.
Int2	Scope 1	45%	1.6%	metric tonnes CO2e per metric tonne of product	2009	8.27	2013	Praxair has a target to improve GHG intensity from Hydrogen Production by 0.4% per year, through 2020. This will result in a 4% intensity improvement by 2020. Hydrogen is Praxair's principal source of Scope 1 emissions and one of our most significant growth drivers. The hydrogen target was set in 2009 for hydrogen facilities operating at the time. The target does not include new hydrogen plants that started operating after 2009.
Int3	Scope 1	3%	6%	metric tonnes CO2e per metric tonne of product	2009	0.021	2013	Praxair established a trucking target in 2009 to improve GHG intensity from our bulk trucking operation (Praxair drivers) by 1.5% per year through 2015.

**CC3.1c Please also indicate what change in absolute emissions this intensity target reflects**

ID	Direction of change anticipated in absolute Scope 1+2 emissions at target completion?	% change anticipated in absolute Scope 1+2 emissions	Direction of change anticipated in absolute Scope 3 emissions at target completion?	% change anticipated in absolute Scope 3 emissions	Comment
Int1	Increase	5			The increase in ASU emissions is due to an increase in production, particularly at new ASUs that came online during 2013. Absolute emissions are calculated here using local and regional emission factors, as opposed to the constant EF used in the conversion of the energy target to a GHG target noted in 3.1b. This is so that information here is consistent with our reporting in sections 9 and 12 of this response.
Int2	Increase	15			The increase in emissions is mainly due to an increase in production at the hydrogen plants included in the target (i.e., those operating in 2009).
Int3	Decrease	13			GHG emissions from trucking (Praxair drivers) have decreased mainly due to emission reduction activities that have resulted in improvements to fuel consumption.

**CC3.1d For all of your targets, please provide details on the progress made in the reporting year**

ID	% complete (time)	% complete (emissions)	Comment
Abs1	100%	100%	We exceeded our total trucking target to achieve a 5% improvement in GHG emissions by 2013. We achieved a 13% improvement in 2013 over 2012. 6% is due to a reduction in miles, while 7% is due to better fuel consumption.
Int1	100%	100%	We met our ASU target to achieve a 1% per year improvement in energy and GHG intensity since 2009 (The target was 4% by 2013). By the end of 2013, we achieved a 4% improvement.
Int2	100%	100%	We exceeded our Hydrogen Production target to achieve 0.4% per year improvement in GHG intensity since 2009 (The target was 1.6% by 2013). By the end of 2013, we achieved a 2.0% improvement.
Int3	100%	100%	We exceeded our target to achieve a 1.5% per year improvement since 2009 in GHG intensity in our bulk trucking (The target was 6% by 2013). By the end of 2013, we achieved a 9.7% improvement.

**CC3.1e** Please explain (i) why you do not have a target; and (ii) forecast how your emissions will change over the next five years

**CC3.2 Does the use of your goods and/or services directly enable GHG emissions to be avoided by a third party?**

Yes

**CC3.2a Please provide details of how the use of your goods and/or services directly enable GHG emissions to be avoided by a third party**

i. How emissions were avoided by a 3rd party: Praxair's Carbon Productivity

Praxair has a target to demonstrate and validate customer carbon productivity for selected products. Praxair's carbon productivity has been calculated for four signature Praxair products in four markets:

- Hydrogen (H2) sold to make ultra-low sulfur diesel fuel (ULSD). When used in trucks fitted with diesel particulate filters, it eliminates black carbon. Environmental agencies, including a joint 2011 UNEP and World Meteorological Association report: "Integrated Assessment of Black Carbon and Tropospheric Ozone," see the elimination of black carbon as being the crucial short-term strategy to reduce the rate of global warming.
- Krypton sold to insulate thermal windows.
- Oxygen (O2) sold to optimize combustion in steelmaking.
- Argon for welding.

In 2013 these markets contributed 11% of sales. These applications allow Praxair customers to avoid Scope 1 and Scope 2 energy-related GHG emissions.

Example: Oxygen - The largest contributor to Praxair's Scope 2 GHG is energy use in our air separation units, and oxygen (O2) is a principal product of air separation. The metals sector accounts for 18% of Praxair sales, including the manufacture of more than 100 million metric tons of steel worldwide. Oxygen is used to enhance blast furnace iron production (reducing coke consumption and increasing furnace productivity), to decarburize steel, and frequently to increase efficiency and lower GHG and other emissions in other combustion applications throughout the steel mill. Praxair estimated that using our oxygen in steelmaking avoids almost 11 million metric tons CO2e per year.

ii. Emissions avoided: These four applications enabled customers to avoid 38 million metric tons of Scope 1+2 CO2e in 2013. This includes 11 million MT avoided by the use of oxygen in steelmaking and 25 million MT avoided by the use of hydrogen in ultra low sulfur diesel.

iii. Methodology - Some of our assumptions are provided here, but as the methodologies are lengthy, we provide a full description of our methodologies, including emission factors, assumptions and global warming potentials, at <http://www.praxair.com/our-company/sustainable-development/green-technologies-and-climate-change/less-carbon-more-green>.

Example: Hydrogen - H2, a key growth platform for Praxair, is made from natural gas (CH4) and steam. The combination of CH4 and water (H2O) produces H2 and emits CO2. In addition to enabling the reduction of sulfur from tailpipe emissions, when the ULSD is used in combination with a diesel particulate filter, it eliminates black carbon (BC). In this scenario, BC has a global warming potential of 2200 (based on an analysis by L. Bruce Hill for the Clean Air Task Force, which also provided us with emission factors to convert diesel fuel consumption into total CO2e emissions with and without diesel particulate filters). The final claim for benefits from H2 production factored in that 32% of Praxair H2 production is used to make ULSD and that 58% of trucks in the USA are fitted with diesel particulate filters (DPFs).

iv. Praxair is not currently considering originating CERs or ERUs within the framework of CDM or JI.

**CC3.3 Did you have emissions reduction initiatives that were active within the reporting year (this can include those in the planning & implementation phases)**

Yes

**CC3.3a Identify the total number of projects at each stage of development, and for those in the implementation stages, the estimated CO2e savings**

Stage of development	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	0
To be implemented*	27	8000
Implementation commenced*	392	115000
Implemented*	1854	475000
Not to be implemented	0	0

**CC3.3b For those initiatives implemented in the reporting year, please provide details in the table below**

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative, years	Comment
Energy efficiency: Building fabric	67 voluntary projects providing permanent reduction in power consumption for lighting retrofits, HVAC controls and building power needs. Voluntary; relates to Scope 2 target for ASUs	4400	954000	2500000	1-3 years	Lifetime is permanent.	Praxair implemented over 1800 projects in 2013. As we cannot list all of them, we grouped some of our more significant projects by activity type and provided information by grouping.
Energy efficiency: Processes	610 voluntary projects providing permanent improvements to energy requirements for turbines, compressors, fans and other primary process equipment, improvement to heat transfer efficiency and control equipment for process efficiency optimization. Voluntary; relates to targets (Scope 1 energy use for hydrogen production, Scope 2 electricity use at ASUs)	394000	62000000	80000000	1-3 years	Lifetime is permanent.	Praxair implemented over 1800 projects in 2013. As we cannot list all of them, we grouped some of our more significant projects by activity type and provided information by grouping.
Transportation: fleet	720 voluntary projects providing permanent reduction in gasoline and diesel fuel use or fuel efficiency including route efficiency programs, on-site tank size optimization, trailer tank size optimization and truck modifications such as fairings and skirts for	32000	33000000	20000000	1-3 years	Lifetime is permanent.	Praxair implemented over 1800 projects in 2013. As we cannot list all of them, we grouped some of our more significant projects by activity type and provided

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative, years	Comment
	MPG efficiency Voluntary; relates to Scope 1 trucking targets (absolute and intensity)						information by grouping.
Process emissions reductions	41 voluntary projects providing permanent process improvements in 11 different countries for CO2 recovery, vent gas reductions, and the reduction of dry ice process losses. Voluntary; relates to Scope 1	22000	2000000	4900000	1-3 years	Lifetime is permanent.	Praxair implemented over 1800 projects in 2013. As we cannot list all of them, we grouped some of our more significant projects by activity type and provided information by grouping.
Process emissions reductions	8 voluntary projects providing permanent process efficiency improvements and reductions in filling losses for gas mixtures, primarily reductions in emissions of refrigerants, for various products in the US, Brazil and Taiwan. Voluntary; relates to Scopes 1+2	38	166000	61000	<1 year	Lifetime is permanent.	Praxair implemented over 1800 projects in 2013. As we cannot list all of them, we grouped some of our more significant projects by activity type and provided information by grouping.

**CC3.3c What methods do you use to drive investment in emissions reduction activities?**

Method	Comment
Dedicated budget for energy efficiency	As energy is a significant portion of Praxair's cost stack, Praxair pursues energy efficiency rigorously and in several areas. Praxair's sustainable productivity organization measures the environmental savings in our productivity work, or the "Lean and Green". This realized \$122 million of savings in 2013, about 820,000 MWh of electricity, 134,000 million Btus, and more than 475,000 MT CO2e avoided. Although much of this work has been embedded into the Productivity organization, small dedicated budget (under \$50k) was released for some internal software upgrades to improve reporting.

**CC3.3d** If you do not have any emissions reduction initiatives, please explain why not

**Further Information**

**Page: CC4. Communication**

**CC4.1** Have you published information about your organization’s response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s)

Publication	Page/Section reference	Attach the document
In voluntary communications (underway) – previous year attached	Praxair Sustainable Development Report 2012 Data Year: pp 1-3; Environmental Chapter Intro pp 51-54; EN3-7; EN16-18;	<a href="https://www.cdp.net/sites/2014/27/15027/Investor%20CDP%202014/Shared%20Documents/Attachments/CC4.1/Praxair%20Sustainable%20Development%20Report%202012%20Data%20Year.pdf">https://www.cdp.net/sites/2014/27/15027/Investor CDP 2014/Shared Documents/Attachments/CC4.1/Praxair Sustainable Development Report 2012 Data Year.pdf</a>
In mainstream financial reports (complete)	pages 6-8, 22-23	<a href="https://www.cdp.net/sites/2014/27/15027/Investor%20CDP%202014/Shared%20Documents/Attachments/CC4.1/Praxair_2013_Annual_Report.pdf">https://www.cdp.net/sites/2014/27/15027/Investor CDP 2014/Shared Documents/Attachments/CC4.1/Praxair_2013_Annual_Report.pdf</a>

**Further Information**

Praxair's new Sustainable Value Report and GRI Annex for the 2013 data year will be available on its website by July 10th. Please see our Sustainable Development Reporting Center at <http://www.praxair.com/our-company/sustainable-development/reporting-center>.

**Module: Risks and Opportunities**

**Page: CC5. Climate Change Risks**

**CC5.1** Have you identified any climate change risks that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

- Risks driven by changes in regulation
- Risks driven by changes in physical climate parameters
- Risks driven by changes in other climate-related developments

**CC5.1a** Please describe your risks driven by changes in regulation

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Cap and trade schemes	Praxair operates in jurisdictions that have, or are developing, laws and/or regulations to reduce or	Increased operational cost	1 to 3 years	Direct	More likely than not	Low-medium	Among other impacts, cap and trade schemes are expected to raise the cost of energy, which is a	The risk of energy price increases has for several consecutive years been identified in Praxair’s annual	For the most part, the management of these potential risks has zero additional financial impact

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	mitigate the perceived adverse effects of greenhouse gas (GHG) emissions, and faces a highly uncertain regulatory environment in this area. The European Union has a cap and trade scheme - the Emissions Trading System - which has wide implications for our customers and impacts certain Praxair operations in Europe. There are also requirements for mandatory reporting in the U.S. and Canada, which apply to certain Praxair operations and have or will be used in developing cap-and-trade regulations. These regulations are expected to impact certain Praxair facilities. Among other impacts, cap and trade schemes are expected to raise						significant cost for Praxair. For example, if energy prices rise 10%, energy costs to Praxair would rise proportionally and could exceed \$100 million.	risk assessment as one of Praxair's top risks. It is therefore brought to the attention of executive management and the Board, and a senior executive is appointed to ensure that the risk is managed for the coming year. Praxair's customer contracts routinely provide rights to recover increased electricity, natural gas, and other costs that are incurred by the company. Other actions to manage the risk of increased cost include: increasing relevant resources and training; consulting with vendors, insurance providers and industry experts; incorporating GHG provisions in commercial agreements; conducting regular reviews of the business risks	and are managed within Praxair's current human and capital resources and budgets. In addition, Praxair invested in internal consulting to improve its Sustainable Development Management System and reporting. The cost of this was less than \$100,000.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	the cost of energy, which is a significant cost for Praxair.							with management; regular evaluation and sensitivity analyses of the impacts of potential energy and raw material cost increases; presentations made to the Office of the Chairman and Board on various cost scenarios under different potential GHG tax regimes; and exploration of renewable energy options in order to expand our sources of energy to include non-fossil fuel sources. Praxair also aggressively invests in energy efficiency in the design of new plants, and in energy efficiency improvements to our existing plants. These activities are part of our sustainable development management system and are covered by our corporate GHG targets.	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Cap and trade schemes	Praxair anticipates continued growth in its hydrogen business, as hydrogen is essential for refineries to remove sulfur from transportation fuels to meet ambient air quality standards in the U.S. and around the world. Hydrogen production plants and a large number of other manufacturing and electricity-generating plants have been identified under California law as a source of carbon dioxide emissions. California has issued regulations to implement a cap and trade scheme in 2013 that includes emissions from liquid hydrogen production at Praxair's Ontario facility. Praxair's hydrogen business in the U.S. accounts for 82% of our Scope	Increased operational cost	Up to 1 year	Direct	More likely than not	Medium	Cap and trade schemes potentially create additional costs. Also, legislation that limits GHG emissions may impact growth in this area by increasing operating costs and/or decreasing demand. Such regulations are expected to raise the cost of energy, which is a significant cost for Praxair. For example, if energy prices rise 10%, energy costs to Praxair would rise proportionally and could exceed \$100 million.	Praxair's customer contracts routinely provide rights to recover increased electricity, natural gas, and other costs that are incurred by the company. Examples of additional Praxair responses include: rigorous management of energy costs; exploration of renewable energy options in order to expand our sources of energy to include non-fossil fuel sources; and the establishment of corporate GHG and energy targets, including a target for our hydrogen plants.	Praxair believes it will continue to mitigate potential costs through the terms of its product supply contracts. For the most part, the management of these risks currently has little additional financial impact and are managed within Praxair's human and capital resources and budgets. In addition, Praxair invested in internal consulting to improve its Sustainable Development Management System and reporting. The cost of this was less than \$100,000.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	1 GHG emissions. Legislation that limits GHG emissions may impact growth by increasing operating costs and/or decreasing demand.								
Fuel/energy taxes and regulations	Cost and Availability of Raw Materials and Energy – Increases in the cost of energy and raw materials and/or disruption in the supply of these materials could result in lost sales or reduced profitability. Energy is the single largest cost item in the production and distribution of industrial gases. Most of Praxair's energy requirements are in the form of electricity, natural gas and diesel fuel for distribution. Praxair attempts to minimize the financial impact of variability in these costs through the management of	Increased operational cost	1 to 3 years	Indirect (Supply chain)	About as likely as not	Medium	The supply of energy has not been a significant issue in the geographic areas where the company conducts business. However, energy availability and price is unpredictable and may pose unforeseen future risks. For example, if energy prices rise 10%, energy costs to Praxair would rise proportionally and could exceed \$100 million.	Regional energy conditions are unpredictable and may pose future risk. Praxair attempts to minimize the financial impact of variability in these costs through the management of customer contracts. Large customer contracts typically have escalation and pass-through clauses to recover energy and feedstock costs.	For the most part, the management of these potential risks has zero additional financial impact and are managed within Praxair's human and capital resources and budgets. In addition, Praxair invested in internal consulting to improve its Sustainable Development Management System and reporting. The cost of this was less than \$100,000.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>customer contracts and energy efficiency initiatives. Large customer contracts typically have escalation and pass-through clauses to recover energy and feedstock costs. Such attempts may not successfully mitigate cost variability which could negatively impact Praxair's financial condition or results of operations. The supply of energy has not been a significant issue in the geographic areas where Praxair conducts business. However, regional energy conditions are unpredictable and may pose future risk. For carbon dioxide, carbon monoxide, helium, hydrogen, specialty gases and surface technologies, raw materials are largely purchased</p>								

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	from outside sources. Praxair has contracts or commitments for, or readily available sources of, most of these raw materials; however, their long-term availability and prices are subject to market conditions. A disruption in supply of such raw materials could impact the company's ability to meet contractual supply commitments.								

**CC5.1b Please describe your risks that are driven by change in physical climate parameters**

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Tropical cyclones (hurricanes and typhoons)	The occurrence of catastrophic events or natural disasters such as extreme weather, hurricanes, or floods could disrupt the operations of	Reduction/disruption in production capacity	>6 years	Direct	About as likely as not	Medium-high	The most important risk is to human safety. On the financial side, the replacement cost of a single large Praxair facility could be more than \$50	Methods used to manage the risk include, among other actions: increasing relevant resources and training; consulting with vendors, insurance	Praxair annually spends in excess of \$20,000 to study its natural catastrophe risk. The service provides, among other

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	the company and/or its customers and suppliers and may have significant adverse impact on the results of the operations. The occurrence of natural disasters could disrupt or delay the company's ability to produce and distribute its products to customers and could potentially expose the company to third party liability claims. In addition, such events could impact the company's customers and suppliers resulting in temporary or long-term outages and/or the limitation of supply of energy or other raw materials used in normal						million. On a long-term average annual basis, the Praxair, Inc. portfolio could sustain potentially over \$3 million in hurricane losses.	providers and industry experts; incorporating GHG provisions in commercial agreements; and conducting regular reviews of the business risks with management. The Corporate Risk Management group continuously re-evaluates physical and financial operational risk from extreme weather exposure. This includes identification, analysis and management of current risk. Praxair Risk Management utilizes several tools to identify and manage natural disaster exposures. Periodically earthquake and windstorm analysis is completed on Praxair	items, detailed evaluations by geography of emerging hurricane and flooding vulnerability and likelihood of incidence of extreme weather.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	business operations.							<p>exposures to ensure that appropriate limits of insurance are purchased. Also, Praxair actively monitors current developments, evaluates the direct and indirect business risks, and takes appropriate actions, including the use of external climate risk identification software. A significant asset is our Operations department and our Safety, Health and Environment department, which work to eliminate the potential of risk with strong design and safety processes. This includes pre-project safety and environmental evaluations, and constant operations monitoring to ensure safety and operations excellence.</p>	

CC5.1c Please describe your risks that are driven by changes in other climate-related developments

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated Financial Implications	Management method	Cost of management
Reputation	Praxair uses energy and seeks to continually improve its energy efficiency; and its applications often bring energy efficiency, as well as environmental and GHG improvements, to customer processes. Some customers are seeking to reduce GHG gases in their supply chain and ask Praxair to provide information, e.g. with the CDP Supply Chain program, and/or to help meet their targets. If Praxair does not or cannot meet these expectations the company could lose	Reduced demand for goods/services	1 to 3 years	Direct	Unlikely	Low	The estimated financial implication could be over \$1 million in annual sales.	Praxair reaches out to customers and the public to demonstrate that its applications create a net GHG benefit. Praxair is an active participant in the CDP Supply Chain program and has answered fully for each year the program has run. 2013 scores for Praxair put it in the top quartile of respondents. Praxair was a CDP Supporter 2013. Praxair invested in research to calculate and validate its Carbon Footprint. We promote this research in public communications to help tell our story and manage the risk from our GHG emissions profile to our reputation. Praxair's carbon productivity was calculated for four signature Praxair products in four markets: Hydrogen used to make ultra-low sulfur diesel fuel; Krypton used to insulate thermal windows; Argon sold for welding; and Oxygen used to optimize combustion in steelmaking. In 2013 these markets contributed some 11% of sales. Praxair applications enabled customers to avoid 38 million metric tons of CO <sub>2</sub> e – an amount that	Praxair conducted the research in-house with subject-matter experts. We paid external providers for the validation audits. This amount was less than \$50,000.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated Financial Implications	Management method	Cost of management
	business from that customer.							exceeded all Praxair GHG emissions by 20 million metric tons. This research and results are offered as part of Praxair's communication to external stakeholders, including on our website and in our SD brochure, which we publish annually. Praxair does not seek GHG credit or offsets from these claims. More information on our methodology and external audit of results can be found on our website at <a href="http://www.praxair.com/our-company/sustainable-development/green-technologies-and-climate-change">http://www.praxair.com/our-company/sustainable-development/green-technologies-and-climate-change</a> .	

**CC5.1d** Please explain why you do not consider your company to be exposed to risks driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

**CC5.1e** Please explain why you do not consider your company to be exposed to risks driven by physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

**CC5.1f** Please explain why you do not consider your company to be exposed to risks driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

**Further Information**

**Page: CC6. Climate Change Opportunities**

**CC6.1** Have you identified any climate change opportunities that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

Opportunities driven by changes in regulation  
 Opportunities driven by changes in physical climate parameters  
 Opportunities driven by changes in other climate-related developments

**CC6.1a Please describe your opportunities that are driven by changes in regulation**

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
General environmental regulations, including planning	Governmental regulation of GHG and other emissions; renewable fuel standards in the EU and U.S.; the need for infrastructure build out in mature and developing economies (especially with the levels of growth being experienced in global megacities) - all these provide Praxair with market opportunities in applications like water technologies, carbon capture and sequestration (CCS) and industrial	Increased demand for existing products/services	1 to 3 years	Direct	More likely than not	Medium	Our eco-portfolio – applications that help customers reduce their environmental footprint – was 27.2% of Praxair’s 2013 sales, or over \$3 billion. Praxair’s long-term outlook is to achieve 8-12 percent annual organic sales growth from these drivers. If applications meet this target, this has a direct impact on Praxair’s profitability.	A significant component of Praxair’s applications technology is devoted to its legacy atmospheric gases business, where we continue to innovate. Praxair’s research and development is directed toward developing new and improved methods for the production and distribution of industrial gases and the development of new markets and applications for these gases. This results in the	There was no additional cost for actions taken, outside of regular budgeted staff and business costs in this area, including for R&D. A portion of the total R&D expenditure in 2013 (\$98 million) went to develop the applications and processes described in this section. An external auditor was paid to validate claims for CO2e avoided from Praxair oxygen and hydrogen applications, and this was less than \$50,000 in fees.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>gases. The renewable energy market is a growth area for Praxair. Praxair supports the photovoltaics market, a key player in the growth of renewable energy. We offer a complete portfolio of solar-grade atmospheric, specialty and dopant gases, delivery systems and sputtering targets, to help customers meet today's economic and environmental demands and position them to exceed these demands in the future. For example, Praxair manufactures Argon, a critical gas used in solar</p>							<p>development of new advanced air separation and hydrogen process technologies and the frequent introduction of new industrial gas applications. It is the job of Praxair's R&amp;D group to develop these applications technologies. In 2009, this group added Praxair's environmental KPIs to project ROI descriptions, so that any project passing through the R&amp;D gates can be viewed in terms of its \$ ROI and environmental ROI. This process allows us to consider the needs of our customers as well as the</p>	

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	wafer production. Praxair supplies Silane, a key raw material for the thin film deposition of amorphous and polysilicon films in the solar industry.							opportunities offered by the markets. This process has allowed the R&D group to develop targets for 2015: (1) that Praxair's eco-portfolio should equal or exceed 30% of sales, or more than \$3 billion of revenue by 2015; and (2) that the GHG benefit enabled by Praxair applications in use is double all Praxair GHG emissions.	

**CC6.1b** Please describe the opportunities that are driven by changes in physical climate parameters

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in precipitation extremes and droughts	Stricter regulation of water quality in emerging economies such as China is	Increased demand for existing products/services	1 to 3 years	Indirect (Client)	More likely than not	Medium	The potential financial implications can be calculated from the size of the market and	In the marketplace, we are established in Brazil with technology, engineering and	There was zero additional cost for actions taken, outside of regular budgeted staff

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	being implemented to better manage water quality in areas where there is population pressure in mega-cities, and increased drought and weather extremes. This presents market opportunity for Praxair, as we develop and deliver customized systems to help industrial plants and municipalities meet their wastewater management goals. We work directly with our customers to provide beginning-to-end treatment methods, from needs assessment and treatment strategy to equipment design, installation and industrial supply.						the size of Praxair's opportunity. Industry experts expect that the demand for water treatment products in China will grow 10.3 percent annually to \$7.5 billion in 2015. Wastewater is an \$80 million market for Praxair and is growing at >10% per year, 2012 – 2016. This represented an \$8-\$10 million market opportunity in 2013.	facility operations and are developing a strong business in China. Other markets include the U.S. and Europe. Praxair's water business is supported by a business development group who is actively investing in innovation and business development in this area. Water opportunities have been identified as significant. Praxair has identified the need for massive water infrastructure development that will involve similar processes and needs around the world. One example is Praxair's new Bio-Solids Management that utilizes ozone coupled with a Praxair application technology to	and business costs in this area, including for R&D. A portion of the total R&D expenditure in 2013 (\$98 million) went to develop the applications and processes described in this section.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>And we offer a wide range of applications that treat and reuse process water, all while maximizing treatment capacity, reducing VOC emissions, improving safety and reducing costs. Also, as the global demand for potable water continues to rise and fresh water supplies are quickly depleting, we're advancing industrial technology to make this life-sustaining resource accessible to a growing population. Last year alone, we helped bring clean drinking water to 25 million people around the world.</p>							<p>reduce sludge up to 80%. This Lyso™ ozonated sludge reduction technology enables bio-solids disposal costs to be greatly reduced. The approach results in significantly greater lysis of secondary sludge streams. To maintain this innovation stream, Praxair R&amp;D measures \$ ROI and environmental ROI, including GHG and water impacts, in all projects under development, so that any project passing through the R&amp;D gates can be viewed in terms of its \$ ROI and environmental ROI. This process allows us to consider the needs of our customers as well as the opportunities offered by the</p>	

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								markets. This process has allowed the R&D group to develop a target that Praxair's eco-portfolio should equal or exceed 30% of sales, or more than \$3 billion of revenue by 2015.	

**CC6.1c** Please describe the opportunities that are driven by changes in other climate-related developments

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Other drivers	New products and services will be needed to mitigate the effects of climate change, or plan for adaptation. These play out in different ways in different geographies, but they include the need for infrastructure build outs for water systems; technology to provide more resource efficiency; and	New products/business services	Up to 1 year	Indirect (Client)	More likely than not	Medium	Solar energy: Praxair sales forecasted to grow from \$60 million at ~ 10% per year. 2nd generation biofuels use industrial and specialty gases at many points in their supply chain and provide a potential ~\$100 million gases market by 2015.	For biofuels: We are exploring opportunities for technology advancement through yield and productivity improvements; solving gasification process challenges; and working on gas cleanup, processing and mixing. For photovoltaics: Praxair is developing and promoting the use of it products	There was no additional cost for actions taken, outside of regular budgeted staff and business costs in this area, including for R&D. A portion of the total R&D expenditure in 2013 (\$98 million) went to develop the applications and processes described in this section.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>energy security and reliability. These provide market opportunity for Praxair, as we provide gases into all these markets, e.g., nitrogen to make lighter composites to make aircraft more fuel efficient; alloys to make wind turbines more durable; CO2 to make water more potable and to clean wastewater systems. These gases are some of the gases sold into Praxair's end-markets in electronics (8% revenue), aerospace (3%) and "other" (11%) , and that provide growth opportunities as markets continue to grow for climate-related technologies.</p>							<p>throughout the supply chain. In the crystalline process, this includes: Hydrogen and Nitrogen for Polysilicon; Argon for Silicon Ingots; Nitrogen, Argon, Silane, Ammonia, CF4 and targets for silicon wafers; and Nitrogen &amp; Welding Gases for Solar Modules. We are actively pursuing opportunities in select regions, including China. We have plans to source 60% of applications development in emerging economies by 2015 (presently we source the vast bulk from U.S.-based R&amp;D). To maintain this innovation stream, Praxair R&amp;D measures \$ ROI and environmental ROI, including of water, in all projects under development, so</p>	

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								that any project passing through the R&D gates can be viewed in terms of its \$ ROI and environmental ROI. This process allows us to consider the needs of our customers as well as the opportunities offered by the markets. This process has allowed the R&D group to develop a target that Praxair's eco-portfolio should equal or exceed 30% of sales, or more than \$3 billion of revenue by 2015.	

**CC6.1d** Please explain why you do not consider your company to be exposed to opportunities driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

**CC6.1e** Please explain why you do not consider your company to be exposed to opportunities driven by physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

**CC6.1f** Please explain why you do not consider your company to be exposed to opportunities driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

**Further Information**

**Module: GHG Emissions Accounting, Energy and Fuel Use, and Trading**

**Page: CC7. Emissions Methodology**

**CC7.1 Please provide your base year and base year emissions (Scopes 1 and 2)**

Base year	Scope 1 Base year emissions (metric tonnes CO2e)	Scope 2 Base year emissions (metric tonnes CO2e)
Thu 01 Jan 2009 - Thu 31 Dec 2009	4163000	9317000

**CC7.2 Provide the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions**

Please select the published methodologies that you use
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
US EPA Mandatory Greenhouse Gas Reporting Rule
Other

**CC7.2a If you have selected "Other" in CC7.2 please provide details of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions**

The California ARB Regulation for the Reporting of Greenhouse Gas Emissions

**CC7.3 Please give the source for the global warming potentials you have used**

Gas	Reference
CO2	IPCC Fourth Assessment Report (AR4 - 100 year)
SF6	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	IPCC Fourth Assessment Report (AR4 - 100 year)
Other: HFC-134a	IPCC Fourth Assessment Report (AR4 - 100 year)
Other: HFC 404a	IPCC Fourth Assessment Report (AR4 - 100 year)
Other: HFC 507	IPCC Fourth Assessment Report (AR4 - 100 year)

**CC7.4 Please give the emissions factors applied and their origin; alternatively, please attach an Excel spreadsheet with data at the bottom of this page**

Fuel/Material/Energy	Emission Factor	Unit	Reference
Diesel/Gas oil	22.4	lb CO2e per gallon	US EPA AP 42
Natural gas	120	lb CO2 per 1000 ft3	US EPA AP 42

**Further Information**

**Page: CC8. Emissions Data - (1 Jan 2013 - 31 Dec 2013)**

**CC8.1 Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory**

Financial control

**CC8.2 Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e**

6152000

**CC8.3 Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e**

11883000

**CC8.4 Are there are any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?**

Yes

**CC8.4a Please provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure**

Source	Relevance of Scope 1 emissions from this source	Relevance of Scope 2 emissions excluded from this source	Explain why the source is excluded
Electricity use at very small sites	No emissions excluded	Emissions are not relevant	Praxair has a number of very small office sites, many with 1-2 people. We estimated these emissions and, as they represent less than 1% of our Scope 2 emissions, consider them to be de minimis.

**CC8.5 Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations**

Scope 1 emissions: Uncertainty range	Scope 1 emissions: Main sources of uncertainty	Scope 1 emissions: Please expand on the uncertainty in your data	Scope 2 emissions: Uncertainty range	Scope 2 emissions: Main sources of uncertainty	Scope 2 emissions: Please expand on the uncertainty in your data
More than 2% but less than or equal to 5%	Assumptions Metering/ Measurement Constraints	Our Sustainable Development Management System was implemented in 2011, requiring monthly sign-off from all businesses of their results versus corporate GHG targets and a quarterly review by the Office of the Chairman. This creates a level of internal oversight and management over our GHG emissions data. Most of Praxair Scope 1 emissions are from hydrogen production, which is made from natural gas (CH4). GHG emissions from hydrogen production are based on assumptions that all carbon in the natural gas is converted into CO2 and is emitted unless there are additional carbon-based products such as CO, methanol, formaldehyde or CO2. There are some measurement constraints in regards to all the data needed to do this material balance such as variability in carbon content in the natural gas, meter reading availability of the different raw materials, as well as the type of products produced. In addition, natural gas data at our Packaged Gas and PST sites is collected only once every three years. This represents less than 2.5% of our total emissions, and does not warrant the level of effort for collecting this data annually.	More than 2% but less than or equal to 5%	Assumptions Metering/ Measurement Constraints	Our Sustainable Development Management System was implemented in 2011, requiring monthly sign-off from all businesses of their results vs. corporate GHG targets and a quarterly review by the Office of the Chairman. This creates a level of internal oversight and management over our GHG emissions data. Standard Plants represent about 8% of Praxair's Scope 2 emissions. Praxair does not pay for or meter the electricity at these sites, as these plants are on customer sites and the customer pays the electricity. These emissions are estimated once every three years because actual activity data is not available. Praxair uses assumptions based on similar plants that we own and operate. In addition, we have a small number of owned corporate offices that account for less than 1% of our Scope 2 emissions. This data is collected once every three years from the larger offices, and estimated based on square footage for the smaller of these offices. Because of the small contribution to our emissions total, this category does not warrant the level of effort to collect and calculate emissions annually.

**CC8.6 Please indicate the verification/assurance status that applies to your reported Scope 1 emissions**

Third party verification or assurance underway for the reporting year but not yet complete - last year's statement attached

**CC8.6a Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements**

Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Limited assurance	<a href="https://www.cdp.net/sites/2014/27/15027/Investor%20CDP%202014/Shared%20Documents/Attachments/CC8.6a/Carbon%20Verification%20Statement%202012.pdf">https://www.cdp.net/sites/2014/27/15027/Investor CDP 2014/Shared Documents/Attachments/CC8.6a/Carbon Verification Statement 2012.pdf</a>	2012 Verification statement pages 1-3. The 2013 pending verification statement is attached in "Further Information."	ISO14064-3	100

**CC8.6b** Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emissions Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission
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**CC8.7** Please indicate the verification/assurance status that applies to your reported Scope 2 emissions

Third party verification or assurance underway for the reporting year but not yet complete - last year's statement attached

**CC8.7a** Please provide further details of the verification/assurance undertaken for your Scope 2 emissions, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of Scope 2 emissions verified (%)
Limited assurance	<a href="https://www.cdp.net/sites/2014/27/15027/Investor%20CDP%202014/Shared%20Documents/Attachments/CC8.7a/Carbon%20Verification%20Statement%202012.pdf">https://www.cdp.net/sites/2014/27/15027/Investor CDP 2014/Shared Documents/Attachments/CC8.7a/Carbon Verification Statement 2012.pdf</a>	2012 Verification statement pages 1-3. The 2013 pending verification statement is attached in "Further Information."	ISO14064-3	100

**CC8.8** Please identify if any data points other than emissions figures have been verified as part of the third party verification work undertaken

Additional data points verified	Comment
Year on year change in emissions (Scope 2)	Praxair's scope 2 emissions account for 66% of emissions (not including scope 3). Electricity accounts for a significant portion of Praxair's operational spend, and we invest heavily in energy efficiency, especially at our ASUs, which comprise 85% of our Scope 2 emissions. We had the year on year change in Scope 2 emissions verified, and these emissions increased by 4.9%.

**CC8.9** Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

Yes

**CC8.9a Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2**

10000

**Further Information**

Last year's verification statement is attached in 8.6a and 8.7a; we also attach here a statement from the verifier indicating that the completion of the audit of 2013 data is pending. Verification of Praxair's GHG emissions data will be complete by the end of June and will be available on Praxair's website at: <http://www.praxair.com/our-company/safety-and-environment/environment/audit-and-assessments>.

**Attachments**

[https://www.cdp.net/sites/2014/27/15027/Investor CDP 2014/Shared Documents/Attachments/InvestorCDP2014/CC8.EmissionsData\(1Jan2013-31Dec2013\)/Verification Statement - 2013 pending.pdf](https://www.cdp.net/sites/2014/27/15027/Investor%20CDP%202014/Shared%20Documents/Attachments/InvestorCDP2014/CC8.EmissionsData(1Jan2013-31Dec2013)/Verification%20Statement%20-%202013%20pending.pdf)

**Page: CC9. Scope 1 Emissions Breakdown - (1 Jan 2013 - 31 Dec 2013)**

**CC9.1 Do you have Scope 1 emissions sources in more than one country?**

Yes

**CC9.1a Please break down your total gross global Scope 1 emissions by country/region**

Country/Region	Scope 1 metric tonnes CO2e
North America	5958000
South America	56000
Europe	58000
Asia, Australasia, Middle East and Africa	80000

**CC9.2 Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)**

By business division  
By GHG type

**CC9.2a** Please break down your total gross global Scope 1 emissions by business division

Business division	Scope 1 emissions (metric tonnes CO2e)
ASUs	478000
Hydrogen Plants	5072000
CO2 Plants	255000
Packaged Gas	117000
Electronics + Surface Technologies	20000
Helium Plants	0
Trucking	206000
Corporate Offices	4000

**CC9.2b** Please break down your total gross global Scope 1 emissions by facility

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
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**CC9.2c** Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
CO2	6040000
CH4	3000
N2O	41000
HFCs	65000
SF6	3000

**CC9.2d** Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 emissions (metric tonnes CO2e)
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**CC9.2e** Please break down your total gross global Scope 1 emissions by legal structure

Legal structure	Scope 1 emissions (metric tonnes CO2e)
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**Further Information**

**Page: CC10. Scope 2 Emissions Breakdown - (1 Jan 2013 - 31 Dec 2013)**

**CC10.1 Do you have Scope 2 emissions sources in more than one country?**

Yes

**CC10.1a Please break down your total gross global Scope 2 emissions and energy consumption by country/region**

Country/Region	Scope 2 metric tonnes CO2e	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling accounted for CC8.3 (MWh)
North America	6392000	10852000	330000
South America	457000	3880000	
Europe	932000	2638000	
Asia, Australasia, Middle East and Africa	4102000	5479000	

**CC10.2 Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)**

By business division

**CC10.2a Please break down your total gross global Scope 2 emissions by business division**

Business division	Scope 2 emissions (metric tonnes CO2e)
ASUs	10061000
Hydrogen plants	510000
CO2 plants	170000
Packaged Gas	85000
Electronics + Surface Technologies	68000
Helium plants	31000
Standard plants	952000
Trucking	0
Corporate Offices	6000

**CC10.2b Please break down your total gross global Scope 2 emissions by facility**

Facility	Scope 2 emissions (metric tonnes CO2e)
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CC10.2c Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2 emissions (metric tonnes CO2e)
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CC10.2d Please break down your total gross global Scope 2 emissions by legal structure

Legal structure	Scope 2 emissions (metric tonnes CO2e)
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**Further Information**

Page: **CC11. Energy**

CC11.1 What percentage of your total operational spend in the reporting year was on energy?

More than 25% but less than or equal to 30%

CC11.2 State how much fuel, electricity, heat, steam, and cooling in MWh your organization has purchased and consumed during the reporting year

Energy type	MWh
Fuel	2323000
Electricity	22085000
Heat	0
Steam	764000
Cooling	0

CC11.3 Please complete the table by breaking down the total "Fuel" figure entered above by fuel type

Fuels	MWh
Natural gas	2031000
Distillate fuel oil No 2	11000
Diesel/Gas oil	281000

**CC11.4** Please provide details of the electricity, heat, steam or cooling amounts that were accounted at a low carbon emission factor in the Scope 2 figure reported in CC8.3

Basis for applying a low carbon emission factor	MWh associated with low carbon electricity, heat, steam or cooling	Comment
Power Purchase Agreements (PPA) not backed by instruments	330000	Our facilities in the Niagara Falls region of New York have a replacement power contract with the local utility that guarantees hydropower.

**Further Information**

**Page: CC12. Emissions Performance**

**CC12.1** How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to the previous year?

Increased

**CC12.1a** Please identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined) and for each of them specify how your emissions compare to the previous year

Reason	Emissions value (percentage)	Direction of change	Comment
Emissions reduction activities	3	Decrease	Emissions decreased 3% due to energy efficiency and other emissions reduction activities.
Divestment			
Acquisitions			
Mergers			
Change in output	11	Increase	Addition of three new hydrogen plants (the largest Praxair has built to date) plus increased customer demand over 2012 resulted in production that increased at a faster pace than revenue.
Change in methodology			
Change in boundary			
Change in physical operating conditions			
Unidentified			
Other			

**CC12.2** Please describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per unit currency total revenue

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for change
0.001512	metric tonnes CO2e	unit total revenue	1	Increase	Revenue increased by 6% over 2012, but GHG emissions increased at a faster rate mainly because of the addition of three major new hydrogen plants. Emissions per metric ton of product increased 2%.

**CC12.3** Please describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per full time equivalent (FTE) employee

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for change
654	metric tonnes CO2e	FTE employee	4	Increase	FTE's increased by 4% over 2012, but mainly due to the addition of three major new hydrogen plants, emissions per FTE also increased 4%.

**CC12.4** Please provide an additional intensity (normalized) metric that is appropriate to your business operations

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for change
0.31	metric tonnes CO2e	metric tonne of product	3	Increase	Total scope 1 and 2 emissions per MT of product produced increased by 3% from 2012. Emissions increased at a faster rate than production, mainly due to the addition of three major new hydrogen plants during 2013.

#### Further Information

The GHG emissions per metric tonne of product were calculated differently in 2012. In 2012, we only counted ASUs and product from these facilities. This year, we corrected this and calculated total Scope 1 + Scope 2 emissions and divided by metric ton product for ALL products produced.

#### Page: CC13. Emissions Trading

**CC13.1** Do you participate in any emissions trading schemes?

Yes

**CC13.1a Please complete the following table for each of the emission trading schemes in which you participate**

Scheme name	Period for which data is supplied	Allowances allocated	Allowances purchased	Verified emissions in metric tonnes CO2e	Details of ownership
California's Greenhouse Gas Cap and Trade Program	Tue 01 Jan 2013 - Tue 31 Dec 2013	41829	0	42265	Facilities we own and operate

**CC13.1b What is your strategy for complying with the schemes in which you participate or anticipate participating?**

Praxair stays current with developments in global regulations. While Praxair is not covered under the EU Emissions Trading Scheme (ETS), we do have facilities that are part of California's Cap and Trade program, Quebec's cap and trade program, and the UK's Climate Change Agreement. These are all regulated programs; Praxair does not trade allowances in voluntary speculative trading schemes. An entirely robust estimation of the future demands of these trading schemes is not possible. However, Praxair is prepared to participate in these schemes by having an adequate and flexible GHG strategy. This takes into account all kinds of emissions reduction measures, e.g. use of abatement technology, increase in energy efficiency, as well as the use of project-based carbon credits and, in the eventual case of ETS, a purchase strategy for EUAs. Praxair's customer contracts pass through increases in the cost of energy, and would also pass through allowance purchases.

If Praxair comes under additional regulated emissions trading regimes such as ETS, we will participate.

**CC13.2 Has your organization originated any project-based carbon credits or purchased any within the reporting period?**

Yes

**CC13.2a Please provide details on the project-based carbon credits originated or purchased by your organization in the reporting period**

Credit origination or credit purchase	Project type	Project identification	Verified to which standard	Number of credits (metric tonnes of CO2e)	Number of credits (metric tonnes CO2e): Risk adjusted volume	Credits cancelled	Purpose, e.g. compliance
Credit Purchase	Forests	The Rio Bravo Climate Action Project, a 15,550 acre area of tropical forest located in northwest Belize, registered by the	VCS (Voluntary)	667	667	Yes	Voluntary Offsetting

Credit origination or credit purchase	Project type	Project identification	Verified to which standard	Number of credits (metric tonnes of CO2e)	Number of credits (metric tonnes CO2e): Risk adjusted volume	Credits cancelled	Purpose, e.g. compliance
		Nature Conservancy. This is Praxair's second year with this project and second purchase of the same number of credits.	Carbon Standard)				

**Further Information**

**Page: CC14. Scope 3 Emissions**

**CC14.1 Please account for your organization's Scope 3 emissions, disclosing and explaining any exclusions**

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using primary data	Explanation
Purchased goods and services	Not relevant, calculated	400	An inventory of office paper purchased was conducted for 2009: 786,662lbs. This was converted to a baseline of 462 MT CO2e, using the USA EPA WARM methodology. By the end of 2011, Praxair had reduced its paper consumption by 20 percent, to 370 MT CO2e. The result from 2011 is carried over for 2012 and 2013, since these emissions are insignificant when compared to other Scope 3 categories.	100.00%	Praxair's largest purchased good is energy, such as electricity to operate our facilities and natural gas to make hydrogen. Details on our energy purchases and emissions are provided in this report. Other goods and services purchased by Praxair include logistics and transportation services, office infrastructure requirements and administrative benefits and services. In the rows below, we detail our largest upstream emissions from the purchase of capital goods, upstream

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using primary data	Explanation
					transportation, and upstream energy-related emissions. The remaining upstream goods and services, such as the paper purchases calculated here, are considered to be not relevant when compared to our energy related activities.
Capital goods	Relevant, calculated	500000	The principal material Praxair procures for capital projects is steel. Based on our annual spend, we used our Steelfirst subscription to calculate the price of carbon steel per country. The weight of steel was then calculated as price per ton divided into spend. Related GHG emissions were calculated by multiplying the carbon steel volumes using a GHG emission factor derived from the U.S. EPA (0.87 MT CO2e/ per MT carbon steel).	100.00%	
Fuel-and-energy-related activities (not included in Scope 1 or 2)	Relevant, calculated	1961000	The methodology used is based on the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard, Category 3. For electricity, we prorated the fuel mix ratios in those 7 countries where we use more than 1 billion KW. These 7 countries represent more than 87% of our total electricity usage. We extrapolated this mix to the remaining 13% of our electricity usage. We then assumed a T&D loss rate of 7%, based on information from the US Department of Energy. We then added in emissions from upstream natural gas.	100.00%	
Upstream transportation and distribution	Not relevant, calculated	37000	Two transportation projects were evaluated: one very large project in Russia and one medium-sized project in the U.S. For each project evaluated, distance travelled was recorded for road, rail and sea. Emissions factors per mode of transportation were used from CEFIC/ ECTA March 2011 Guidelines for Measuring and Managing CO2 Emissions from Freight Transport Operations, and GHG emissions were determined per project. The average GHG emissions per project was multiplied by the number of oversized and heavy capital equipment transportation projects. This was multiplied by 1.2 to determine GHG emissions from 100 percent of capital equipment purchased. The number likely overstates the emissions as 20 percent is from far smaller capital equipment transportation	100.00%	

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using primary data	Explanation
			projects. Since these emissions are not relevant to Praxair, we carried over our emissions estimate to 2013.		
Waste generated in operations	Relevant, calculated	13000	The methodology used is based on the Greenhouse Gas Protocol's Corporate Value Chain (Scope 3) Accounting and Reporting Standard. Using the average data method according to this standard, Praxair multiplied the waste treated by third parties for each waste treatment method by the associated emission factors. The amount of waste treated by third parties is recorded in our EKPI database according to the waste treatment methods (landfill, recycled, other). To calculate the CO2e emissions resulting from waste treated in landfills, Praxair multiplies the total amount of waste in this category by an emissions factor provided by the EPA, which is associated with the municipal waste mix in the United States. The IPCC suggests that any CO2e emissions associated with recycling should not be included in Scope 3 inventories. Therefore Praxair uses an emissions factor of 0 for recycled waste treated by third parties. The small amount of waste which is not landfilled or recycled is calculated equally as if it were landfilled.	100.00%	
Business travel	Not relevant, calculated	9000	Business travel is a very small component of Praxair's reported Scope 3 emissions; its most significant component is airline travel. In 2008, Praxair calculated GHG emissions from rental cars, which was less than five percent of transportation Scope 3 emissions; therefore, we consider this to be de minimis. Praxair's travel vendor provided a GHG report for 2009 global air travel and calculates airline GHG emissions on the basis of short, medium and long-haul flights, using emission factors of 0.18, 0.19 and 0.24 respectively. The GHG emissions factors are derived from the GHG Protocol. Emissions from business travel are small compared to other Scope 3 sources; these will be recalculated once every five years (next in 2014).	100.00%	
Employee commuting	Not relevant, calculated	54000	The methodology is based on the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard, Category 7: Employee Commuting. This category includes emissions from the transportation of employees between their homes and their worksites. Emissions from employee commuting may arise from automobile travel, bus travel, rail travel, or other modes of	100.00%	

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using primary data	Explanation
			transportation (e.g., subway, bicycling, walking). At Praxair, emissions from employee commuting are not relevant to the business goals. Praxair used a simplified version of the Scope 3 Protocol's average-data method to calculate emissions from employee commuting. This involved estimating emissions from employee commuting based on average (e.g., national) data on commuting patterns. National data on commuting times in some Praxair countries is provided in the OCED "How's Life: Measuring Wellbeing (2011)": <a href="http://www.oecd.org/els/family/43199696.pdf">www.oecd.org/els/family/43199696.pdf</a> . Praxair used the OECD average time of 38 minutes per day. Time spent commuting was assumed to be in a single occupancy car at 30 miles per hour; the average commuting distance (both ways) was assumed to be 21 miles. We assumed the average passenger vehicle emissions as 423 grams of CO2 per mile, based on the U.S. EPA Greenhouse Gas Emissions from a Typical Passenger Vehicle at: <a href="http://www.epa.gov/oms/climate/documents/420f11041.pdf">www.epa.gov/oms/climate/documents/420f11041.pdf</a> . This was multiplied by the number of employees (2013: 27,560) and 220 working days per year. We assume that the calculated result overstates emissions from employee commuting, as it assumes that each employee drives a car to work and does not take into account employees using public transit or carpooling.		
Upstream leased assets	Not relevant, calculated	15000	GHG emissions from leased offices were assessed based on leased space (in square foot) and a standard global assumed annual energy consumption per square foot for office buildings. Praxair has 23 leased offices around the world that provided square footage reports. Total square feet of leased assets were reported as 836,110. Using the EIA report for commercial building energy use, we assumed 26 KWh per square foot. CO2e was determined using the EPA GHG Calculator.	100.00%	
Downstream transportation and distribution	Relevant, calculated	239000	Praxair products are delivered by pipeline, through on-site product production, and by truck. A small portion is delivered by train and ship. Product delivered by Praxair trucks is reported as Scope 1. Half of Praxair's truck miles are driven by contractors. Contractor miles driven are collected in each country and business or region and tracked as part of Praxair's safety program. Praxair's Scope 3 emissions resulting from delivery of products by third party carriers were derived using the same methodology to calculate GHG	100.00%	

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using primary data	Explanation
			emissions from Praxair's trucks: Total miles were converted into gallons assuming a weighted average constant miles per gallon, and converted to GHGs using an EPA emission factor for diesel fuel to metric tons.		
Processing of sold products	Not relevant, explanation provided				Guidance for this category is based on the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard, section 6.4. Praxair is at the beginning of many value chains (for carbonated beverage companies, refineries, electronics, aerospace, automotive, healthcare, steel making, etc.). Praxair provides many intermediate products with many downstream applications, each of which has a very different GHG profile. The effort involved in determining Scope 3 emissions from processing of our products is not reasonable, and for this reason, we are unable to reasonably estimate the downstream emissions associated with the various end uses of our products. For these reasons we do not report emissions in the following categories: processing of sold products, use of sold products, and end of life treatment of sold products. Emissions from our CO2 sales to the food industry may be traceable.

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using primary data	Explanation
					This market segment is a subset of our food and beverage end market, which is 6% of our annual revenue. Actual CO2 volumes are business confidential. However, customers have requested this information as part of CDP's Supply Chain program and we have provided it to them.
Use of sold products	Not relevant, explanation provided				Guidance for this category is based on the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard, section 6.4. Praxair is at the beginning of many value chains (for carbonated beverage companies, refineries, electronics, aerospace, automotive, healthcare, steel making, etc.). Praxair provides many intermediate products with many downstream applications, each of which has a very different GHG profile. The effort involved in determining Scope 3 emissions from use of our products is not reasonable, and for this reason, we are unable to reasonably estimate the downstream emissions associated with the various end uses of our products. For these reasons we do not report

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using primary data	Explanation
					emissions in the following categories: processing of sold products, use of sold products, and end of life treatment of sold products. Emissions from our CO2 sales to the food industry may be traceable. This market segment is a subset of our food and beverage end market, which is 6% of our annual revenue. Actual CO2 volumes are business confidential. However, customers have requested this information as part of CDP's Supply Chain program and we have provided it to them.
End of life treatment of sold products	Not relevant, explanation provided				Guidance for this category is based on the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard, section 6.4. 47% of Praxair's raw materials are non-greenhouse gas atmospheric gases, extracted directly from the air and ultimately returned to the atmosphere with no GHG impact. In addition, Praxair is at the beginning of many value chains (for carbonated beverage companies, refineries, electronics, aerospace, automotive, healthcare, steel making, etc.). Praxair provides many

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using primary data	Explanation
					intermediate products with many downstream applications, each of which has a very different GHG profile. The effort involved in determining Scope 3 emissions from end-of-life treatment of our products is not reasonable, and for this reason, we are unable to reasonably estimate the downstream emissions associated with the various end uses of our products. For these reasons we do not report emissions in the following categories: processing of sold products, use of sold products, and end of life treatment of sold products. Emissions from our CO2 sales to the food industry may be traceable. This market segment is a subset of our food and beverage end market, which is 6% of our annual revenue. Actual CO2 volumes are business confidential. However, customers have requested this information as part of CDP's Supply Chain program and we have provided it to them.
Downstream leased assets	Not relevant, explanation provided				Praxair does not have any downstream leased assets.

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using primary data	Explanation
Franchises	Not relevant, explanation provided				Praxair does not have any franchises.
Investments	Not relevant, calculated	22000	An estimate of Praxair's share of GHG emissions from joint ventures where we own less than 50% was made based on assuming the same output per \$ revenue in our JV's as in our own business. Since these emissions are not relevant to Praxair, we carried over our 2012 emissions estimate to 2013.	100.00%	Where we own only a small share in a joint venture, and because our share of revenue in the JV is only a fraction of our total revenue, emissions from these investments are not relevant to our scope 3 footprint.
Other (upstream)					
Other (downstream)					

**CC14.2 Please indicate the verification/assurance status that applies to your reported Scope 3 emissions**

Third party verification or assurance underway for the reporting year but not yet complete - last year's statement attached

**CC14.2a Please provide further details of the verification/assurance undertaken, and attach the relevant statements**

Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of Scope 3 emissions verified (%)
Limited assurance	<a href="https://www.cdp.net/sites/2014/27/15027/Investor%20CDP%202014/Shared%20Documents/Attachments/CC14.2a/Carbon%20Verification%20Statement%202012.pdf">https://www.cdp.net/sites/2014/27/15027/Investor CDP 2014/Shared Documents/Attachments/CC14.2a/Carbon Verification Statement 2012.pdf</a>	2012 Verification statement pages 1-3. The 2013 pending statement is attached in "Further Information."	ISO14064-3	8

**CC14.3 Are you able to compare your Scope 3 emissions for the reporting year with those for the previous year for any sources?**

Yes

**CC14.3a Identify reasons for any change in your Scope 3 emissions and for each of them specify how your emissions compare to the previous year**

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Downstream transportation and distribution	Emissions reduction activities	10	Decrease	The decrease is due to emissions reduction activities. Due to investments in more fuel-efficient equipment and contract driver training in eco-efficient driving methods, GHG emissions from contract drivers improved 10% over 2012.
Waste generated in operations	Emissions reduction activities	48	Decrease	The decrease in emissions from waste generated is due to Praxair's Zero Waste program, which focuses on emissions reduction activities. By encouraging recycling and reuse, less waste is being sent to landfills.
Fuel- and energy-related activities (not included in Scopes 1 or 2)	Change in output	4	Increase	The increase in energy-related emissions are in line with the increase in energy use and corresponding Scope 1 and Scope 2 emissions. This is the result of increased production and new plants.
Capital goods	Change in output	6	Increase	The increase is due to higher levels of facility construction and capital spend.
Employee commuting	Change in output	15	Increase	The increase in emissions from employee commuting are due to an increase in the number of FTEs.
Upstream leased assets	Change in methodology	0	No change	Last year Praxair reported lower emissions from leased office space. This was due to an under-reporting of square footage. In 2013, we used actual square footage from all 23 offices, so we are restating our 2012 emissions to be the same as 2013.

**CC14.4 Do you engage with any of the elements of your value chain on GHG emissions and climate change strategies? (Tick all that apply)**

Yes, our suppliers

**CC14.4a Please give details of methods of engagement, your strategy for prioritizing engagements and measures of success**

We engage with utility suppliers and contract drivers. We describe our engagement strategy with our utility providers here and in question 14.4b. We describe our engagement with contract drivers in 14.4c.

Method of engagement: As a very large energy buyer, Praxair is a strategic customer for many of its electricity providers. Praxair energy reductions can help utility companies meet state and federal/ national regulations for energy efficiency and renewable energy standards. Also, Praxair's flexible use of power allows the utility companies to effectively manage their loads and not have to build out a capital infrastructure to manage intermittent peaks in demand. Praxair therefore reaches out to these suppliers on a regular planned basis, to optimize opportunities for these win-win partnerships.

Prioritizing engagements: Praxair has major contracts with at least 25 major U.S. utility company suppliers that collectively account for over 1/3 of Praxair power consumption and more than 50% of Praxair's U.S. power spend, i.e. over \$300 million. As energy is the largest component of Praxair's variable costs, energy efficiency is a material issue for the company. Optimizing energy use is a key strategy to minimize risks from increases in energy prices, as well as to increase margin and revenue.

Measure of success: The results of these engagements are measured in several ways, including, for example, an annual report on energy and CO2e savings resulting from partnerships with utility company suppliers. In 2013, these partnerships saved more than 50,000 MT CO2e and more than \$1 million from energy efficiency, i.e. reduced energy demand. In addition, the projects realized more than \$1 million in incremental revenue from customer rebates. One example illustrates this: In 2013, Praxair participated in the Northern Indiana Public Service Company's (NIPSCO) energy-efficiency program. Praxair is one of NIPSCO's largest customers and this program helps the utility meet Indiana's energy efficiency requirements, which call for a two percent a year reduction in electricity sales by 2019. Praxair's energy conservation activity involved replacing more than 3,800 lighting fixtures and making a variety of argon production-related upgrades at Praxair's Burns Harbor, East Chicago and Gary-Lakeside facilities. Praxair is reducing its energy consumption by over 50 million kilowatt hours per year—equivalent to the amount of electricity used by more than 5,000 U.S. homes a year—and thereby reducing GHG emissions by 35,000 MT of CO2e per year.

**CC14.4b To give a sense of scale of this engagement, please give the number of suppliers with whom you are engaging and the proportion of your total spend that they represent**

Number of suppliers	% of total spend	Comment
25	33%	Praxair has major contracts with at least 25 major U.S. utility company suppliers that collectively account for over 1/3 of Praxair power consumption and more than 50% of Praxair's U.S. power spend, i.e. over \$300 million.

**CC14.4c If you have data on your suppliers' GHG emissions and climate change strategies, please explain how you make use of that data**

How you make use of the data	Please give details
Identifying GHG sources to prioritize for reduction actions	We have prioritized GHG emissions from driving for reduction activities. Drivers drive Praxair product around the world about 30Xs a day, and half of this is done by contract drivers. We track and manage GHG emissions in trucking for both Praxair drivers and contract drivers, to help us improve distribution efficiency around the world. We invest in technology such as route optimization and on-board computers, and in training in fuel-efficient driving techniques. These initiatives are conducted with our own drivers and with contract drivers. Contract drivers receive the same professional driver training in eco-efficiency that is provided to Praxair drivers. These efforts helped us to improve the fuel economy of the trucks transporting Praxair product. Beginning in 2014, we have extended our 1.5% per year target for improving driving GHG intensity to our worldwide contract drivers. In addition, suppliers were engaged in a series of steps starting with the communication of Praxair's supplier expectations, including environmental improvement. This was followed by a Supplier Forum which included some contract driver companies. Expectations that contractor environmental performance is in line with Praxair standards has been included among several sustainability issues that are "tie-breakers" in proposals; and they have been included in contract terms.

**CC14.4d** Please explain why you do not engage with any elements of your value chain on GHG emissions and climate change strategies, and any plans you have to develop an engagement strategy in the future

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**Further Information**

Last year's verification letter is attached to 14.2a; we also attach here a statement from the verifier indicating that the completion of the audit of 2013 data is pending. Verification of Praxair's GHG emissions data will be complete by the end of June and will be available on Praxair's website at: <http://www.praxair.com/our-company/safety-and-environment/environment/audit-and-assessments>.

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**Attachments**

[https://www.cdp.net/sites/2014/27/15027/Investor CDP 2014/Shared Documents/Attachments/InvestorCDP2014/CC14.Scope3Emissions/Verification Statement - 2013 pending.pdf](https://www.cdp.net/sites/2014/27/15027/Investor%20CDP%202014/Shared%20Documents/Attachments/InvestorCDP2014/CC14.Scope3Emissions/Verification%20Statement%202013%20pending.pdf)

**Module: Sign Off**

**Page: CC15. Sign Off**

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**CC15.1 Please provide the following information for the person that has signed off (approved) your CDP climate change response**

Name	Job title	Corresponding job category
Riva Krut	Vice President and Chief Sustainability Officer	Environment/Sustainability manager

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**Further Information**

**CDP 2014 Investor CDP 2014 Information Request**