Gold Fields Carbon Disclosure Report

CDP 2010

May 2010

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Introduction

0.1 Introduction

Please give a general description and introduction to your organization.

Gold Fields is one of the world's largest unhedged producers of gold, with production rates of 3.892 million ounces per annum (for the period of 01 Jan 2009 – 31 Dec 2009) from nine operating mines in South Africa, Ghana, Australia and Peru. Gold Fields has an extensive growth pipeline, with both greenfields and near mine exploration projects at various stages of development. Gold Fields has total attributable Mineral Reserves of some 80 million gold equivalent ounces and Mineral Resources in excess of 270 million ounces gold equivalent ounces.

Gold Fields is listed on the JSE Limited (primary listing), the New York Stock Exchange (NYSE), the Dubai International Financial Exchange (DIFX), the Euronext in Brussels (NYX) and the Swiss Exchange (SWX).

Gold Fields is responsible for mining and concentrating gold and copper at its operations, from where it is sent to be refined further at various refineries. These refineries are not under the sole ownership of Gold Fields.

The location and nature of Gold Fields' operations is as follows:

The South African operations are all underground mines:

- Driefontein (26° 24'S and 27° 30'E)
- Kloof (26° 24'S and 27° 36'E)
- Beatrix (28° 15'S and 26° 47'E)
- South Deep (26º 25' S and 27º 40' E)

The Ghanaian operations are open pit mines:
Tarkwa (5° 15' N and 2° 00' W)
Damang (5° 11'N and 1° 57'W)

The Australian operations are a combination of underground and open pit mines:
St Ives (31° 12'S and 121° 40'E)
Agnew (27° 55'S and 120° 42'E)

Cerro Corona is an open pit copper and gold mine located in Peru (6° 45'S and 78° 37'W)

St. Ives and Agnew are located Australia, an Annex I country with emission reduction obligations. The rest of the operations are located in Non-Annex I countries, which have ratified the Kyoto Protocol. Non-Annex I countries are developing countries which may participate in the Clean Development Mechanism (CDM) and, therefore, have the potential to receive income for the implementation of emission reduction projects.

As Gold Fields has operations in both Annex 1 and Non-Annex 1 countries, they are exposed to a number of risks associated with operating in both developed and developing countries. Some of the major risks identified in this CDP response are listed below:

- The introduction of carbon tax (cap-and-trade) in Australia in the near future will impact on the operating costs of the Australian operations.
- It is anticipated that South Africa will introduce a carbon tax in the future, but there is uncertainty about what form this tax will take. Carbon tax will increase the operating costs of Gold Fields' South African operations.
- In Peru and Ghana, there are no climate change regulations. There is uncertainty about what the impact of such regulations would be if they were to be introduced in the future.
- The operations are furthermore exposed to physical risks, including temperature rise and changes in rainfall patterns, which could impact on mining operations.

Annual Report:
http://onlinewebstudio.co.za/online_reports/gold_fields_ar09/pdf/full.pdf

Sustainability Report:
http://www.goldfields.co.za/pdf/sus_dev_2009.pdf

Company Revenue for the period of 01 Jan 2009 – 31 Dec 2009:
US$ 3,795 million

ISIN number:
ZAE000018123

CUSIP number:
38059T106

SEDOL number:
6280215

0.2 Reporting Year

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

Enter Periods that will be disclosed
Thu 01 Jan 2009 - Thu 31 Dec 2009

0.3 Are you participating in the Walmart Sustainability Assessment?

No

0.4 Modules

As part of the Investor CDP information request, electric utilities, companies with electric utility activities or assets, companies in the automobile or auto component manufacture sectors and companies in the oil and gas industry should complete supplementary questions in addition to the main questionnaire. If you are in these sectors, the corresponding sector modules will be marked as default options to your information request. 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 www.cdproject.net/cdp-questionnaire.

0.5 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
South Africa
Australia
Ghana
Peru

Governance

1. Governance

1.1 Where is the highest level of responsibility for climate change within your company?

Board committee or other executive body

1.1a Please specify who is responsible.

Committee appointed by the Board

1.2 What is the mechanism by which the board committee or other executive body reviews the company's progress and status regarding climate change?

Gold Fields is committed to the sustainable growth of its business and its board has established a Safety, Health and Sustainable Development (SHSD) Committee. Climate change risks and issues are the responsibility of this committee. The terms of reference of this committee is informed by the Sustainable Development Framework of the company that includes the commitments made by the company in terms of climate change. It is also informed by the ICMM position on climate change and the UN Global Compact.

The Board of Directors has established and maintains internal controls and procedures, which are reviewed regularly for effectiveness. These controls and procedures are designed to manage, rather than eliminate, the identified risks, and provide reasonable, but not absolute, assurance that there is an adequate system of internal control in place.

The Board and Executive committees are kept informed of the progress and status of the energy efficiency and CDM projects through updates at committee meetings held quarterly. Quarterly reports have contained a section on climate change/ emissions/carbon management since 2005.

Gold Fields seeks to act ethically, and responsibly, and as such, participates in the JSE's SRI (Social Responsibility Index) on an annual basis. In 2009, Gold Fields was awarded "Best Performer" within the SRI. The company is also party to the Electronics Industry Citizenship Coalition (EICC), which seeks to promote the notion of "responsible gold" and the associated downstream impacts related to metals industries. In addition, the company participates in numerous assessments as part of its investment analysis.

During 2009/2010 carbon credit projects elevated in importance at board level as a result of the Beatrix CDM project and associated Emission Reduction Purchase Agreement (ERPA). The Executive Committee also focused on the progress of the emission reduction projects at their meetings.

To date, Gold Fields has identified 10 potential CDM projects that, if successfully developed, could yield in excess of 600,000 tons of CO_2e per year. The development of these projects needs approval firstly, from the technical committee; then the operational committee and finally, the executive committee. Large scale projects would also require board approval.

The King III Code demands increased attention to climate change from the boards of companies. The Code requires that: A proper identification of the company's adverse and positive environmental impacts, with particular emphasis on the organisation's direct and indirect impacts on waste and pollution; resource efficiency; and climate change. The board must also ensure that the company recognises the business costs and opportunities of its identified environmental risks. Gold Fields is aligning itself with the King III Code. Gold Fields has completed an internal review and gap analysis and is implementing relevant actions to address the identified gaps. Specific issues around the business costs and opportunities and the identified risks are addressed in the company's comprehensive Carbon Management Strategy and embedded policies.

Gold Fields is listed as a "Best Performer" of the JSE's Socially Responsible Investment (SRI) Index. The SRI was launched in May 2004 in response to the burgeoning debate around sustainability globally and particularly in the South African context. In terms of the Ground Rules Revised May 2009 to the SRI Index, eligible companies are assessed against the Criteria on an annual basis. At each annual review, participating companies have to meet the requisite threshold as specified in the Criteria to qualify for inclusion in the SRI Index. Companies are assessed against Criteria across the triple bottom line (environment, society and economy) as well as governance (forming the foundation of the triple bottom line pillars). Within each area of measurement, companies are assessed based on policy, management / performance and reporting. The criteria retains the triple bottom line philosophy, but the indicators are structured along ESG lines (Environment, Society, and Governance), in keeping with the framework promoted by the UN Principles for Responsible Investment.

1.4 Do you provide incentives for the management of climate change issues, including the attainment of greenhouse gas (GHG) targets?

Yes

1.5 Please complete the table.

Who is entitled to benefit from those incentives?	The type of incentives
Corporate executive team	Monetary reward
Energy managers	Monetary reward

Please complete the table.

Who is entitled to benefit from those incentives?	The type of incentives	
Corporate executive team	Monetary reward	✕
Business unit managers	Monetary reward	✕
Energy managers	Monetary reward	✕
All employees	Monetary reward	✕

Add Row

Further Information : You can use the text box and attachments field to provide information beyond that requested by the question

The performance assessment of all Gold Fields employees is done on the basis of their Balanced Scorecards. This Balanced Scorecard includes the requirements of the company with respect to its sustainable development and climate change objectives. The outcome of the balanced scorecard assessment impacts in two ways on the monetary reward every employee receives: it impacts on the annual salary increase of the employee as well on his/her annual performance bonus.

Risks and Opportunities

2. Identification Process

2.1 Describe your company's process for identifying significant risks and/or opportunities from climate change and assessing the degree to which they could affect your business, including the financial implications.

Gold Fields understands that the world economy is being restructured from a carbon based economy to a low carbon economy. It furthermore understands that this fundamental shift in the world economy will impact on all aspects of business, ranging from the pricing of carbon into energy through to the sentiment of its various stakeholder groups.

Gold Fields has developed and implemented a comprehensive Carbon Management Strategy that incorporates the identification of risks and opportunities presented by climate change and the change in the world economy. This includes physical, regulatory, market, perception and other risks and opportunities. The Carbon Management Strategy ensures that the company commits sufficient resources in its environmental and community engagement structures at an operational and corporate level so as to enable it to operate in a proactive and legally compliant manner. The Carbon Management Policy is linked to the Group Risk Policy, which guides the consistent and systematic assessment of risk and the procedures for risk reporting and risk mitigation measures across the group's global operations.

Gold Fields is in the process of further developing the Carbon Management Strategy through the development and implementation of the Carbon Management Communications Strategy, Carbon Management Policy and the Carbon Management Toolkit that will assist all managers in the organisation on how to deal with carbon and climate change related issues.

The Board, via the Audit Committee, is responsible for the overall system of risk management. The Audit Committee oversees measures to understand the changing environment within which the group operates and the identification and mitigation of new and existing risks on an ongoing basis. The Group Risk Manager ensures that the process of risk management takes place at a corporate level. All risks identified in Gold Fields' risk management process have control measures and mitigating strategies in place. Risk mitigatory actions appropriate to each risk are implemented and are measurable. These mitigatory actions are subject to continual assessment and review to ensure their effectiveness.

Gold Fields has four types of enterprise wide risk registers:

1. Individual Operations and Service Divisions
2. Summary of South African Operations and International operations
3. Certain specialised company-wide e.g. Technical, Climate Change
4. Corporate

Gold Fields strives to manage risk effectively in order to protect the company's assets, stakeholders, environment and reputation and to ensure achievement of its stated business objectives. The aim is to achieve a fuller understanding of the reward/risk balance and seeks to reduce the likelihood and consequences of adverse impacts to acceptable levels and to achieve continous improvement in its management of risk, thereby enhancing the degree of certainty in achieving its objectives.

The new Internet web based Cura electronic risk management software solution was implemented across Gold Fields during the latter part of 2008 and was fully functional by early 2009. Risk registers from all the operations and service divisions have been analysed, and incorporated into the new program. An auditing function was added to the existing software in order to conduct ongoing internal assurances that mitigating strategies for risks are receiving the required attention. The audits are conducted by an internal controller on each operation. The Top 10 risks are identified from the risk management process and can be extracted directly from the new electronic software and presented for each operation and service division during the Executive Committee strategic management planning and review for F2010. The unpredictable consequence of global warming was included in the Gold Fields risk register during 2009.

Mitigating strategies have been initiated, and a comprehensive Carbon Management Strategy has been drawn up and is being implemented. The CEO states the following in the 'Statement of Responsibility by the Board of Directors' in the 2009 Annual Report: "The company and the Group operated in a well-established controlled environment, which is well documented and regularly reviewed. This incorporates risk management and internal control procedures, which are designed to provide reasonable, but not absolute, assurance that assets are safeguarded and the risks facing the business are being controlled". Once captured in a register, each risk is subjected to a process which:

- Defines the risk issue and its context
- Defines the business implications of the risk
- Defines the primary controls in place and estimates the effectiveness of these controls
- Specifies the responsible manager
- Specifies further actions risk/mitigation strategies
- Estimates the severity and probability of the risk occurring
- Evaluates the risk (Risk rating = Severity x Probability)

(Note: the financial impact of a risk is contained in the severity rating).

The process of compiling the risk registers is used to strengthen the role of risk management within broader operational management. The intention is to have a more informed, pro-active risk management system and mitigation that allows for remedial action to be taken, often before the risks materialise.

Carbon management and climate change is a regular feature in the company's internal publication "Golden Age"

3. Regulatory Risks

3.1 Do current and/or anticipated regulatory requirements related to climate change present significant risks to your company?

Yes

3.2b What are the current and/or anticipated significant regulatory risks related to climate change and their associated countries/regions and timescales?

Global Regulatory Framework

During 2009 Gold Fields completed version 1 of its Carbon Management Strategy. This comprehensive strategy document has identified the following: "It is likely that there will be a Copenhagen Protocol, which will set tough targets for emission reductions, which will filter through to all countries, developed and developing. It can be expected that there will be major regulatory and economic discontinuities resulting from this." The fact that there was no binding agreement in Copenhagen creates uncertainties that impact on the risks to which Gold Fields' business is exposed. Failure of the global community to reach agreement in Copenhagen carries regulatory uncertainty and risk. These risks are:

- Any delay in providing regulatory certainty prior to the end of 2012 shortens the time horizon for planning and implementation by the end of 2012, and therefore increases associated cost.
- Any pre-emptive action in anticipation of regulatory requirements may be implemented in the wrong direction. This could be both costly and damaging to existing Gold Fields business structures.
- Lack of global market removes opportunity to optimise greenhouse gas mitigation expenditure. This translates into a higher cost of abatement.

There is an international trend in the regulatory and social environment that increasingly expects mining companies to fund the communities in which they operate. Climate change impacts directly on this trend through the vulnerability if rural communities to climate impacts. This carries risks both in the amount of money required to mitigate the climate change vulnerability of communities and the sustainability of operations in areas where the community vulnerability is high.

South African Region:
South Africa's commitment in terms of the Copenhagen Accord is to reduce emissions 34% below the business as usual level by 2020 and 42% below by 2025. The emission reduction commitments are conditional on the granting of adaptation funds by the developed world (international financial

assistance). The risk to Gold Fields lies in that there is uncertainty as to how the South African Government will eventually attempt to achieve this. For instance, if the adaptation funds linked to the emission reduction pledge are utilised to clean up the South African electricity grid then the risk to Gold Fields will be very low. Likewise, if a cap and trade system or carbon tax were to be introduced by 2015, Gold Fields would need to assess how best the business could utilise and support such a system. The pricing and supply of electricity is critical, as it has the ability to fundamentally impact on the cost of Gold Fields' operations, in South Africa and internationally.

Ghana:

Ghana is a non-Annex I country and ratified the Kyoto Protocol in 2003. The President of Ghana said in January 2010: "....Ghana will pursue [a] low carbon development growth path, even though our emissions currently are very insignificant". Ghana made a submission in terms of the Copenhagen Accord in February 2010. This submission lists nationally appropriate mitigation actions (NAMA's) in a number of sectors that could impact on Gold Fields operations. These sectors include the electricity system, transport, industrial processes and forestry. Ghana did not estimate the emission reduction that can be achieved by these NAMA's. The fact that the magnitude of the emission reduction is not indicated creates uncertainty about what the extent of possible regulatory interventions could be.

Peru:

Peru is a non-Annex I country which has ratified the Kyoto Protocol. The country responded to the Copenhagen Accord on 28 January 2010, but did not make any commitments with respect to greenhouse gas emission reduction targets. There is no indication that Peru is planning a carbon tax or cap and trade scheme. The country has however built an institutional framework to fully capitalise on the benefits offered by the CDM. Gold Fields therefore consider its regulatory risk in Peru to be low.

Australia:

Australia is an Annex I country and ratified the Kyoto Protocol in 2007. On 27 January 2010, Australia submitted its emission reduction pledges in terms of the Copenhagen Accord: Australia will reduce its greenhouse gas emissions by 25% on 2000 levels by 2020, if the world agrees to an ambitious global deal capable of stabilising levels of greenhouse gases in the atmosphere at 450ppm CO_2-eq or lower. Australia will unconditionally reduce Gold Fields emissions by 5% below 2000 levels by 2020, and by up to 15% by 2020, if there is a global agreement which falls short of securing atmospheric stabilisation at 450ppm CO_2-eq and under which major developing economies commit to substantially restrain emissions and advanced economies take on commitments comparable to Australia's. The Australian regulatory framework consists of a reporting mechanism, The National Greenhouse and Energy Reporting Act 2007 (NGER) and a cap and trade system, the Carbon

Pollution Reduction Scheme (CPRS). The implementation of the CPRS has been delayed until after 2012.

3.3 Describe the ways in which the identified risks affect or could affect your business and your value chain.

South African Region:
Discussions to date with the SA Government have indicated that the Government favours a carbon tax as the preferred way to price carbon into the South African economy. The policy is being drafted at the moment and Government has committed to releasing a Climate Change White Paper by mid 2010 and a Carbon Tax White Paper in the second half of 2010. The White Paper is expected to address the following issues such as a tax on carbon emissions effective 2012, fuel efficiency standards and carbon emission calculation and reporting by large companies.
There is a probability that South Africa may introduce a cap-and-trade system by 2015 to 2020 in order to align the domestic carbon regulatory regime with the international community.

Gold Fields also expects the White Paper to give indications about how the adaptation funds promised by the developed world will be used to achieve the emission reduction targets and in what way this will help to mitigate its risks. If a carbon tax were to be introduced in South Africa, the cost of using diesel, coal, other fossil fuels and electricity will undoubtedly increase. Gold Fields operations source their electricity from the national grid; which is supplied primarily by coal-fired power stations with high carbon intensities. Electricity accounts for 12.5% of Gold Fields' total operating costs in South Africa and is of similar importance in the cost structure of many of our suppliers. Increasing energy costs will increase the real cost of producing an ounce of gold, or Notional Cash Expenditure (NCE) per ounce of gold. The NCE is currently estimated to be in the order of approximately US$760. An increase in the NCE per ounce of gold could impact on both the existing operations and the feasibility of growth/development opportunities and associated downstream activities.

A report, entitled 'Climate Change: Risks and Opportunities for the South African Economy', published in May 2010 and supported by the British High Commission, states that the greatest risk to Eskom lies in the introduction of carbon pricing, which could prove 'financially crippling' to the utility. The study highlights the fact that climate change has "moved from an issue of environmental concern to an issue of commercial significance". The authors conclude that efforts to maintain short- and medium-term growth will no longer be able to ignore the implications of climate change for business and the economy more broadly. All South African companies will be exposed to Eskom risks.

Ghana:

The biggest risk in Ghana is that Gold Fields does not yet know how the regulatory environment will change and how that change will impact on its business.

Peru:
Peru has adopted some green house gas mitigation policies, including a program of incentives for natural gas introduction, a program to reduce deforestation, a renewable energy programme and a programme to further CDM implementation. Gold Fields regulatory risk in Peru is therefore low.

Australia:
Gold Fields' Australian operations will be impacted through participation in the NGER and the Carbon Pollution Reduction Scheme (CPRS), when implemented after 2012. Installations that emit more than 25,000 tons of CO_2e per year must report their emissions under the NGER. Currently, St Ives emits in the order of 200,000 tons per year Agnew 44,000 tons. Both Gold Fields operations are therefore required to disclose their emissions in terms of this Act. Australia has been working on implementing the CPRS. The CPRS is an emissions trading scheme which will use a cap and trade mechanism. All facilities with emissions exceeding 25 000 tonnes of CO_2-e a year will be required to apply the conditions prescribed under the CPRS. Both St Ives and Agnew exceed these limits. On 27 April 2010, the Prime Minister announced that the Government has decided to delay the implementation of the CPRS until after the end of the current commitment period of the Kyoto Protocol and only when there is greater clarity on the action of other major economies including the US, China and India.

Globally:
Increasing expectations that mining companies, through their sustainability efforts, support local communities puts severe pressure on certain operations. The implementation of sustainable development plans requires a fine balance between what a mining company can afford to contribute to a community and the profitability, and therefore survival, of that company. Climate change impacts on this balance. A number of practical cases can be observed where mining operations has collapsed and severely impacted on the surrounding communities. One such example is the closure of the Buffelsfontein mine on the West Rand in South Africa during 2009. Even though these closures have not been climate change related, it serves as an indicator of what can happen if climate change has a high impact on the communities in which we operate.

3.4 Are there financial implications associated with the identified risks?

Yes

3.5 Please describe them.

Global Impact:

The European Union modelled the price of carbon under different global carbon market scenarios (*Towards a Comprehensive Climate Change Agreement in Copenhagen, extensive background information and analysis, PART 1, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, 21 January 2009*). The base case was taken as a "gradual global carbon market". In this case the price needed to achieve Europe's reduction commitment came to €44 per ton CO_2e by 2020. In the case where there is no global carbon market, the price went up to €72 per ton CO_2e. The reason for this lies in the fact that the opportunity to invest in the most optimal emission reduction alternative is removed when international trade in offset opportunities is removed. The impact of the failure of the world to reach an agreement in Copenhagen therefore introduces a risk to Gold Fields' business that carbon will need to be priced into existing cost structures at a higher level than what would otherwise have been required or anticipated. One of the global financial risks associated with the Copenhagen failure lies in the possible implementation of 'border tax adjustments' in which countries/areas like Europe may impose life cycle greenhouse gas taxes on their borders to level the greenhouse gas emission reduction playing field. Gold Fields have considered this and believe that the risk to its operations in this respect is low owing to the status of gold as a monetary instrument in the global financial system.

South African Region:

South Africa already has a 2c/ kWhr tax on non-renewable electricity, introduced in 2009. This equates to R20/ton CO2e. Other forms of carbon taxes such as tax on vehicles are also implemented. The Long Term Mitigation Scenarios (LTMS) refers to a carbon tax at a level of R100 per ton escalating to R750 per ton by 2030. This means that Gold Fields can expect an additional R80 per ton of CO_2e by 2012. With its SA carbon footprint in the order of 5 million tons (excluding mine methane emissions) this equates to an additional tax burden of around R400 million. At present Gold Fields' SA operations produce in the order of 2 million ounces of gold per year, the tax burden equates to around $25 per ounce. This would increase its NCE by around by around 3.5%. Note that this increase is a worst case impact and will be mitigated by any application of international funding as specified in the provisions of the Copenhagen Accord.

Ghana:

Gold Fields has not been able to quantify the cost impact of regulatory risks in Ghana as at the time of submitting this report, much was speculative.

Peru:

Gold Fields has not been able to quantify the cost impact of regulatory risks in Ghana as, at the time of submitting this report, much was speculative.

Australia:

There is much uncertainty about the cost of carbon under the CPRS. With Gold Fields' Australian carbon footprint in the order of 240,000 tons, a cost of carbon of AUD 10 per ton of CO_2e equates to an additional tax burden of AUD 2.4 million. As its Australian operations produce in the order of 650,000 ounces of gold per year, this additional cost burden equates to around US$3.30 per ounce. This would increase Gold Fields NCE in Australia by around by around 0.5%. If the cost were to go up to AUD 40 per ton, this increases to an impact of 1.7% on the current NCE. These figures will come down if Gold Fields qualify for either the assistance for the Emissions-Intensive Trade-Exposed industry assistance (EITE) or the Transitional Electricity Cost Assistance Program (TECAP). The impact of the CPRS can further be reduced through the use of Obligation Transfer Numbers (OTN) for the diesel purchased and through the use of CERs generated from Gold Fields' operations in non-Annex I countries.

The Australian Government has announced their intention to implement a "Super tax" on mining companies that will tax all profits in excess of normal bond rates at 40%. If this is implemented, it will make Australia tax on mining companies the highest in the world. There seems to be a link between the introduction of this tax and the forced delay in the implementation of the CPRS.

3.6 Describe any actions the company has taken or plans to take to manage or adapt to the risks that have been identified, including the cost of those actions.

As most of the regulatory risks relate to the pricing of carbon into Gold Fields cost parameters, and more specifically pricing carbon into the energy? electricity it uses, the first attempt at mitigating these regulatory risks would focus on energy efficiency as well as the development, or use, of alternative energy.

South Africa:

The focus in South Africa is two-pronged. Firstly, the development of CDM projects and, secondly, other energy efficiency projects that can be funded through Eskom's DSM mechanism. The CDM projects include the following:

- Beatrix methane project. This project will generate up to 4 MW of power from mine methane and will cost R72 million. The project will generate power between 45-55c per kWhr.
- Kloof hard ice plants. This project will cost R80 million and reduce energy consumption at Gold Fields' Kloof operation by 53 GWhr per year

The following projects are in the planning stage:

- Reduction of hoisting of waste rock. This project will reduce energy consumption by between 50 and 100 GWhr per year. The project is still a research project which has not been proven.
- Waste heat recovery project. A project to recover waste heat is being investigated.
- Gold Fields has placed an order for a pre-feasibility study of a renewable energy project at Driefontein that could generate 5 MW in the first phase, but has the opportunity to generate up to 50 MW in later phases.

Other energy efficiency projects include:

- Three Chamber Pipe Systems to improve water pumping efficiency
- Optimisation of Air and Water Networks
- Thermal Ice Storage
- Lighting and Air-conditioning
- Solar Water Heating in company houses
- Metallurgical plant optimisation project
- Educating staff in energy efficiency

Ghana:

Gold Fields has employed a consulting firm to complet energy efficiency workshops and project evaluations for its Tarkwa and Damang operations. The resultant report for the Tarkwa mine contains a total of 23 projects, of which 10 are viable, based on initial estimates. These projects account for predicted annual savings of 32,500GJ. Final reports for the Damang mine are expected in the first half of F2010. In addition to this, the option of using locally produced biodiesel, mixed with standard diesel and back-up power supply options for the Tarkwa CIL plant, are being evaluated. Longer term gas fired power options, possibly through a gold industry consortium, will be explored further in F2010.

Gold Fields is in the pre-feasibility stage of assessing how their conservation and rehabilitation efforts in Ghana can earn afforestation credits through the REDD + or coming US trading schemes.

Peru:

Since the Cerro Corona mine is only now coming into production energy efficiency opportunities are in the process of being investigated. To note, however, is the fact that Gold Fields included energy efficiency considerations in the mine design, and is investigating renewable energy options in the form of hydropower and wind turbine technology.

Australia:

The progress on energy efficiency projects has been greatly assisted by the appointment of energy officers at both St Ives and Agnew, which has leveraged off the existing continuous improvement systems. Gold Fields has identified 7 energy efficiency opportunities totalling savings potential of 24,700 GJ per year which amounts to 6.5% of the total energy consumption of 380,000 GJ at Agnew during the 2009 financial year. Similarly, energy savings opportunities to the value of 108,000 GJ per year, amounting to 5.6% of the total energy consumption of 1.9 million GJ per year, were identified at St Ives. These energy opportunities include the following projects at Agnew:

- Knelson feed water supply upgrade
- Secondary process compressor upgrade and the secondary fan rationalisation

Projects at St Ives include the airstrip upgrade, fuel management system and the ore haulage optimisation. Renewable energy options to supplement gas fired power were also progressed for the Australian operations, with a wind resource survey to be commissioned on Lake Lefroy at St Ives and solar power options covering the TSF2 area progressed at Agnew. Gold Fields intends utilising recently announced government incentive programmes to assist progression of these projects.

4.1 Do current and/or anticipated physical impacts of climate change present significant risks to your company?

Yes

4.2b What are the current and/or anticipated significant physical risks, and their associated countries/regions and timescales?

During the past year Gold Fields has contracted a specialist firm, Climate Risk Solutions to conduct a detailed physical climate change risk assessments for a number of its operations. These assessments were done using both the long term global circulation models scaled down to its operations and the projection of historic data measured at the sites. One of the biggest constraints on this work was the availability of continuous and reliable data for the sites in question. This was a problem particularly for temperature, which is often recorded at fewer stations than rainfall data. The data used in the analysis for the South African sites were sourced from the Computing Centre for Water Research, with additional tests for homogeneity, data integrity and length of data records. Rainfall data was available for three stations in the vicinity of the Gold Fields sites in Ghana. The analysis of the weather station data was based on the suite of 57 seasonal and annual indices. These indices represent a broad range of rainfall and temperature characteristics that capture most aspects of the climate and the trend between 1960 and 2002 was calculated for each index.

Trends were calculated for each index, using both the average and maximum recorded observations at all stations reporting on each day at each site. A robust regression was used to calculate trends for the period 1960-2002, as this is less sensitive to outliers in the time series. The statistical significance of each trend was evaluated. The results are presented only for those indices that indicate trends statistically significant at the 90% confidence level.

South Africa West Rand Operations (Driefontein, Kloof, South Deep):
Maximum recorded rainfall shows a statistically significant increase, while average rainfall intensity shows significant decrease, with longer periods of less intense rainfall. Taken together these results suggest that whilst area, average rainfall may be decreasing in intensity, isolated maximum intensities and hence, localized storms within the area are increasing, potentially leading to an increase in the risk of flash floods. Recorded maximum temperatures have increased by approximately 1°C since 1960. This is accompanied by decreases in the frequency of temperatures below the 10th percentile (coldest hot temperatures) and increases above the 90th percentile

(hottest hot temperatures). This results in increases in the 90th percentile heat wave duration (longer heat waves).

Beatrix:

Several aspects of rainfall have changed as evidenced by indices based on both the maximum recorded and area average rainfall. In particular:

- Mean dry spell lengths have decreased
- Mean dry day persistence has decreased
- Maximum 10 day total rainfall has increased

These rainfall changes suggest an increase in both the frequency and intensity of extreme rainfall, exacerbating the potential for flooding especially when accumulated over many days. Indices based on minimum temperatures alone (including daily average temperatures) indicate little significant change during the period. However, both area average and maximum recorded maximum temperatures have increased by 0.7 - 1.0°C since 1960, potentially leading to problems associated with higher maximum temperatures. Both area average and maximum recorded maximum temperatures indicate increases in the duration of long (90th percentile) heat waves, as well as the frequency with which the 90th percentile maximum temperatures are exceeded. There are similar reductions in the frequency with which the 10th percentile or lower temperatures occur, indicating more hot days have been occurring in the later periods.

Ghana:

Rainfall data was available for three stations in the vicinity of the Gold Fields sites in Ghana. These data, however, indicated a reduction in the total rainfall, its intensity and cumulative 3, 5 and 10 day rainfalls during the 1960-2005 period. These changes suggest reduced water availability and soil moisture and therefore exposure to drought riskGhana had record rainfall in 2007!

Peru & Australia:

A similar analysis to the one done in South Africa is being planned for the other regions.

4.3 Describe the ways in which the identified risks affect or could affect your business and your value chain.

Gold Fields has completed the first phase of its program to establish how its physical risk exposure will change due to climate change. The next phase, which is currently in progress, is aimed at translating the information gained on the changing environment into engineering impacts. The program is to be rolled out in South Africa first and will then be repeated in the other regions.

South Africa:

More extreme storms could increase risk as mine flooding and increased water levels in tailings dams, could, in turn, impact on tailings dam stability. Higher maximum temperatures and more hot days could impact on productivity, safety, mine rehabilitation and the mine water balance. Likewise, as mining goes deeper to access higher grade ore, the cost of mining increases, and technological requirements increase, thereby resulting in a likely increase in the carbon footprint.

Ghana:
Drought in the catchment area of the Volta River has lead to the reduction of power availability to our Ghana operations in the previous 2 years. The impact of this can clearly be seen on our carbon footprint where the emissions from the Damang mine reduced by 30% from 2008 to 2009 due to the fact that the diesel generators required to supply power to the operations in 2008 could be shut down when hydropower became available again.
During 2009 the Damang company had increased pumping costs due to the flooding of the Teberebi pit at the Tarkwa mine.

Peru:
Peru is particularly vulnerable to climate change as its Andes Mountains are the home of more than half the world's tropical glaciers. It is estimated that in 25 years time they will have melted. The glaciers supply rivers which provide water for farms and people on the arid Pacific coast, where almost three-quarters of Peru's population live. Although this will not impact directly on our operation, the climate change vulnerability of the country will impact on our ability to do business in that environment.

4.4 Are there financial implications associated with the identified risks?

Yes

4.5 Please describe them.

Gold Fields' program to quantify the physical risks its operations are exposed to due to climate change, is in progress. Gold Fields is currently translating the information gained on how the environment is changing into engineering designs and will then quantify the costs.

Gold Fields has changed their tailings facility design requirements to account for 1 in 200 year rain storm. This change has a significant impact on both the capital cost of constructing these facilities as well as the operating cost.

Drought risk in Ghana has lead to increased costs due to the interruption of hydro power to the operations the impacts of the interruptions could be seen in production losses, capital cost required to buy diesel generators and the cost of operating the diesel generators.

4.6 Describe any actions the company has taken or plans to take to manage or adapt to the risks that have been identified, including the cost of those actions.

The assessment of Gold Fields' changing exposure to physical climate risks is the result of the implementation of its integrated global Carbon Management Strategy. In terms of this strategy Gold Fields has a rollout plan according to which the risks are assessed and then incorporated into its management planning and normal business practices as required. Gold Fields is currently in the process of assessing and costing these risks and the potentially required interventions, and will incorporate them into its normal day-to-day operational practices as and when required. The costs of these interventions will only be available when the engineering work underlying these actions has progressed further.

5. Other Risks

5.1 Does climate change present other significant risks - current and/or anticipated - for your company?

Yes

5.2b What are the current and/or anticipated other significant risks, and their associated countries/regions and timescales?

Unknown Risks:
Unknown climate change risks present a discontinuity in the way Gold Fields does business. Historically, Gold Fields planned its business on projecting from the past experiences. This can now be done to the same extent as there are a number of unknowns. The biggest other risk Gold Fields is exposed to is the uncertainty related to the rapid change that climate change will bring in the environment in which it operates. When one understands a risk it is possible to manage, mitigate and/or insure the risk. When one does not understand the risk this becomes increasingly difficult to do.

Climate Change Risks:
Gold Fields is expending a lot of effort, and resources, into understanding the climate change risk as it believes that this is the only way in which it can manage and mitigate these risks in the long term. Gold Fields has a resource base that will allow it to still be in operation past 2040. The world needs to reduce its GHG emissions by between 60% and 80% below the 1990 levels by 2050. Accordingly, Gold Fields is trying to understand how this could be achieved and how this will impact on its ability to extract its resource base.

Supply Chain Risks:
Climate change will have a direct impact on the Gold Fields supply chain. Gold Fields uses various materials like steel, timber, cement and chemical reagents in its operations. All of these materials come from industries that are vulnerable to climate change.

Social Risks:
As the impacts of climate change becomes more apparent, social perceptions about issues surrounding climate change are also set to change. Gold Fields will be at risk if it does not anticipate these changes. Also, the risk related to closure of its operations, either due to declining resources, or economic factors, impacts directly on the communities surrounding its operations, as well as labour-sending areas.

Gold Fields is committed to the long terms sustainability of their mining operations. Globally the issue of land use for mining versus land use for food production is an issue that needs to be addressed. There is a risk that climate change and the vulnerability of communities to climate change may influence this balance.

Technological Risks:
Gold Fields' continued efforts to adapt to the changing environment requires that it continually evaluates new technologies that will allow it to overcome the cost incurred when carbon is priced into the economy. These technologies focus on both doing more with less (energy efficiency) and using alternative energy sources. New technology almost always poses new risks.

As the higher grade and shallower gold deposits worldwide are being depleted, gold miners are moving towards lower grade and deeper deposits. These deposits require more energy to extract, and more energy implies a high carbon intensity. The technological challenge in gold mining therefore lies in accessing these lower grade and deeper deposits with less energy.

Market Risks:
There could be market risks associated with consumer demand as a result of climate change. Demand for jewellery fabrication continues to absorb most of the gold produced. If climate change adversely affects daily living, increasing living expenses (energy, fuel, and food prices), then there could be reduced demand for luxury goods such as jewellery; which is considered a luxury item. Reduction in jewellery demand could reduce gold demand. However, the uncertainties related to climate change might strengthen gold's position as a long term safe haven and investment option.

Reputational Risk:
The public sector's awareness around climate change is growing. Mining is a large energy consumer and Gold Fields could be faced with a reputational risk if it is not seen to be moving towards using energy, natural resources and fossil fuels efficiently, and by implication, responsibly. Along with public pressure, there is increasing pressure from investors to know how companies are responding to climate change. Investors and securities regulators are paying an increasing amount of attention to how companies are responding to climate change. By extension, it could be argued that any reputational damage could result in Gold Fields' ability to secure financing to fund future projects being compromised.

5.3 Describe the ways in which the identified risks affect or could affect your business and your value chain.

Unknown Risks:

Gold Fields is not certain how these risks will impact on its business.

Supply Chain Risks:
Regulatory, physical or other climate change impacts on Gold Fields' suppliers could impact on both the continuity of supply as well as the cost of these supplies. Higher cost of supplies will increase costs and this in turn will impact on the profitability of reserves.

Social Risks:
Gold Fields takes its "Social Licence to Operate" very seriously. It values the support of all stakeholders, ranging from the communities it operates in, and its personnel all the way through to its shareholders. Should the effects of, or perceptions, around climate change affect the relationship it has with any of its stakeholders, it can potentially impact on its ability to conduct its business in a responsible and profitable way.

In areas where communities are very vulnerable to climate change the use of large areas of land for mining as opposed to food production may become unsustainable.

Technological Risks:
As Gold Fields' mines develop deeper, there is an increasing demand on energy, meaning more services and increased cost. Gold Fields must be at the leading edge of technology; providing innovative solutions to its operations, this poses a risk that needs to be managed. Projects on the cutting edge of technology currently in Gold Fields portfolio included: a renewable energy project at Driefontein, various water pumping reductions, ventilation optimisation projects, and a project aimed at reducing the amount of rock hoisted There is currently no capital for the Ethos project, although the GROWTH project includes a portion of the equipment which would be used for ETHOS.

Reputational Risks:
If Gold Fields were to suffer reputational risk due to any negative perception that may arise from issues surrounding climate change, it may impact on its ability to cooperate with a number of stakeholder groups. These include Gold Fields employees (it could lose our senior, experienced and talented people who may choose to work for more responsible companies), the regulators (who may withhold regulatory approvals due to negative perceptions) or its shareholders (who may choose to invest companies perceived to be more responsible)

5.4 Are there financial implications associated with the identified risks?

Yes

5.5 Please describe them.

Unknown Risks:
Gold Fields does not know in what way these risks will impact on its business.

Supply Chain Risks:
Gold Fields could face discontinuities in supply both with respect to security of supply and cost. Some of these risks include timber (fire vulnerability), cement (carbon tax vulnerability), steel (carbon tax and logistical vulnerability), and chemical reagents (carbon tax and logistical vulnerability). The financial impact of a disruption in supply comes through potential production stoppages and the resulting loss of revenue. The financial impact of price increases lies in a reduction of margin and therefore profitability.

Social Risks:
Damage to relationships with Gold Fields stakeholders can impact on the ability of the company to conduct its business in a responsible and profitable way.

Gold Fields own substantial pieces of land. If the sustainability of the use of this land is affected by climate change then the sustainability of our mining operations can be affected with serious financial consequences.

Technological Risks:
Investment decisions for projects involving new technology are always challenging. Normal financial hurdle rates need to be modified in order to compensate for the higher risk profiles of the projects. Gold Fields is seriously considering at using carbon finance from the CDM mechanism to mitigate these technology risks.

Market Risks:
A reduction in gold demand due to a climate change induced global decline in affluence could impact on Gold Fields revenue through a lower gold price. Gold Fields do however believe that the risk of such a reduction in gold price is significantly offset by the potential gold price increase due to gold's status as safe haven in times of economic turbulence.

Reputational Risk:
Many potential actions taken by stakeholders due to reputational perceptions can impact on the profitability and sustainability of Gold Fields' operations. Loss of qualified, talented and experienced personnel would certainly limit its ability to operate efficiently and profitably. Decline of regulatory approvals could have very serious financial implications.

Gold Fields is dependent on shareholders goodwill to fund new expansions and operations. If the company suffers reputational risk, the ability of the company to fund such projects will be jeopardised.

5.6 Describe any actions the company has taken or plans to take to manage or adapt to the other risks that have been identified, including the costs of those actions.

Unknown Risks:
Gold Fields' risk management strategy, in conjunction with its Carbon Management Strategy, provides for a mechanism to scan its operations for changing risk profiles on a continuous basis. Any changes in the magnitude of the risks, or new risks coming to the fore are addressed within the framework of these systems. The cost of these risk management systems already forms part of Gold Fields existing operating cost.

Supply Chain Risks:
Gold Fields is developing a program that will require of all suppliers to disclose their carbon footprints as part of their standard contract conditions. This information will allow Gold Fields to accurately assess the risk associated with all supplies and thereby manage those risks more efficiently.

Social Risks:
A survey, reported on last year, which looks at attitudes and awareness on climate change across different levels of the Gold Fields organisation is progressing. Analysis of the results of the first round of this study have been incorporated in Gold Fields' Carbon Management Strategy.

Gold Fields is currently invests according to a formula based on gold production and profit, monies to a foundation which is utilised for social investment in the areas in which they operate. One of the main criteria for the investment of this money is to make the communities in these areas more sustainable.

Technological Risks:
Gold Fields is working closely with experts in a variety of industries to mitigate the technology risks it is exposed to. These include experts in mine ventilation and cooling, mining and processing methods, energy and renewable energy from the private sector, academic institutions and the public sector.

Reputational Risk:

Gold Fields' Carbon Management Strategy makes provision for a detailed communication strategy that is designed to convey the message that the company takes climate change very seriously, and is continuously doing its utmost to adapt to, and mitigate, the effects of climate change.

6. Regulatory Opportunities

6.1 Do current and/or anticipated regulatory requirements related to climate change present significant opportunities for your company?

Yes

6.2b What are the current and/or anticipated significant regulatory opportunities and their associated countries/regions and timescales?

Global Impact:
Many developing countries have made their emission reduction pledges in terms of the Copenhagen Accord conditional upon international financial assistance or funding from developed countries. On the other hand the pricing of carbon into the economies of the world economy will put a huge burden on businesses operating in developing countries. Gold Fields expects that the application of the funds contributed by developed countries will be used through the regulatory frameworks of developing countries in which it operates to mitigate the impacts of the pricing of carbon into the economies of those countries. Gold Fields see this as a general regulatory opportunity for its operations in these countries.

South Africa:
The regulatory opportunities represented in the South African regions include the following:

- Implementing projects under the Clean Development Mechanism (CDM) of the Kyoto Protocol
- Accessing funding for energy efficiency project from the Demand Side Management Program (DSM) run by Eskom
- Accessing tax incentives as described in the Revenue Laws Amendment Bill of 2009.

Gold Fields has two CDM projects that are in the validation stage; The Capture and Utilisation of Methane at the Gold Fields' owned Beatrix Mine in South Africa, as well as the Kloof #3 Ice Chiller project. The Beatrix project will capture and destroy methane gas emissions from the Beatrix mine in South Africa and generate 4 MW of electricity (approximately 4% of the mine's electrical demand). The Kloof project employs hard ice technology is this true? that has not been implemented in South Africa as yet. These 2 projects will reduce our greenhouse gas emissions by around 6%.

Other projects in the pipeline for South Africa include:

- Reduction of hoisting of waste rock. This project will reduce energy consumption by between 50 and 100 GWhr per year. The project is still being costed.
- Waste heat recovery project. A project to recover waste heat is being developed.Where?
- Gold Fields has placed the order for a pre-feasibility study of a renewable energy project at Driefontein that will generate 5 MW in the first phase but has the opportunity to generate up to 50 MW in later phases.

Gold Fields has a number of energy efficiency projects that will benefit from both the Demand Side Management project run by Eskom and the tax incentives announced for energy efficiency projects. These include projects such as:

- Three Chamber Pipe Systems to improve water pumping efficiency
- Optimisation of Air and Water Networks
- Thermal Ice Storage
- Lighting and Air-conditioning
- Solar Water Heating in company houses
- Metallurgical plant optimisation project
- Educating staff in energy efficiency

Ghana:

The 2008 budget of Ghana included a moratorium on excise duties, VAT and all local charges for biodiesel. These incentives are aimed at encouraging investment in the energy sector in Ghana. Gold Fields is investigating opportunities in biodiesel, including the option of using locally-produced biodiesel mixed with standard diesel. Gold Fields has started discussions with local producers on capacity and capability to produce biodiesel for blending.

Australia:

The regulatory environment in Australia encourages energy efficiency. At both of the Australian operations, energy champions have been appointed and energy efficiency awareness has been campaigned. Australian operations have the opportunity to become involved in energy efficiency projects as a result of the Energy Efficiency Opportunities Programme. To date, 96 energy efficiency initiatives, representing a savings of 8% of the total energy used per annum, were identified under this programme.

The Department of the Environment, Water, Heritage and the Arts has a responsibility for delivering several renewable energy programmes; providing opportunities to become involved in renewable energy. The implementation of carbon tax provides an incentive for investing in clean renewable energy. Gold Fields has operations in both Annex 1 and Non-Annex 1 countries. The company has the opportunity to develop carbon credit projects in Non-Annex 1 countries. The revenue from

carbon credits can offset the increasing energy costs. The introduction of a cap-and-trade system in Australia will provide Gold Fields with an opportunity to trade carbon credits internally. Regulations on climate change present opportunities in renewable energy and energy efficiency. As renewable energy becomes more commonplace through regulation changes so too does its affordability and the business case is rapidly becoming more compelling.

6.3 Describe the ways in which the identified opportunities affect or could affect your business and your value chain.

Sustainable production is important to Gold Fields. The regulatory opportunities available to the company can strengthen the financial viability of some of the operations and thereby extend the mine lives by turning resources into reserves.

South Africa:

Both the CDM and energy efficiency projects will have the following positive impacts on its business and value chain:

- It will introduce additional cash flow into the business.
- It will reduce Gold Fields dependency on electricity supplied by Eskom.
- It will reduce to tax burden on its cash flow.
- It will assist in projecting Gold Fields image as a company that understands how climate change is impacting on the environment in which it operates and that it is actively repositioning its business to thrive in this environment.

Ghana:

Gold Fields use in the order of 20,000 kiloliters of diesel per year in Ghana. The use of biodiesel will reduce its reliance on imported fossil fuel and its carbon footprint.

Peru:

Gold Fields is considering the generation of renewable energy to supplement the supply of power from the Peruvian grid where frequency variation is a problem.I am not aware of this problem, and anyway the generation of a few MW of RE will not stabilise the frequency in Peru which has a national installed capacity of >4000MW, mainly generated from hydro power 60%? The only problem I am aware of is a shortage of transmission capacity from the South to the North of Peru which may limit the amount of power Cerro corona can purchase from their natural gas IPP who is in the south of the country.

Australia:

Gold Field is investigating the generation of wind and or solar power in Australia.

6.4 Are there financial implications associated with the identified opportunities?

Yes

6.5 Please describe them.

South Africa:
The Beatrix project will yield in the order of 280,000 CERs per year. At current market prices, this equates to around R40 million per year. This cash flow would make a contribution of $14 per ounce of gold produced, which represents 1.8% of the NCE (based on average South African cost). In addition to this, the value of the tax benefit contributed by the impact of the project on the energy consumption by the Beatrix mine could yield an additional R4.5 million per year Beatrix does not currently pay tax to my knowledge, so how can we predict a tax benefit?

Similarly, the Hard Ice project could have an impact of 0.2% on the NCE of Kloof. The energy efficiency project will not only soften the blow of Eskom's price increases over the next couple of years, it will also contribute to a saving of between 10c/kWhr and 15c/kWhr Is this the tax benefit?. The Emission Reduction Purchase Agreement (ERPA) linked to Gold Fields' Beatrix methane project has been awarded the "Deal of Year Award" for 2010 by the Energy Risk magazine in the UK.

6.6 Describe any actions the company has taken or plans to take to exploit the opportunities that have been identified, including the investment needed to take those actions.

Beatrix Project:
The project can be divided into two distinct sections:

- The first being the destruction and utilisation of mine methane, which originates in the main Beatrix mine from intersecting geological faults whilst mining. The mining activity releases underground methane. Methane is highly explosive and a safety hazard. Currently, the underground mine methane is diluted with ventilation air to below its explosion limits and released into the atmosphere through ventilation shafts. This methane will be captured and piped to surface where it will be used to generate power.
- The second being the destruction of non-mine methane; which is methane being emitting from boreholes drilled for exploration purposes by the Beatrix mine. Methane is released from numerous exploration boreholes. The capital cost of the Beatrix project is in the order of R90 million

Kloof Project:
The project will introduce an ice maker on the surface to produce hard ice from the cold water supplied from the chillers. The ice would be the prime carrier of chill energy, as opposed to water. Since ice is a far more efficient carrier of chilled energy, the pumping load will be significantly

reduced, which leads to a reduction in power consumption. The capital cost of the project is in the order of R80 million.

Australia:
At St Ives, Gold Fields is currently investigating using 600-2,000kW wind turbines. Gold Fields has appointed a consultant to do dynamic modelling and, if feasible, they would need to erect a 50m mast on the lake to do wind resource validation. Gold Fields is considering the feasibility of using solar and wind lighting towers as well as solar-powered tailings dam pumps. The company is also looking at trialling prototypes of wind/solar lighting plants, both mobile and fixed units, at the St Ives operations.

At Agnew, Gold Fields has an administration office solar project for which it has invited four vendors to submit budget proposals. There could be further opportunities to access federal or state government funding to assist with the development of such renewable energy projects.

7. Physical Opportunities

7.1 Do current and/or anticipated physical impacts of climate change present significant opportunities for your company?

No

8. Other Opportunities

8.1 Does climate change present other significant opportunities - current and/or anticipated - for your company?

Yes

8.2b What are the current and/or anticipated other significant opportunities and their associated countries/regions and timescales?

Gold as a Safe Haven:
Last year it was reported that "Gold is seen as a safe investment, being used to hedge against turmoil. Sales of gold could increase if climate change were to create economic, political or social unrest." Whereas it is impossible to link the increase in gold price over the last year to the failure of the world to come to an agreement in Copenhagen, the lack of clarity in the carbon regulatory environment does add to the uncertain state of the world economy and could, albeit in a small way have a positive impact on the price of gold.

Voluntary Carbon Market:
Gold Fields have also started a process of identifying and implementing projects to generate voluntary emission reduction credits (VERs). These projects are considered in cases where the CDM cannot be implemented. A number of VER projects have been identified but these are on hold pending the recovery of the VER market after the recent financial crisis.

Waste Recycling Opportunities:
Gold Fields is investigating various waste recycling opportunities; which would not only create jobs, but would reduce emissions by displacing the manufacture of new tyres for haulage vehicles, which were in short supply worldwide and the disposal of these tyres was problematic. According to the Australian Department of Environment, Water, Heritage and the Arts, retreading extends the life of a tyre and utilises much of the original materials and structure: the net result is a decrease in materials and energy used in comparison with new tyres. Gold Fields will monitor the performance

of the retread tyres and are benchmarking this against the performance of new tyres. Some of the retread tyres have exceeded 1,000 hours of use and the company is actively working on increasing this. Other recycling opportunities exist that could be developed.

New Industrial Applications for Gold:
There is a possibility that the development of clean technologies will open up a new market for gold. Gold alloy catalysts are being investigated as an alternative to expensive platinum within the fuel cell stack and catalytic converters. Nanostellar, in partnership with the World Gold Council, developed a catalyst called NS Gold(TM); which is made of gold, platinum and palladium. This catalyst has the potential to reduce noxious emissions by about 20% more than traditional platinum catalysts. Ted da Silva could comment on Mintek's project Autek which is jointly funded by GFL, AGA and Harmony.

Development of the Uranium Market:
The Government's strategy for dealing with climate change involves diversifying the energy mix away from coal, shifting to cleaner-coal technologies, nuclear and renewable energy. The LTMS outlines four sets of actions, which, when implemented together, will allow South Africa to achieve a target of reducing emissions by 30% to 40% from 2003 levels by 2050. These actions outline what the generation mix of the electricity grid in South Africa should look like in 2050?. This generation mix should include 14 new conventional nuclear plants, 103 GW of new solar plants and 15 GW of new wind plants, although some variation from these numbers can be expected in the final implementation. Gold Fields has an opportunity to mine uranium and become a supplier to new nuclear plants as mentioned in the LTMS. Gold Fields has in excess of 50 million pounds of uranium contained in historical tailings dams across its Driefontein, Kloof and South Deep mines in South Africa. At Driefontein alone, Gold Fields has in excess of 14 million pounds of uranium contained in tailings from current and future mining horizons. Work has already begun to determine how best to unlock the value inherent in this resource as part of the tailings treatment project.

8.3 Describe the ways in which the identified opportunities affect or could affect your business and your value chain.

Gold as a Safe Haven:
The possibility exists that the impact of climate change on the world economy is going to be more fundamental than what most people realise. A fundamental restructuring of the world economy from a carbon based energy economy to a low carbon energy economy will not be without significant upheaval. Traditionally the price of gold has reacted positively to two types of events: increases in the price of energy, and global political turmoil. Climate change will inevitably raise the price of energy significantly and has the potential to cause significant global political turmoil. Gold

Fields therefore sees gold as a gold hedge against the unknowns and uncertainties which may be presented by climate change in coming years.

Voluntary Carbon Market:
The successful development of VER projects will add another cash flow stream to Gold Fields business. This would give the company the opportunity to capitalise on the development of revenue streams for projects that do not qualify for CDM project registration.

Waste Recycling Opportunities:
The implementation of waste recycling opportunities will reduce Gold Fields' costs. It would also instil a culture of saving at its operations, which could have positive impacts in other parts of the business.

Gold Fields has commissioned a feasibility study to generate renewable energy at Driefontein using waste from a number of sources. This plant will also produce biochar for use in the environmental rehabilitation plan of the mine.

New Industrial Applications for Gold:
New industrial applications for gold could lead to an increase in the demand for gold and therefore an increase in the gold price.

Development of the Uranium Market:
Gold Fields sees the development of the uranium project as a significant expansion opportunity and additional source of revenue for its business. This business will have the added benefit of enhancing our rehabilitation efforts on the West Rand.

8.4 Are there financial implications associated with the identified opportunities?

Yes

8.5 Please describe them.

Any increase in the price of gold will directly impact on Gold Fields financial performance. It is unfortunately not possible to quantify what the impact on the gold price could be, but it appears more likely that the price will increase than decrease. Additional revenue streams will impact directly on the company's profitability.

8.6 Describe any actions the company has taken or plans to take to exploit the opportunities that have been identified, including the investment needed to take those actions.

Gold Fields is developing the “Liquid Gold” project to supply clean water to the West Rand region in South Africa from water pumped from underground. The project will turn the current water pumping liability into an asset and simultaneously help to mitigate the potential negative impact of climate change on the water supply of the Gauteng and North West Provinces.

Gold Fields has developed the uranium project at a pre-feasibility level. The project was discussed at board level on 25 March 2010. The board’s decision was for the project team to complete a feasibility study on the proposed Phased Approach Project by the end of August 2010. The next step in the development of the project is to complete the Phased Approach Feasibility study and then to do an overall financial evaluation and assessment, valorising the project (sell/joint venture/develop/mothball).

Gold Fields has entered into an agreement for the completion of a pre-feasibility study for a renewable energy project based on turning waste to energy at the Driefontein mine. The project will also be able to take biomass from a potential phyto-remediation project which is being studied for the mine. The first phase of the project will be 5 MW with the potential to expand to 50 MW.

Several projects that could earn Voluntary Emission Reduction credits under the VCS system are being investigated.

Strategy

9.1 Strategy

9.1 Please describe how your overall group business strategy links with actions taken on risks and opportunities (identified in questions 3 to 8), including any emissions reduction targets or achievements, public policy engagement and external communications.

The objective of a mining company like Gold Fields is to maximise the economic value of the reserves it mines over the life of the reserve However, as a global company with operations in different countries across the world, Gold Fields appreciates that in order to secure business into the future, it will have to conduct its business both responsibly and ethically At present Gold Fields has gold reserves with mine lives expected to extend to after 2050. The company understands that the world needs to reduce its greenhouse gas emissions by between 60% and 80% below the 1990 levels by 2050. It also understands that this can only be achieved if the whole world economy is fundamentally re-structured. Gold Fields has been active in the alignment of both the company (at corporate level) and its operations (business unit level) with the emerging low carbon world economy since 2005.

Gold Fields appreciates that companies that wish to thrive in the new carbon-constrained economy realise the importance of having an integrated carbon management strategy, to steer them through future turbulent times. The company realises that having a carbon management strategy is now a strategic imperative; without one, the ability to operate effectively and profitably in the future will be compromised. A carbon management strategy comprises the additional elements a company must integrate into its overall strategy. Gold Fields completed a comprehensive Carbon Management Strategy in October 2009. The South African Executive Committee approved the rollout of the Strategy to all the operations in November 2009. The objective of this strategy was to "To continue the alignment of Gold Fields with the emerging low carbon world economy and retain our leadership position in this arena." This is achieved by analysing their existing business strategies and processes and identifying points of contact and influence with the climate change risks and opportunities it faces. Gold Fields understand that these risks can only be mitigated and the opportunities grasped if it integrates the actions it takes because of climate change with its day-to-day running of in the business.

The development of this strategy focussed on the following:

- Gold Fields analysed both the internal and external environments in which it operates. This analysis focussed on understanding the impacts of the physical, regulatory, economic, and other influences of climate change on the environments in which Gold Fields operates. The

understanding gained in this analysis set the framework within which the company needs to redesign management planning and related business practices.

- Gold Fields analysed the risks and opportunities to which its business was exposed. The focus is to gain a fundamental understanding of how the changing environment will impact on the way in which it conducts its business.
- Gold Fields analysed existing business strategies and identified the points of contact between the risk and opportunities and its existing strategies.
- The process concluded with 15 strategic initiatives. The 15 strategic initiatives are:

1. Risks from climate change
2. Opportunities from climate change
3. Determine its carbon footprint
4. Define its position on climate change:
    a. Make consistent with vision, values and goal
    b. Modify policies to match
    c. Ensure management buy-in
5. Manage its position on climate change
    a. Communicate to all stakeholders
    b. Address employee perceptions and buy-in
    c. Manage the influence and concerns of all stakeholders
6. Modify and implement to meet the needs of the carbon management strategy
    a. Governance and organisation structure
    b. Data capturing and reporting structure
    c. Carbon accounting and taxation procedures
    d. Performance management system
    e. Long range emission planning process

Gold Fields is progressing the development and implementation of the Carbon Management Strategy by:

- Development of the Climate Change Communication Strategy. This will be rolled out during the second half of 2010
- The Carbon Management Policy
- The Carbon Management Toolkit. This will assist all managers throughout the company in dealing with climate change related issues in their daily operations.

9.2 – 9.6 Targets

9.2 Do you have a current emissions reduction target?

Yes

9.6 Please complete the table. *(If you have a current emissions reduction target or have a recently completed target)*

Target Type	Value of Target	Unit	Base year	Emissions in base year (metric tonnes CO_2-e)	Target Year	GHGs and GHG sources to which the target applies	Target met?	Comment
Other: Beatrix Mine: Emissions Intensity	2.01	Other: tons CO_2 per ounce of gold corrected for ore grade	2008	899230	2009	Other: Scope 1 & 2 excluding mine methane	Target ongoing	Increased by 1.41% from 1.99 tCO_2/oz in 2008 to 2.02 tCO_2/oz in 2009. This target excludes the mine methane emissions as these emissions distort the operation results and makes it difficult to measure progress. If the mine methane is included, the emission intensity increased by 2.64% due to a reduction of 15% in the gold output from the mine. The implementation of the Beatrix methane capture CDM project will significantly reduce the mine methane emissions
Other: Driefontein Mine: Emissions Intensity	1.78	Other: tons CO_2 per ounce of gold corrected for ore grade	2008	1618329	2009	Scope 1 + 2	No	Increased by 5.79% from 1.79 tCO_2/oz in 2008 to 1.89tCO_2/oz in 2009. The increase is mostly due deeper mining which requires more energy. We are working on ways to normalize the emission intensity to compensate for mining depth, but cannot yet report on it.

Target Type	Value of Target	Unit	Base year	Emissions in base year (metric tonnes CO_2-e)	Target Year	GHGs and GHG sources to which the target applies	Target met?	Comment
Other: South Deep Mine: Emissions Intensity	2.56	Other: tons CO_2 per ounce of gold corrected for ore grade	2008	463446	2009	Scope 1 + 2	Yes	Decreased by 25.9% from 2.56 tCO_2/oz in 2008 to 1.90 tCO_2/oz in 2009. The dramatic decrease in emission intensity at South Deep is due to the ramp-up of production
Other: Kloof Mine: Emissions Intensity	1.95	Other: tons CO_2 per ounce of gold corrected for ore grade	2008	1421180	2009	Scope 1 + 2	Target ongoing	Increased by 4.28% from 2.32 tCO_2/oz in 2008 to 2.42 tCO_2/oz in 2009. Reporting distorted by accelerated infrastructure replacement program which increased emissions and lower gold production
Other: Tarkwa Mine: Emissions Intensity	0.33	Other: tons CO_2 per ounce of gold corrected for ore grade	2008	212575	2009	Scope 1 + 2	No	Increased by 11.7% from 0.33 tCO_2/oz in 2008 to 0.37 tCO_2/oz in 2009. Tarkwa upgraded the CIL plant between 2008 and 2009. . The increased tonnage being directed into the new mill,accounts for the increase in emissions intensity

Target Type	Value of Target	Unit	Base year	Emissions in base year (metric tonnes CO_2-e)	Target Year	GHGs and GHG sources to which the target applies	Target met?	Comment
Other: Damang Mine: Emissions Intensity	0.44	Other: tons CO_2 per ounce of gold corrected for ore grade	2008	84713	2009	Scope 1 + 2	Yes	Reduced by 21.2% from 0.37 tCO_2/oz on 2008 to 0.29 tCO_2/oz in 2009
Other: St Ives Mine: Emissions Intensity	0.59	Other: tons CO_2 per ounce of gold corrected for ore grade	2008	444743	2009	Scope 1 + 2	Yes	Reduced by 3.5% from 0.51 tCO_2/oz in 2008 to 0.49 tCO_2/oz in 2009.
Other: Energy Efficiency target	5	% reduction per year	2008	6360009	2010	Other: Electricity and diesel savings	Target ongoing	Project 3M relates to a saving initiative in utilities such as power, air and water. Operations in the South Africa Region are operating at 90 per cent of the historic baseline electric power. Further improvements to cut power usage and costs are included in a Group-wide power conservation strategy, which is monitored through the 3M project.

Target Type	Value of Target	Unit	Base year	Emissions in base year (metric tonnes CO_2-e)	Target Year	GHGs and GHG sources to which the target applies	Target met?	Comment
Other: Agnew Mine: Emissions Intensity	0.29	Other: tons CO_2 per ounce of gold corrected for ore grade	2008	200932	2009	Scope 1 + 2	Yes	Increased by 16.8% from 0.22 tCO_2/oz in 2008 to 0.26 tCO_2/oz in 2009. Stability issues inside the mine and void issues caused a decrease in the production of gold, which in turn increased the emission intensity of the gold produced. Agnew's overall emissions (Scope 1 & 2) reduced by 6% during this period.

9.7 Please use the table below to describe your company's actions to reduce its GHG emissions.

1. Actions - please describe	2. Annual energy saving	3. Annual energy savings - number	4. Annual energy saving - units	5. Annual emission reduction in metric tonnes CO_2-e	6. Reduction - achieved or anticipated	7. Investment - number	8. Investment - currency	10. Monetary savings - currency	12. Timescale of actions & associated investments (if relevant)
Beatrix methane project - generate 4 MW from mine methane	Anticipated	31000000	kWh (kilowatt-hour)	280000	Anticipated	80000000	ZAR (R)	ZAR (R)	The project is in validation as a CDM project. Measurement and flaring of the methane will start in November 2010 and power generation in 2012
Kloof Hard Ice Plants	Anticipated	53000000	kWh (kilowatt-hour)	53000	Anticipated	80000000	ZAR (R)	ZAR (R)	The project is in validation as a CDM project. The plant will be commissioned by the end of 2010.

1. Actions - please describe	2. Annual energy saving	3. Annual energy savings - number	4. Annual energy saving - units	5. Annual emission reduction in metric tonnes CO_2-e	6. Reduction - achieved or anticipated	7. Investment - number	8. Investment - currency	10. Monetary savings - currency	12. Timescale of actions & associated investments (if relevant)
Project Ethos - reduction of hoisting requirements	Anticipated	50000000	kWh (kilowatt-hour)	50000	Anticipated		ZAR (R)	ZAR (R)	The project involves the implementation of novel technology which is being piloted at the moment
Waste heat recovery project	Anticipated	50000000	kWh (kilowatt-hour)	50000	Anticipated		ZAR (R)	ZAR (R)	The project is linked to the uranium project which is in the bankable feasibility stage
Renewable energy project at Driefontein	Anticipated	40000000	kWh (kilowatt-hour)	560000	Anticipated		ZAR (R)	ZAR (R)	The project in the pre-feasibility stage
Three camber pipe feed systems	Anticipated	10000000	kWh (kilowatt-hour)	10000	Anticipated	15000000	ZAR (R)	ZAR (R)	The project in the pre-feasibility stage
Optimization of air and water networks									

1. Actions - please describe	2. Annual energy saving	3. Annual energy savings - number	4. Annual energy saving - units	5. Annual emission reduction in metric tonnes CO_2-e	6. Reduction - achieved or anticipated	7. Investment - number	8. Investment - currency	10. Monetary savings - currency	12. Timescale of actions & associated investments (if relevant)
Thermal ice storage									
Lighting and air conditioning									
Solar water heating in company houses									
Metallurgical plant optimization project									

9.10 Do you engage with policy makers on possible responses to climate change including taxation, regulation and carbon trading?

Yes

9.11

Please describe.

During the first half of 2010 Gold Fields participated in 2 workshops (organised by the NBI and the Energy Research Centre of the University of Cape Town) in which ways to price carbon into the South African economy was discussed. Members of a number of Government Departments including National Treasury, Department of the Environment and Department of Trade and Industry were present and participated in these workshops.

Gold Fields is an active participant in the work the International Council on Mining and Metals (ICMM) (www.icmm.com) is doing in climate change. During 2009 ICMM's Council of CEOs, which consists of 19 Chief Executive Officers of many of the world's largest mining and metals companies, undertook a review of the climate change issue. The result is a policy on climate change, approved by the ICMM Council in October 2009.

The company also engages with the Electronics Industry Citizenship Coalition regarding the downstream impact of metals on the environment.

The ICMM actively participated in the activities at Copenhagen in December 2009 and engages with regulatory authorities around the world.

Gold Fields is an active member of the Chamber of mines in South Africa (http://www.bullion.org.za). The Chamber exists as the Principal advocate of major policy positions endorsed by the mining employers and represents these to various organs of South African national and provincial governments and to other relevant policy-making and opinion-forming entities, both within South Africa and abroad. The Chamber also works closely with the various employee organisations in formulating these positions where appropriate.

Gold Fields also engage in numerous other initiatives such as the sustainability research by Oekom Research from Germany (which includes climate change issues).

Emissions

10. Boundary (1 Jan 2009 – 31 Dec 2009)

10.1 Please indicate the category that describes the company, entities, or group for which Scope 1 and Scope 2 GHG emissions are reported.

Companies over which operational control is exercised

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

Yes

10.3 Please complete the following table.

Source	Scope	Explain why the source is excluded
Mine Methane (all operations except Beatrix)	Scope 1	It is very small and not measured due to variability and technical difficulty of obtaining a accurate measurement.

11. Methodology (1 Jan 2009 – 31 Dec 2009)

11.1a Please give the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions and/or describe the procedure you have used (in the text box in 11.1b below).

Please select the published methodologies that you use.
ISO 14064-1
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

11.1b Please describe the procedure that you use.

The scope 1 and 2 emissions were calculated in accordance with The International Standards Organization (ISO) 14064-1 – "Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals" and the Greenhouse Gas Reporting Protocol. In order to determine the scope 1 and 2 emissions, the data was multiplied by

an appropriate emission factor. Actual emission factors were used where available, but otherwise emission factors were sourced from the Intergovernmental Panel on Climate Change (IPCC) 2006 Guidelines for National Greenhouse Gas Inventories.

Scope 3: GHG Protocol guidance
Mine methane:
Methane is found in geological faults in the South African mines in the Witwatersrand and Free State regions. The origin of this mine methane is unknown and, according to literature, it could be bacterial, hydrothermal, abiogenic or a mixture of all of these. Gold mine methane differs from coal mine methane. Coal mine methane is released as coal is mined and is a function of the amount of coal mined. Gold mine methane is released only when a geological fault containing methane is encountered in the mining process. This makes the flow rate of methane difficult to measure or predict. Current practice is to dilute the mine methane to acceptable levels (below explosion limits) with air and vent it to the atmosphere.

The mine methane released at Beatrix was estimated to be 31,996 tonnes of methane/year. This is based on a combination of documented test results and in situ gas measurements and airflow rates. However, the flow rate of methane varies; creating uncertainty around the accuracy of this measurement. The other South African Operations have small volumes of mine methane. However, this has not been measured due to the variability in the methane flow and the technical difficulty of obtaining an accurate measurement.

11.2 Please also provide the names of and links to any calculation tools used.

Please select the calculation tools used.
Calculation tool not used

11.3 Please give the global warming potentials you have applied and their origin.

Gas	Reference	GWP
Methane	IPCC Third Assessment Report (TAR - 100 year)	23

11.4 Please give the emission factors you have applied and their origin.

Fuel/Material	Emission Factor	Unit	Reference
Liquefied petroleum gas (LPG)	0.06	metric tonnes CO_2-e per GJ	IPCC 2006 Guidelines
Gas/Diesel oil	0.07	metric tonnes CO_2-e per GJ	IPCC 2006 Guidelines
Motor gasoline	0.07	metric tonnes CO_2-e per GJ	IPCC 2006 Guidelines
Sub bituminous coal	0.10	metric tonnes CO_2-e per GJ	IPCC 2006 Guidelines
Methane	23.00	metric tonnes CO_2-e per metric tonne	IPCC Third Assessment Report
Other: Blasting Agents	0.17	metric tonnes CO_2-e per metric tonne	AGO 2006a and the Australian Department of Climate Change
Other: South African Electricity Grid Emission Factor	1.03	Other: metric tonnes CO_2-e per MWh	Eskom Annual Report 2009
Other: Ghanaian Electricity Grid Emission Factor	0.15	Other: metric tonnes CO_2-e per MWh	U.S. Department of Energy
Other: Australian (North) Electricity Grid Emission Factor	0.57 Is this correct? St Ives and Agnew power is generated from natural gas in predominantly islanded grids in Western Australia.	Other: metric tonnes CO_2-e per MWh	BHP Billiton
Other: Peruvian Electricity Grid Emission Factor	0.15	Other: metric tonnes CO_2-e per MWh	U.S. Department of Energy

12. Scope 1 (1 Jan 2009 – 31 Dec 2009)

12.1 Please give your total gross global Scope 1 GHG emissions in metric tonnes of CO_2-e.

1,308,764

12.2 Please break down your total gross global Scope 1 emissions in metric tonnes CO_2-e by country/region.

Country	Scope 1 Metric tonnes CO_2-e
South Africa	966,728
Ghana	222,888
Australia	108,075
Peru	11,072

12.5 Where it will facilitate a better understanding of your business, please also break down your total gross global Scope 1 emissions by facility. (Only data for the current reporting year requested.)

Facilities	Scope 1 Metric tonnes CO_2-e
Beatrix	945,103
Driefontein	6,974
Kloof	6,192
South Deep	8,460
Tarkwa	179,397
Damang	43,491
St. Ives	95,358
Agnew	12,717
Cerro Corona	11,072

12.6 Please break down your total gross global Scope 1 emissions by GHG type. (Only data for the current reporting year requested.)

GHG Type	Scope 1 Emissions (Metric tonnes)	Scope 1 Emissions (Metric tonnes CO_2-e)
CO_2	408,529	408,529
CH_4	39,141	900,235

12.8 Please give the total amount of fuel in MWh that your organization has consumed during the reporting year.

1464288

12.10 Please complete the table by breaking down the total figure by fuel type.

Fuels	MWh
Gas/Diesel oil	1,315,501.00
Motor gasoline	6,389.00
Liquefied petroleum gas (LPG)	25,076.00
Sub bituminous coal	117,300.00

13. Scope 2 (1 Jan 2009 – 31 Dec 2009)

13.1 Please give your total gross global Scope 2 GHG emissions in metric tonnes of CO_2-e.

5,093,511

13.2 Please break down your total gross global Scope 2 emissions in metric tonnes of CO_2-e by country/region.

Country	Metric tonnes CO_2-e
South Africa	4,886,693
Ghana	62,127
Australia	132,998
Peru	11,692

13.5 Where it will facilitate a better understanding of your business, please also break down your total gross global Scope 2 emissions by facility. (Only data for the current reporting year requested.)

Facility name	Metric tonnes CO_2-e
Beatrix	856,940
Driefontein	1,726,566
Kloof	1,752,524
South Deep	550,663

Facility name	Metric tonnes CO_2-e
Tarkwa	45,786
Damang	16,341
St Ives	102,725
Agnew	30,273
Cerro Corona	11,692

13.6 How much electricity, heat, steam, and cooling in MWh have your organization purchased for its own consumption during the reporting year?

Please supply data for these energy types.	MWh
Electricity	5,093,511

14. Scope 2 - Contractual

14.1 Do you consider that the grid average factors used to report Scope 2 emissions in question 13 reflect the contractual arrangements you have with electricity suppliers?

Yes

14.4 Has your organization retired any certificates, e.g. Renewable Energy Certificates, associated with zero or low carbon electricity within the reporting year or has this been done on your behalf?

No

15.1 Please provide data on sources of Scope 3 emissions that are relevant to your organization.

Sources of Scope 3 emissions	Metric tonnes of CO_2-e	Methodology
Purchased goods & services - direct supplier emissions	913,578	This section was completed in accordance with the Scope 3 Accounting and Reporting Standard by The Greenhouse Gas Protocol Initiative. Equation used: Tonne CO_2 = (Mass of product supplied) x (Emission factor) The mass of each product supplied was obtained from Anglo Platinum. Emissions were allocated based on physical relationships (mass). Where information on the emissions of a supplier was unavailable, an industry benchmark emission factor for the manufacturing process of the product was used. Emission Factors Used: Diesel - 0.37 tonne CO_2/tonne produced (source: Royal Dutch Shell CDP 2009) Petrol - 0.37 tonne CO_2/tonne produced (source: Royal Dutch Shell CDP 2009) LPG - 0.0046 tonne CO_2/tone produced (source: Sasol CDP 2009) Coal - 0.0181 tonne CO_2/tonne produced (source: Exxaro CDP 2010) Timber - 0.0219 tonne CO_2/m^3 harvested (source: E. Sonne, Greenhouse Gas Emissions from Forestry Operations: A Life Cycle Assessment, http://jeq.scijournals.org/cgi/content/full/35/4/1439) Timber (conversion) - 1.4 m^3/tonne (source: http://bioenergy.ornl.gov/papers/misc/energy_conv.html) Blasting Agents - 3.23 tonne CO_2/tonne produced (source: P.D. Sharma, Carbon footprint reduction in mining and blasting operation, http://miningandblasting.wordpress.com/2009/10/30/carbon-footprint-reduction-in-mining-and-blasting-operation/)

Sources of Scope 3 emissions	Metric tonnes of CO_2-e	Methodology
		Lime - 7.013 GJ/tonne produced (source: W Kenefick & M Tate, Lime– A Sustainable "Green" Building Product, http://www.nationallime.org/IBLS05Papers/Kenefick.pdf) Cement - 4.4 GJ/tonne produced (source: International Energy Agency 2007, http://www.global-greenhouse-warming.com/cement-CO_2-emissions.html) Caustic Soda - 16.56 GJ/ton produced (source: E Worrell, et al., Energy Use and Energy Intensity of the U.S. Chemical Industry, http://www.energystar.gov/ia/business/industry/industrial_LBNL-44314.pdf) Grid electricity emission factors used in calculations: South Africa - 1.02 ton CO_2/MWh (source: Eskom Annual Report 2009) Ghana - 0.15 ton CO_2/MWh (source: US Department of Energy, http://www.eia.doe.gov/oiaf/1605/pdf/Appendix%20F_r071023.pdf) Australia (Southern) - 0.575 ton CO_2/MWh (source: BHP Billiton) Australia (Northern) - 0.585 ton CO_2/MWh (source: BHP Billiton) Peru - 0.148 ton CO_2/MWh (source: US Department of Energy, http://www.eia.doe.gov/oiaf/1605/pdf/Appendix%20F_r071023.pdf)
Transportation & distribution of inputs & waste generated in operations	31,534	This section was completed in accordance with the Scope 3 Accounting and Reporting Standard by The Greenhouse Gas Protocol Initiative. Only the emissions from external transportation and distribution of inputs associated with direct suppliers were included. Due to a lack of information, external warehousing and storage of inputs, and external transportation of waste generated in operations were not included. The activity-based methodology was used for calculations. Equation used: Tonne CO_2 = (Quantity) x (Distance travelled) x (Emission factor) The quantities of purchased products were obtained from Gold Fields. An average distance of 100km was assumed for the travel of all deliveries. Emissions were allocated based on physical relationships (tonne.km). Emission Factors Used: Truck Freight – 0.187 kg CO_2/tonne.km (source: http://www.defra.gov.uk/environment/business/envrp/pdf/passenger-transport.pdf)

Sources of Scope 3 emissions	Metric tonnes of CO_2-e	Methodology
Business travel	4,232	This section was completed in accordance with the Scope 3 Accounting and Reporting Standard by The Greenhouse Gas Protocol Initiative. Emissions for all air and road business travel are calculated. Equation used for flights: Tonne CO_2 = (Distance travelled) x (Number of flights) x (Emission factor) Distances travelled were calculated from actual destinations obtained from Gold Fields. Number of flights (or passengers per flight) were obtained from Gold Fields Emissions were allocated based on physical relationships (person.km). Emission Factors Used: short haul flights (<425km) - 0.18 kg CO_2/km medium haul flights (<1600km) - 0.13 kg CO_2/km long haul flights (>1600km) - 0.11 kg CO_2/km (source: http://www.eci.ox.ac.uk/research/energy/downloads/jardine09-carboninflights.pdf) Equation used for road travel: Tonne CO_2 = (Distance travelled) x (Emission factor) Distances travelled were obtained from Gold Fields. Emissions were allocated based on physical relationships (person.km). Emission Factors Used: Petrol emission factor - 2.27 kg CO_2/l Average fuel consumption (assumed) – 10 litres/100 km (source: 2006 IPCC Guidelines for National Greenhouse Gas Inventories)

Sources of Scope 3 emissions	Metric tonnes of CO_2-e	Methodology
Transportation & distribution of sold products	947	This section was completed in accordance with the Scope 3 Accounting and Reporting Standard by The Greenhouse Gas Protocol Initiative. Only the transportation and distribution of sold products in vehicles not owned or controlled by the reporting company were included. Due to a lack of information, warehousing and storage of sold products in warehouses and other facilities not owned or controlled by the reporting company, and retail of sold products in facilities not owned or controlled by the reporting company, were not included. Gold produced by Gold Fields is an intermediate product, therefore transportation of gold from Gold Fields to the refineries (direct customers of Gold Fields), as well as distribution to end-users were included in the calculations. The activity-based methodology was used for calculations. Equation used for distribution to refineries: Tonne CO_2 = (Hours travelled) x (Fuel efficiency) x (Emission factor) For the hours travelled, actual destinations and travel times for distribution to the gold refineries were obtained from Gold Fields. Fuel Efficiency is assumed to be 170 litres/hour (source: http://www.uhnl.nf.ca/fleet.htm). Emissions were allocated based on physical relationships (tonne.km). Emission factor used: Aviation Fuel Emission Factor (calculated) - 2.55 kg CO_2/litre Jet Kerosene calorific value - 44.1 MJ/kg (source: IPCC 2006 Guidelines) Jet Kerosene emission factor – 71500 kg CO_2/TJ (IPCC 2006 Guidelines) Jet Kerosene Density – 808 kg/m^3 (source: http://en.wikipedia.org/wiki/Jet_fuel) Equation used for distribution to end-users: Tonne CO_2 = (Mass of sold product) x (Distance travelled) x (Emission factor) The mass of sold products were obtained from Gold Fields. Annual worldwide final consumption figures were used to calculate the mass and distance travelled to end-user. (Source: World Gold Council, Gold Demand Trends, Feb 2010, www.gold.org). It was assumed that all products are distributed via air travel. Emissions were allocated based on physical relationships (tonne.km).

Sources of Scope 3 emissions	Metric tonnes of CO_2-e	Methodology
		Emission Factors Used: Long-haul cargo flight (approx 10000km) - 0.6 kg CO_2/tonne.km Short-haul cargo flight (approx 1000km) - 1.32 kg CO_2/tonne.km (source: http://www.defra.gov.uk/environment/business/envrp/pdf/passenger-transport.pdf)
Use of sold goods and services	2,635	This section was completed in accordance with the Scope 3 Accounting and Reporting Standard by The Greenhouse Gas Protocol Initiative. Gold produced by Gold Fields is an intermediate product. Although the end uses of the sold products from Gold Fields are unknown, it is expected that the upstream scope 3 emissions will be orders of magnitude bigger than the downstream scope 3 emissions. Only the emissions associated with smelting and refining of gold are calculated. It is expected that this will be the most energy intensive process step of all the downstream gold products emissions seeing that 89.1% of gold is used for investment and jewellery which should have very little resulting emissions in its use phase. It is also assumed that the entire product will be recycled once during its lifetime (i.e. undergo the refining and smelting process twice). Equation used: Tonne CO_2 = (Mass of sold product) x (Emission factor for production technique) The mass of sold products was obtained from Gold Fields. Emission Factor for gold refining and smelting: Energy Requirements – 41737.70 MJ/tonne gold (source: National Resources Canada, http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/tableshandbook2/agg_00_6_e_7.cfm?attr=0) South Africa grid emission factor - 1.03 kg CO_2/kWh (source: Eskom Annual Report 2009) Final Emission Factor for gold refining and smelting – 11.36 tonne CO_2/tonne gold

Sources of Scope 3 emissions	Metric tonnes of CO_2-e	Methodology
Disposal of sold products at the end of their life	0	Gold is an inorganic material that produces no emissions in the landfill environment. As a result, the land filling emission factor is the standard disposal emission factor (i.e. transport to landfill site) of 0.0367 ton CO_2/ ton. (source: EPA 2002, Solid Waste Management and Greenhouse Gases: A Life Cycle Assessment of Emissions and Sinks, EPA530-R-02-006, Chapter 7) Gold is a valuable product with a high recycle rate of at end-of-life which results in the reduction of the disposal of sold products at the end-of-life: Jewellery and investment - 100% Electronics, dentistry, and other industrial use - 80%
Employee commuting and teleworking	31,624	The total number of employees working for Gold Fields was obtained and it was assumed that 20% make use of private transport seeing that most of the workers are transported by Gold Fields buses to and from the workplace. The average distance travelled per employee per day was assumed to be 40km. Equation used for road travel: Tonne CO_2 = (Distance travelled) x (Emission factor) Emissions were allocated based on physical relationships (person.km). Emission Factors Used: Petrol emission factor - 2.27 kg CO_2/l Average fuel consumption (assumed) – 10 litres/100 km (source: 2006 IPCC Guidelines for National Greenhouse Gas Inventories)

16 - 17. Other 1

16.1 Does the use of your goods and/or services enable GHG emissions to be avoided by a third party?

Yes

16.2 Please provide details including the anticipated timescale over which the emissions are avoided, in which sector of the economy they might help to avoid emissions and their potential to avoid emissions.

Gold catalysts are being investigated as an alternative to platinum for use in fuel cells, which combine hydrogen and oxygen to produce direct electrical power and water. Fuel cells are characterised by particularly high electrical efficiencies and low emissions. Gold Fields does not have estimates of the emissions avoided through the use of fuel cells as this will require further investigation.

17.1 Please provide your total carbon dioxide emissions in metric tonnes CO_2 from the combustion of biologically sequestered carbon i.e. carbon dioxide emissions from burning biomass/bio fuels.

167,663

18 - 20. Other 2

18.1a Please describe a financial intensity measurement for the reporting year for your gross combined Scope 1 and Scope 2 emissions.

If you do not consider a financial intensity measurement to be relevant to your company, select "Not relevant" in column 5 and explain why in column 6.

Figure for Scope 1 and Scope 2 emissions	GHG units	Multiple of currency unit	Currency unit	Financial intensity metrics
1,687.00	Metric tonnes CO_2-e	Million	USD($)	Revenue

18.1b Please describe an activity-related intensity measurement for the reporting year for your gross combined Scope 1 and Scope 2 emissions.

Oil and gas sector companies are also asked to report activity-related intensity metrics in answer to table O&G1.3. If you do not consider an activity-related intensity measurement to be relevant to your company, select "Not relevant" in column 3 and explain why in column 4.

Figure for Scope 1 and Scope 2 emissions	GHG units	Activity-related metrics
1.51	Metric tonnes CO_2-e	Other: per ounce of gold (weighted)
0.13	Metric tonnes CO_2-e	Other: per tonne ore milled

19.1 Do the absolute emissions (Scope 1 and Scope 2 combined) for the reporting year vary significantly compared to the previous year?

Yes

19.2 Please explain why they have varied and why the variation is significant.

The amount of energy used per ounce of gold depends heavily on the grade of the ore, the strip ratio and whether it is mined underground or open-cast. With a lower ore grade, more ore will need to be moved and more energy used to produce the same amount of gold. A high strip ratio means that more rock must be moved to access the ore body. More energy is used for moving the rock, yet gold is not produced. There is also a baseline electricity consumption needed for water pumping and ventilation, which cannot be changed irrespective of production. The baseline electricity consumption is independent of production.

21. Emissions Trading

21.1 Do you participate in any emission trading schemes?

No, we do not currently participate nor do we anticipate participating in any emissions trading scheme within the next two years.

21.4 Has your company originated any project-based carbon credits or purchased any within the reporting period?

Yes

21.5 Please complete the following table.

Credit origination or credit purchase?	Project identification	URL link to project documentation	Verified to which standard?	Number of credits (metric tonnes of CO_2-e)	Credits retired?	Purpose e.g. compliance
Credit Origination	The Capture and Utilisation of Methane at the Gold Fields' owned Beatrix Mine in South Africa	http://cdm.unfccc.int/Projects/Validation/DB/FZNY1KDY3FV94IE5TNALVQ8V0L1XTU/view.html	CDM	1979274	No	Not applicable
Credit Origination	Kloof #3 Ice Chiller project	http://cdm.unfccc.int/Projects/Validation/DB/4GPLA0CT95IRX1512LI8LAZGBZOQ9Y/view.html	CDM	375370	No	Not applicable

Climate Change Communications

22. Communications

22.1 Have you published information about your company's response to climate change/GHG emissions in other places than in your CDP response?

Yes

22.2 In your Annual Reports or other mainstream filing? *(If so, please attach your latest publication(s).)*

Yes

22.3 Through voluntary communications such as CSR reports? *(If so, please attach your latest publication(s).)*

Yes