Overview

Role of Renewables in Gold Fields Global Energy Security Plans

- Background to Gold Fields
- Background to the Carbon War Room and the Rocky Mountain Institute (CWR-RMI)
- Gold Fields renewable energy commitments and journey
- Energy security plans and renewable energy
- Case for collaboration with the CWR-RMI on the review of Gold Fields energy security plans
- First steps and initial goals in reviewing the plans
- CWR-RMI methodology for collaboration
- Assessing renewable energy potential
- Initial outcomes and the way forward

To be the Global Leader in Sustainable Gold Mining
Background to Gold Fields

Gold Fields Limited (GFL)

- Gold Fields Limited (GFL) is an unhedged, globally diversified producer of gold
- Eight operating mines in Australia, Ghana, Peru and South Africa as well as a number of development projects including ones in Chile and the Philippines
- Attributable annual gold production of approximately 2.2 million ounces
- Our vision is to be the ‘global leader in sustainable gold mining’
- Carbon and energy management are key to achieving our vision
Background on CWR and RMI

Carbon War Room and the Rocky Mountain Institute

- Rocky Mountain Institute (RMI): An independent nonprofit founded in 1982—transforms global energy use to create a clean, prosperous, and secure low-carbon future. It engages businesses, communities, institutions, and entrepreneurs to accelerate the adoption of market-based solutions that cost-effectively shift from fossil fuels to efficiency and renewables.

- Carbon War Room (CWR) was founded in 2009 as a global nonprofit by Sir Richard Branson and a group of likeminded entrepreneurs to accelerate the adoption of business solutions that reduce carbon emissions at gigaton-scale and advance the low carbon economy.

- CWR merged with Rocky Mountain Institute (RMI) in 2014 and now operates as an RMI business unit. The combined organization has offices in Snowmass and Boulder, Colorado, New York City, Washington D.C., and Beijing.
Gold Fields Commitment to Renewable Energy

Supported by top management and an enabling environment

- Supported at a Board and ExCo level
- Strong CEO commitment
- Energy and Carbon Strategy - To Support Business Integration
- Entrenched through our Group Energy & Carbon Policy and Guideline
- Group Balanced Scorecard for 2015: Renewables evaluated as part of 5 year energy security plans

Evaluating renewable energy is a business imperative for global energy security as well as advancing a low carbon economy.
Gold Fields Commitment to Renewable Energy

What Gold Fields is focused on in 2015

Group BSC illustrates integrated thinking

CEO, Executive and Senior Management remuneration is linked to the deliverables
Gold Fields Commitment to Renewable Energy

Group Strategic Renewable Energy Commitments

1. Review replacement of carbon-intense sources of energy with renewable energy or switch to less intense energy sources (taking security of supply or price demands into account)
2. No operation should go backwards to a more carbon-intensive source (unless security of supply or price demands)
3. Identify short, medium and long term renewable energy initiatives that meet regional and operational IRR requirements
4. Determine what investments need to be made and budget accordingly
5. 20% renewable energy generation on average in all new mine developments
Gold Fields Renewable Energy Journey

2006 – 2015: Key Milestones

**2006 - 2011**
- Beatrix Methane Project
- Carbon Management Strategy
- Gold Fields first Carbon Disclosure Project (CDP) Submission
- Energy Efficiency projects (including a CDM registered project)

**2012**
- Integrated Energy and Carbon Management Strategy
  - Included renewables evaluation (biomass, solar and wind)
  - Energy and carbon reduction targets
  - On-going targeting of energy efficiency opportunities

**2013/2014**
- Group Guideline to further support E&C Strategy Integration
  - Good progress made with meeting E&C reduction targets
  - US$ 20 million saved in 2014 from energy efficiency and optimisation projects

**2015**
- Partnership with the CWR/RMI: Evaluate renewables for global energy security
- Gold Fields Corporate office to go 50% off-grid using solar PV
- Studies underway to assess possibility of 20% renewable sources as part of the energy mix for Salares Norte Project
- Almost a decade of CDP submissions
- Project registered with the ERF for our Granny Smith Mine in Australia
Why evaluate renewable energy as part of our Energy Security Plans?

- Energy is 21% of Gold Fields operating costs and rising annually
- Energy security is vital for operational sustainability
- Significant decline in PV panel and component costs
- Increasing likelihood of price parity with conventional sources
- Increase in remote off-grid projects
- Grid unpredictability, load shedding/curtailment, rising electricity prices in South Africa/Ghana
- Dependency on a single energy source or provider
- Future demand exceeding supply in many operating jurisdictions
- Climate change effects (i.e. reduced rainfall and low water levels in the Volta Lake in Ghana)
- Supply chain risks (road/rail/pipe networks compromised due to regional/national instability)

Other Key Benefits of Renewable Energy

- Carbon emissions reduction
- Enhanced reputational impact
- Viewed by investors as a proxy for good risk management & ESG performance
- Potential for host community benefits through shared value (Biomass/Biogas)
Gold Fields and CWR-RMI Collaboration

Background

● Energy security (of which renewables forms a key component) is business critical to Gold Fields and an integral part of our carbon/renewables journey
● 5 Year Energy Security plans are a key group requirement for 2015
● Independent third party review required to maximise the potential for the integration of renewable energy at an operational level into the plans

Why CWR-RMI?

● Global leader in business solutions to reduce carbon emissions and to advance a low-carbon economy
● CWR-RMI mission is a perfect fit for Gold Fields vision and business strategy
● Significant experience in breaking the barriers to entry for renewables
● Collaborative model has been tried and tested with other companies
● Bring together a group of best in class partners to conduct analysis & provide support for renewable energy procurement
● Lessons gleaned from Gold Fields will be used to further advance and enhance renewables uptake globally

Committed to the Evaluation of Low Carbon Energy Solutions
Initial Steps

- CWR-RMI has been involved during the development of the regional 5-year energy security plans through Gold fields energy working group.

2014
Energy Security moves into top 10 Group Risks

2015
5 Year Regional Energy Security Plans commenced
Completion of Plans by mid-July 2015

2015/2016
Energy Security Plans Integration into Operational Plans & Implemented
# CWR-RMI Methodology

## Adding Value Through Independent Review & Procurement Assistance

<table>
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<tr>
<th>Activity</th>
<th>Key Tasks</th>
<th>Conducted by</th>
<th>Funded by</th>
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| Gain Company Commitment | • Identify optimal mining firms  
• Gain commitments to conduct feasibility study & procurement support | CWR, CWR     | CWR       |
| Conduct high level needs analysis | • Locate and acquire approvals to access site and industrial process specific energy data  
• Identify potential renewable energy projects | CWR, CWR     | CWR       |
| Conduct Detailed Feasibility Study + Project Development | • Undertake a detailed feasibility study and measurement campaigns to identify appropriate renewable energy and smart energy use measures.  
• Develop proposals for projects with the greatest impact potential. | Technical advisor (i.e. DNV-GL / Cronimet) | CWR       |
| Develop, issue and manage RFP | • Determine an appropriate procurement strategy on a case by case basis;  
• Prepare a template set of RFP documents to include employers requirements, to be issued to Independent Power Producers (IPPs);  
• Manage the RFP process;  
• Collate RFP responses and identifying optimal bid. | DNV GL, IPP   | Energy Off-taker |
| Project Delivery / Installation | • Execution of project(s). | IPP, Energy Off-taker | IPP, Energy Off-taker |
Assessing Renewable Energy Potential

Rigorous Analysis to Determine Economic & Technical Feasibility

- Life of Mine
- Prevailing and Future Energy Tariffs
- Geography (land & RE potential)
- Cost of On-Site Generation
- Energy Use Factors
- Grid Stability
Assessing Renewable Energy Potential

Analytical & Project Development Process

1. **Determine Baseline Scenario**
2. **Model Baseline and Other Scenarios**
3. **Determine Ideal Energy Mix**
4. **RFI & Pre-Qualification**
5. **RFP & Selection**
6. **Development & Commissioning**
Initial Outcomes & Way Forward

Initial Outcomes

● All of Gold Fields regions have considered renewable energy and its integration into their respective operations during the development of the regional 5-year energy security plans
● Gold Fields South Deep mine will explore renewables options of 15MW, 30MW and 60MW on-site Solar PV generation as well as off-site wind generation
● Small biomass plant to be investigated as a shared value project at South Deep

Way Forward

● CWR-RMI to complete independent review of Gold Fields Energy Security Plans and the findings of the review will be integrated into the Plans by Mid-July 2015
● Gold Fields and CWR-RMI to work together on the next steps to further investigate the above options for South Deep (i.e. possibility for a detailed feasibility study)
● Other regional options to be evaluated for the most feasible potential projects following the finalisation of the review
● Gold Fields Solares Norte Project in Chile is in the process of validating renewables for 20% of its energy needs
● Possible further partnership with CWR-RWI on the Salares Norte Project
Thank You

To be the Global Leader in Sustainable Gold Mining