



Integrating Solar Power into Gold Fields' South Deep Mine

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Forward looking statements



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In particular, the forward looking statements in this document include among others those relating to the Damang Exploration Target Statement; the Far Southeast Exploration Target Statement; commodity prices; demand for gold and other metals and minerals; interest rate expectations; exploration and production costs; levels of expected production; Gold Fields’ growth pipeline; levels and expected benefits of current and planned capital expenditures; future reserve, resource and other mineralisation levels; and the extent of cost efficiencies and savings to be achieved. Such forward looking statements involve known and unknown risks, uncertainties and other important factors that could cause the actual results, performance or achievements of the company to be materially different from the future results, performance or achievements expressed or implied by such forward looking statements. Such risks, uncertainties and other important factors include among others: economic, business and political conditions in South Africa, Ghana, Australia, Peru and elsewhere; the ability to achieve anticipated efficiencies and other cost savings in connection with past and future acquisitions, exploration and development activities; decreases in the market price of gold and/or copper; hazards associated with underground and surface gold mining; labour disruptions; availability terms and deployment of capital or credit; changes in government regulations, particularly taxation and environmental regulations; and new legislation affecting mining and mineral rights; changes in exchange rates; currency devaluations; the availability and cost of raw and finished materials; the cost of energy and water; inflation and other macro-economic factors, industrial action, temporary stoppages of mines for safety and unplanned maintenance reasons; and the impact of the AIDS and other occupational health risks experienced by Gold Fields’ employees.

These forward looking statements speak only as of the date of this document. Gold Fields undertakes no obligation to update publicly or release any revisions to these forward looking statements to reflect events or circumstances after the date of this document or to reflect the occurrence of unanticipated events.

Integrating solar power into Gold Fields' mines: A case for collaborative leadership

- Background to Gold Fields
- Background to the Carbon War Room and the Rocky Mountain Institute (CWR-RMI)
- Gold Fields renewable energy commitments
- Case for collaboration with the CWR-RMI
- South Deep Solar PV process
- Outcomes
- Lessons learnt
- Way forward



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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 two major development projects in Chile and the Philippines
- Attributable annual gold production of approximately 2.2 million ounces (2014)
- Our vision is to be the 'global leader in sustainable gold mining'
- Carbon and energy management are key to achieving our business objectives and vision



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Background to South Deep

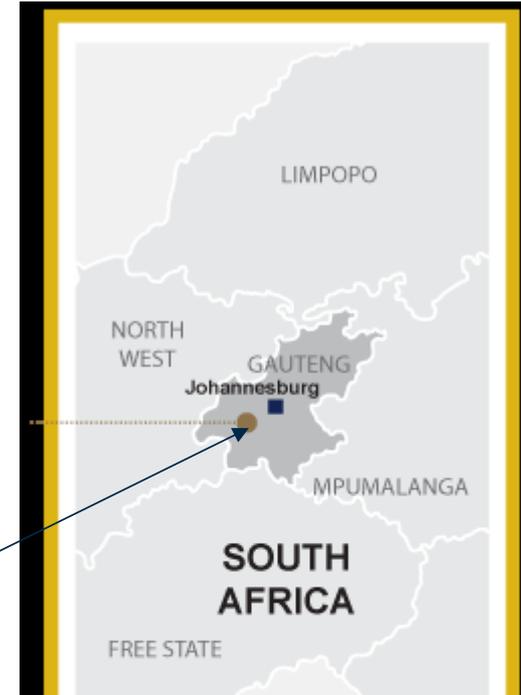
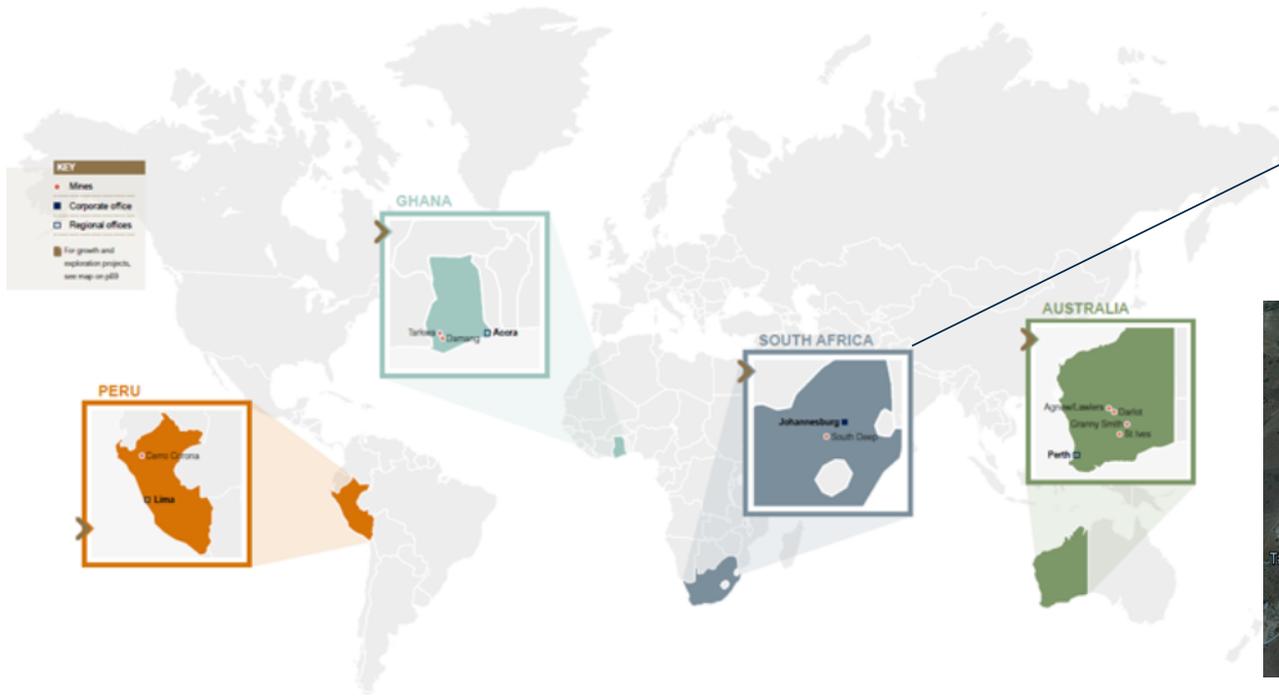


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South Deep Mine

- Grid connected (Eskom), 95% of electricity from coal
- Energy spend is 13% of operating spend (Group 22%)
- Average load 55 MW, to peak at 75 MW
- Life of Mine: +70 years
- Global Horizontal Index (GHI) of 2 061 kWh/m²



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Carbon War Room and Rocky Mountain Institute



- **Carbon War Room (CWR)**

Non-profit founded in 2009 by Sir Richard Branson and likeminded entrepreneurs to accelerate adoption of business solutions that reduce CO₂ emissions at gigaton scale and advance the low carbon economy

- **Rocky Mountain Institute (RMI)**

Non-profit founded in 1982 by Amory B Lovins with the mission to transform global energy use to create a clean, prosperous, and secure low-carbon future through market-based solutions

- CWR and RMI merged in 2014 and now has offices in Colorado, New York City, Washington D.C., and Beijing.



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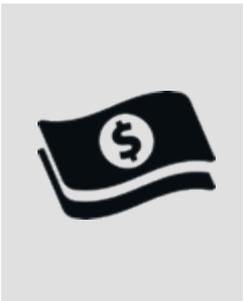
1) High Energy-Intensity Globally

- Mining is very **energy intensive** – globally consuming 400 TWh annually
- Energy is often the single **largest operating expenditure** for a mine – 30% avg
- Energy intensity is **steadily rising**, driving costs up



2) Energy Security Concerns

- Mines are operating in **increasingly remote areas** and/or with **unreliable electric grids**
- Mines are **relying increasingly on diesel generators** to ensure consistent power



3) Energy Costs and Profit Motives – Solar PV systems are within reach

- The **cost of solar PV continues to decline** rapidly – more than 50% in 5 years
- **Technology has matured** dramatically – hybrid solutions are completely reliable
- **Energy storage** is likewise rapidly maturing

4) Community Development and Relations

- Mining can help “**turn on the lights**” across sub-Saharan Africa.
- Mines can **lead an energy transformation** with lasting economic and social benefits

5) Sustainability, CSR, Brand Value, and Shareholder Demand

- Growing **shareholder demand** for de-carbonization of supply chains
- **Corporate directives** and targets on renewable energy
- Renewables is a critical component of mining companies’ **CSR strategy**

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Gold Fields commitment to renewable energy



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Supported by Top Management and an Enabling Environment

Supported by Board and Group ExCo

Strong and visible CEO Commitment

Integrated Group Energy and Carbon Strategy

Entrenched through our Group Energy & Carbon Policy and Guideline

Included in Group Balanced Scorecards (Executive to Operation)

“ Rising energy costs, supply constraints and carbon emission standards are some of the challenges we need to address, through, among others increased energy efficiency, use of renewable energy forms and energy storage systems”

Nick Holland, CEO, “Gold Mining Company of the Future” presentation 2015

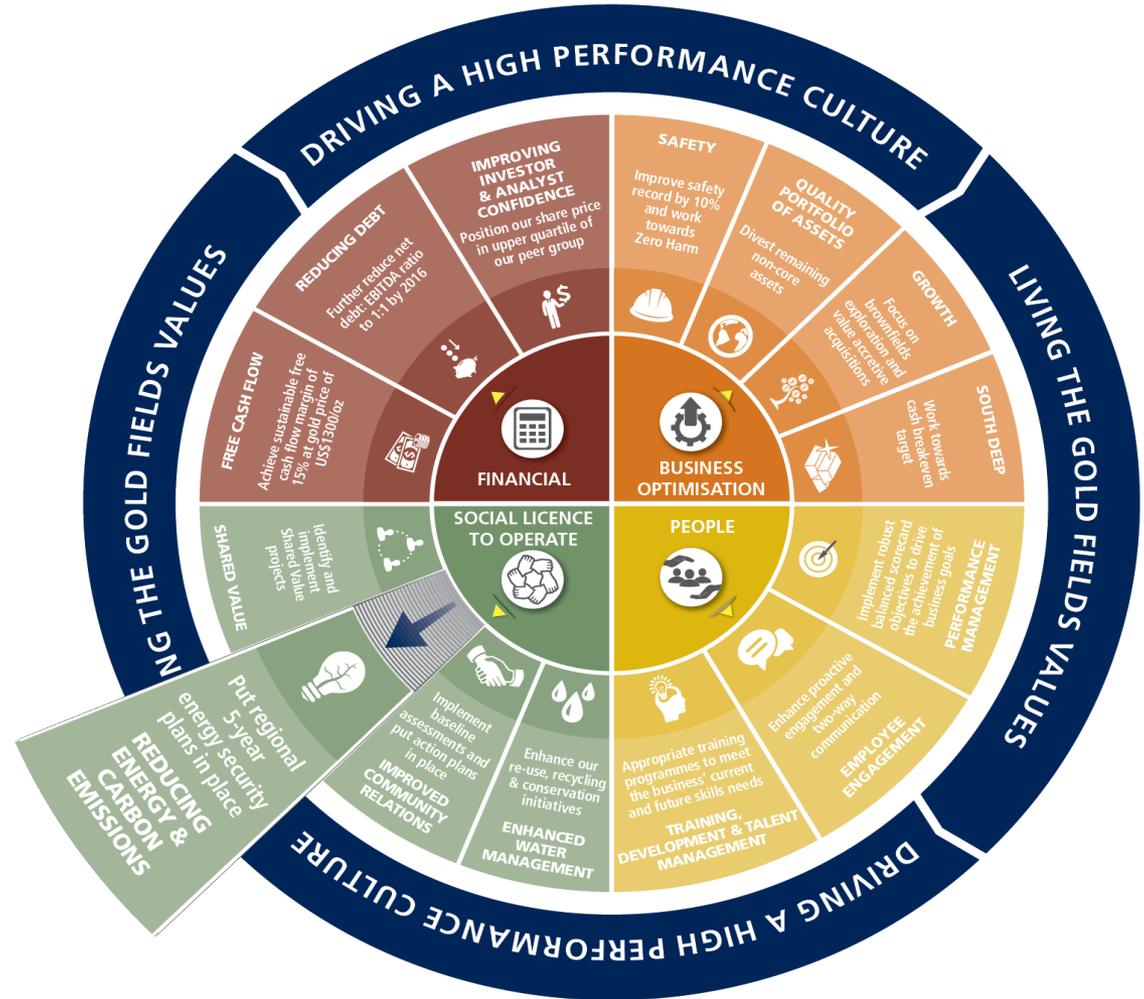
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Gold Fields commitment to renewable energy

What Gold Fields is focused on

Group BSC illustrates integrated thinking

CEO, Executive and Senior Management remuneration is linked to the deliverables



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Group strategic renewable energy commitments

- Aiming for 20% renewable energy generation on average in all new mine developments
- Set 3-year regional carbon emission and energy efficiency targets to 2016 & revised targets till 2020
- PV rooftop system to meet 50% of power needs installed at Corporate office
- Gas plant registered with the ERF for our Granny Smith Mine in Australia; Savings = 13,000 tonnes CO₂eq
- Evaluating RFP's for a 40 MW solar PV plant for our South Deep mine in South Africa
- Nearly 10 years of CDP submissions
- ICMM Climate Change statement
- Recently signed The Paris Pledge for Action
- Estimated US\$20m savings from energy efficiency/optimisation in 2014 & US\$30m for 2015

ICMM
International Council
on Mining & Metals

 **ROBECOSAM**
Sustainability Award
Silver Class 2016



 **Global
Reporting
Initiative™**

 **CDP™**
DRIVING SUSTAINABLE ECONOMIES

We've joined
**The Paris Pledge
for Action**
WE MUST
CAN
WILL 

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Why did Gold Fields chose to work with CWR-RMI?

- Global leader in business solutions to reduce carbon emissions & advance a low-carbon economy
- CWR-RMI mission is aligned with our vision
- We share the goal of supporting industry-wide change
- CWR-RMI has supported our leadership aspirations and actions
- Tap into their significant experience in lowering entry barriers for renewables
- Provision of an optimised not maximised solution
- Collaborative model has been tried and tested with other companies
- Bought 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

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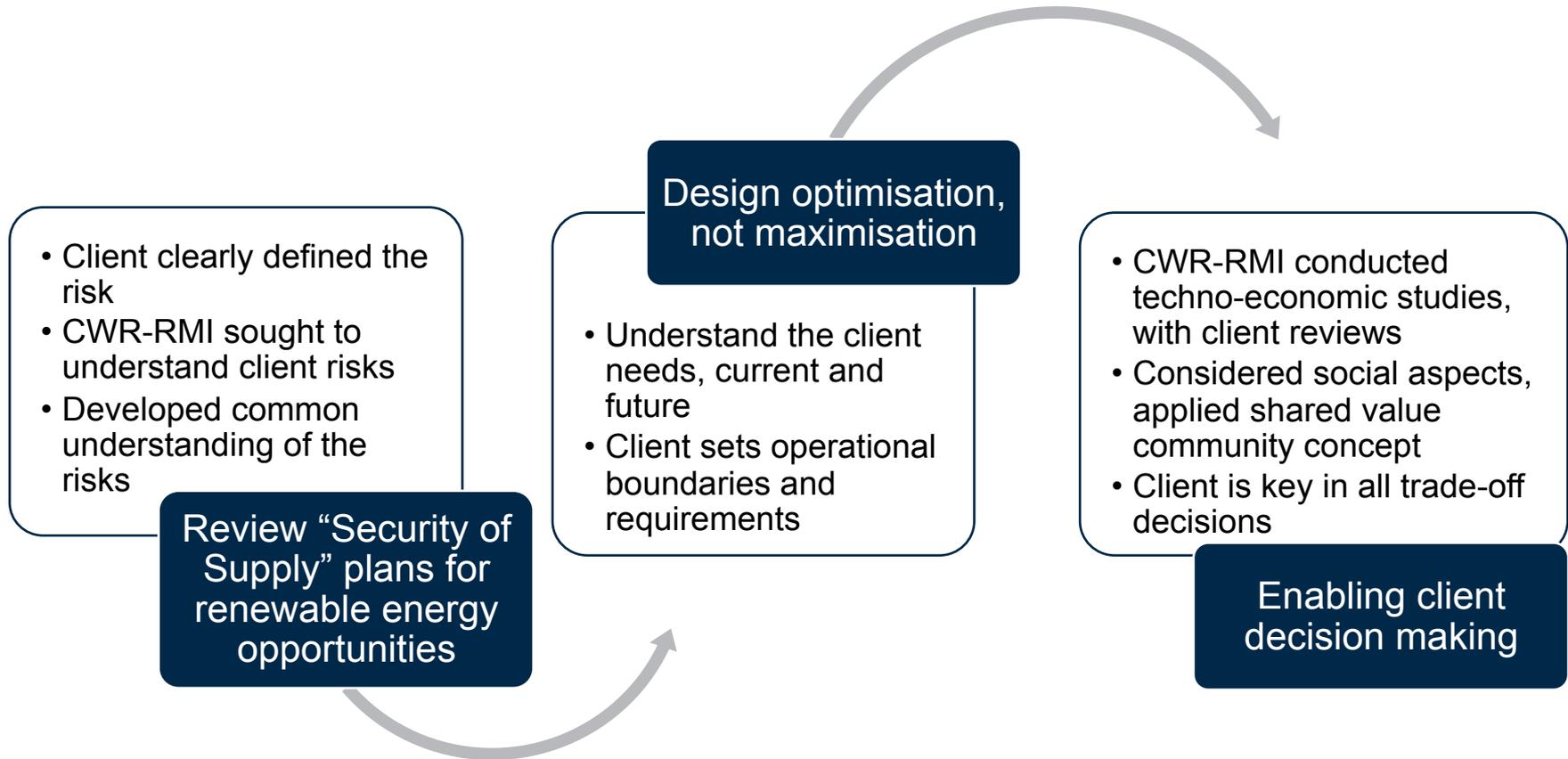
Why should other mining companies chose to work with CWR-RMI?

- **Collaborative model** – build consensus and “will-to-act”
- **Unlock the potential** – mining operations have cost-effective options for energy security, cost reductions, and meeting CSR/sustainability goals but limited internal capacity to monetize... we bring that
- **Represent the mining firm** – a business-friendly non-profit, not selling any specific solution; we assist to capture the value of distributed renewable energy
- **Relevant experience** – long experience in the mining industry, leading knowledge of renewables and a wide network of renewable developers
- **Best-practice RFP capabilities** – not only the prices are low, but the negotiations of terms and conditions are short and the assets get built

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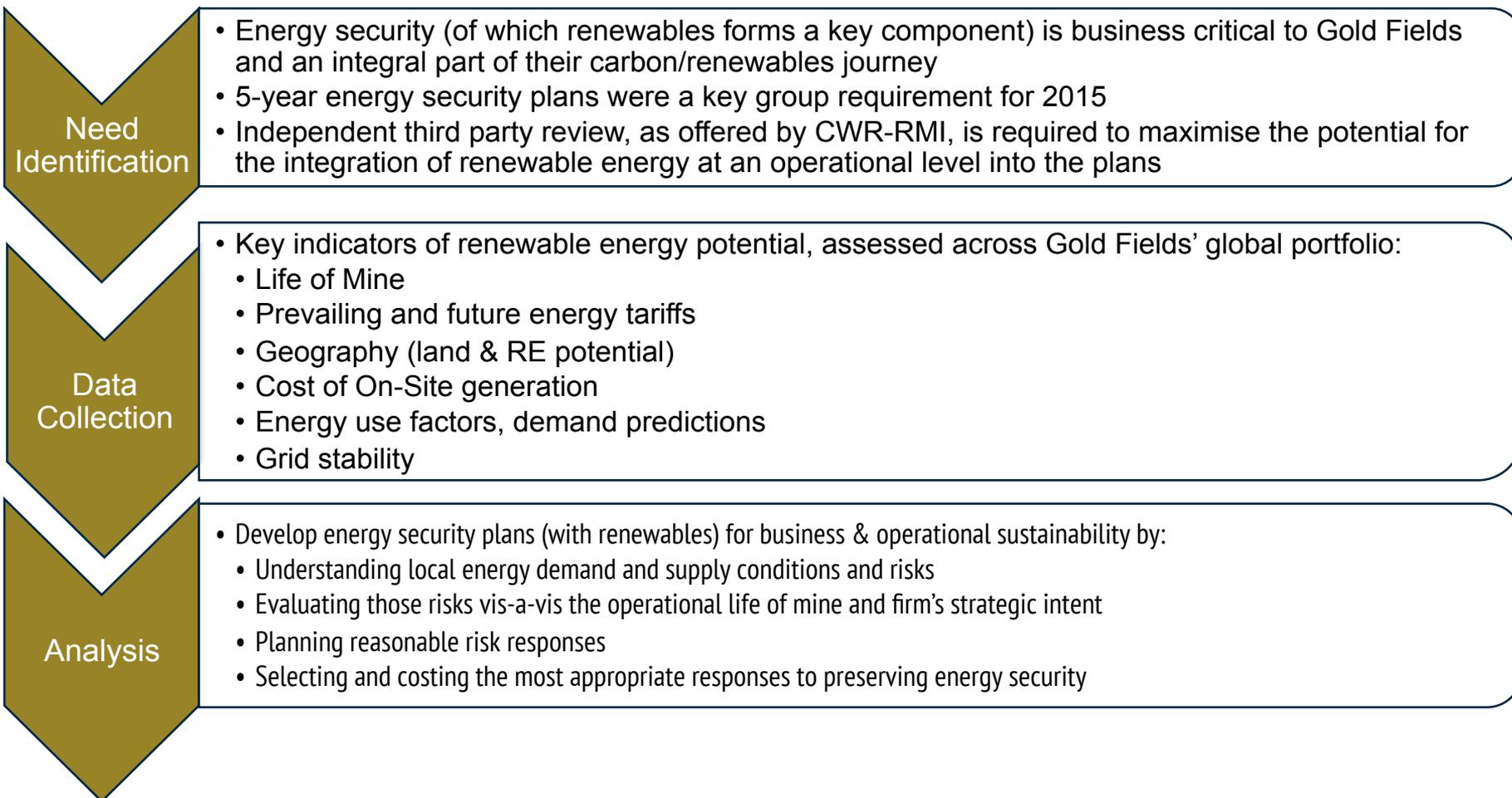
This collaborative engagement model proved vital

From reviews and data collection, through solution design and decision making



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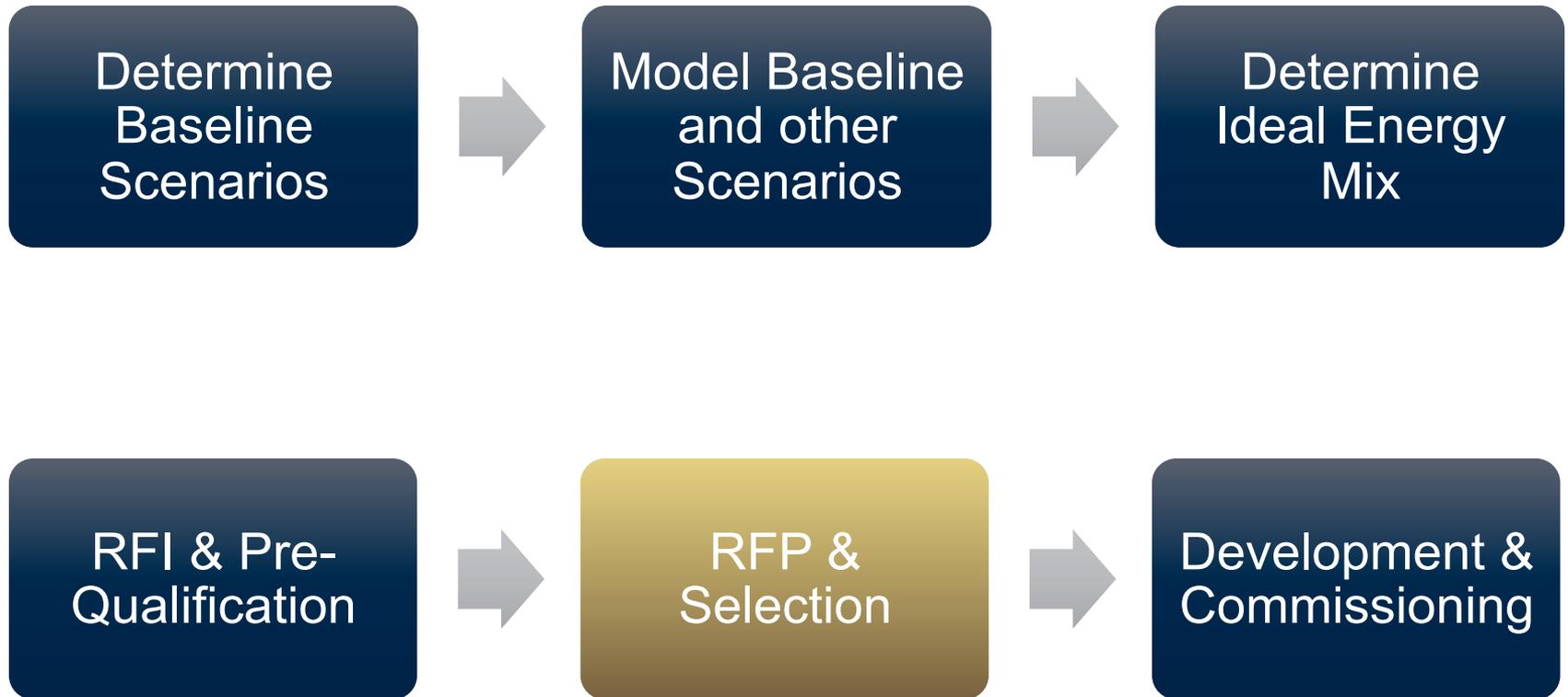
What we did and why



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Moving from analysis to impact

CWR-RMI's analytical & project development process



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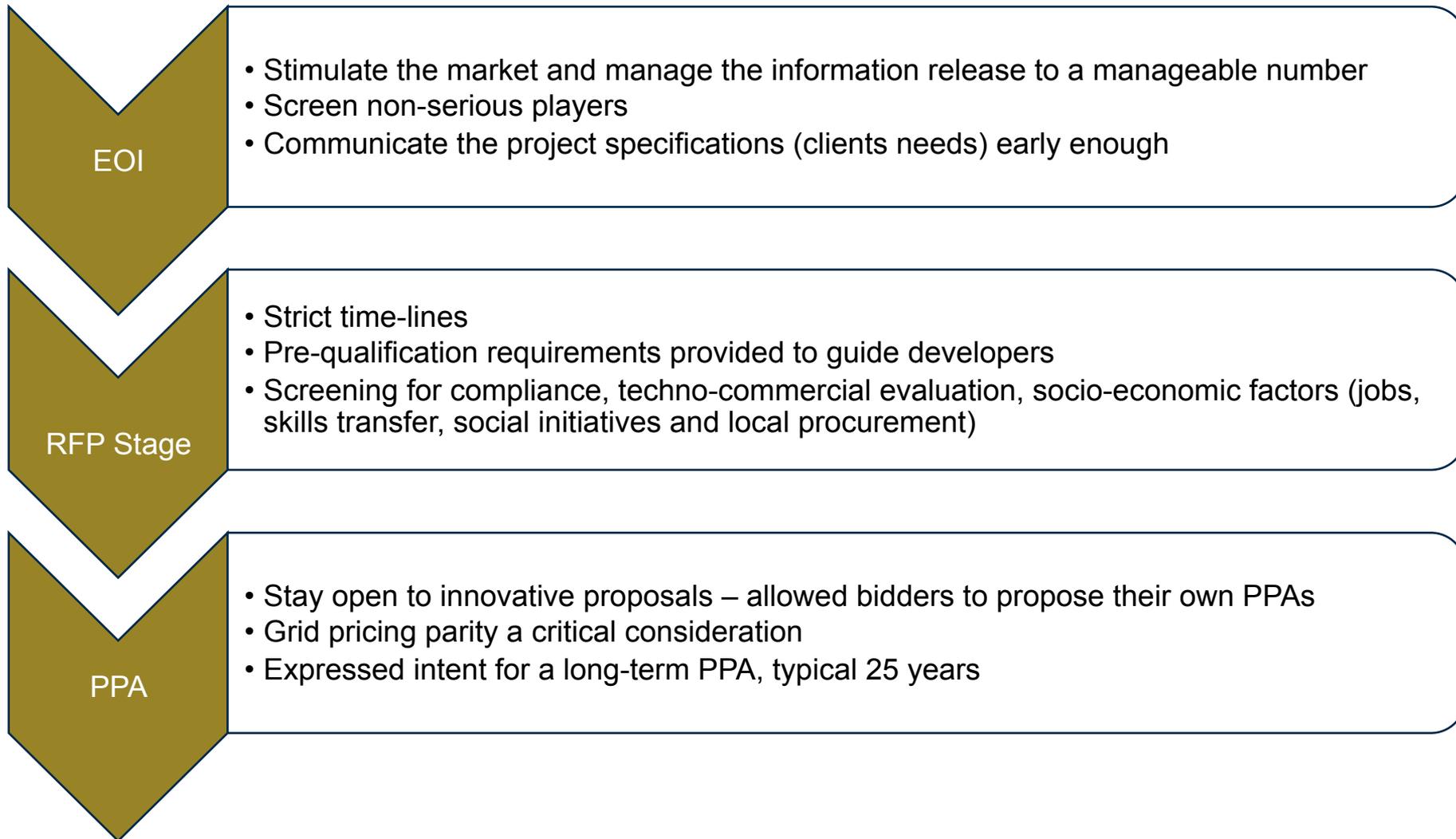
Solar PV Procurement Process



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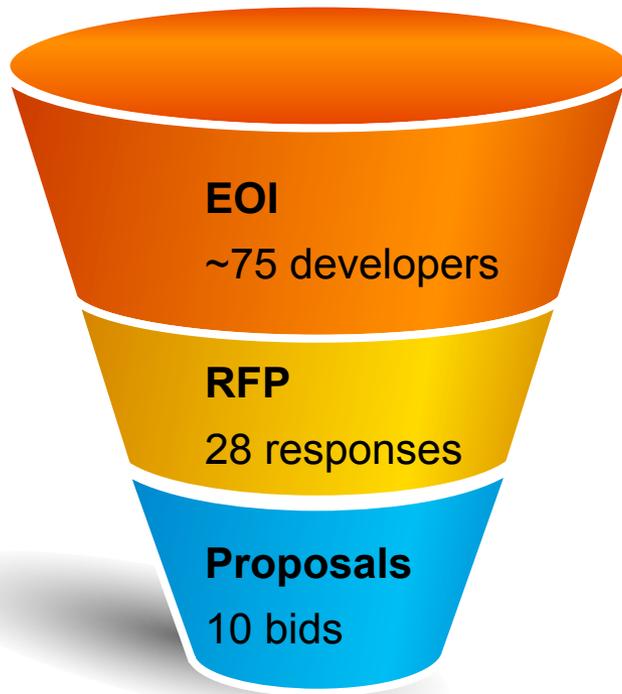
What We Did and Why



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What are the outcomes thus far?

Market Stimulation



- Some of those proposals claim to meet Eskom price parity today, and most trend favourably with inflation over the PPA term
- Energy storage technologies also appear to be on par with the current cost of diesel generation

Definitions: EOI – Expression of Interest; RFI – Request for Information; RFP – Request for Proposal; PPA – Power Purchasing Agreement; IPP – Independent Power Producer

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Lessons learnt: Banking a captive PPA

Considerations to determine economic & technical feasibility for a captive PPA



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What we learned from the market

- Very strong interest for IPPs to work on captive PPAs with mining companies
- Grid parity demonstrates dropping price of solar technology
- Be open to innovative proposals – especially on the PPA structure (allows optionality)
- It is possible to power a mine 100% from renewable sources (on-site + wheeling)
- Interesting latest perspectives on large scale storage – but technology a few years away
- The South African REIPPP programme set a very strong foundation that industry should take advantage of and increase renewable energy uptake
- An enabling regulatory environment is vital: current environment could be improved
- Shared value is able to be integrated into PPA's

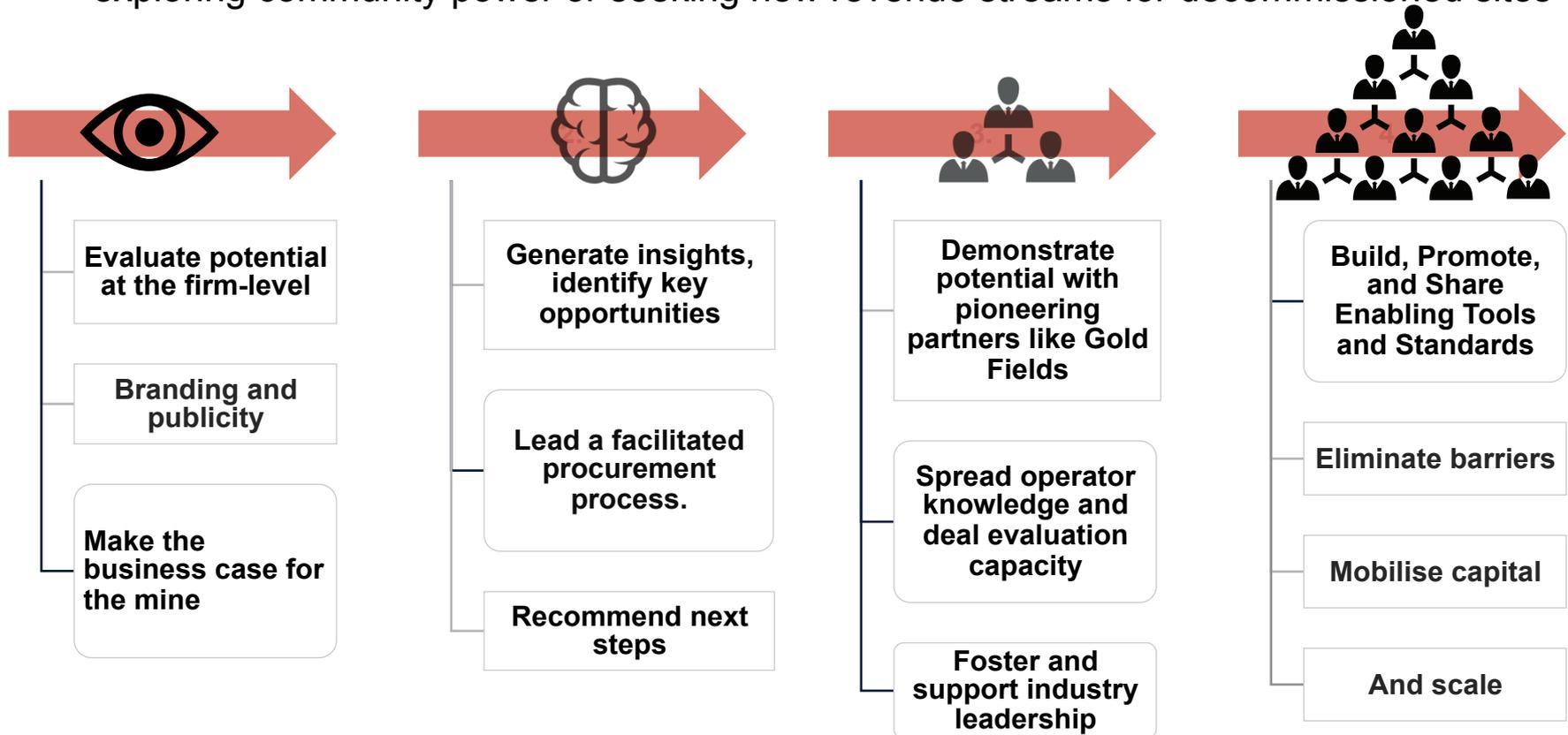
REIPPP - Renewable Energy Independent Power Producers Programme

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The journey ahead

CWR-RMI aims to repeat the experience of Gold Fields with additional firms

- We will expand our suite of services, to look at opportunities not only for integrating renewables onto off-grid mine sites or sites faced with grid instability, but also for mines exploring community power or seeking new revenue streams for decommissioned sites



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The Journey Ahead

- The RFP evaluation process is underway
 - Conducting technical and commercial reviews
 - Hoping to conclude a viable PPA which meets key criteria
- Gold Fields is exploring possible further partnerships with CWR-RWI for Salares Norte, a remote gold project in the Atacama desert in Chile (at pre-feasibility stage), to investigate renewables options that could supply a minimum 20% of its energy needs

Gold Fields will continue to explore collaborative partnerships as a sustainable business driver & to promote a low carbon economy

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