

REDUCING OUR EMISSIONS

Says CEO, Graham Briggs, "Our commitment to sustainable development is real and increasingly measurable because the company recognises that its responsibility as a corporate citizen goes beyond securing a social licence to operate. It is a moral responsibility that Harmony has at the core of its business sustainability — especially environmental stewardship — and that guides decision making."

We at Harmony Gold Mining Company Limited (Harmony) acknowledge the impact of our business on and our corresponding responsibilities to surrounding communities and the natural environments. On this depends the sustainability of our business. Notwithstanding our responsibility to the environment, a profitable business enables us to mitigate our environmental impacts.

Harmony's revised energy efficiency and climate-change policy and strategy, articulating the company's commitment to energy efficiency and continuous improvement, were approved two years ago.

We are determined to reduce our carbon footprint by integrating energy management into our business strategy. Harmony's long-term business strategy (post 2015) is focused on optimising long-life assets and developing our greenfields operations. The business strategy calls for exploring, designing and building, operating and decommissioning mines while ensuring that environmental considerations inform our decisions and actions.

Melanie Naidoo-Vermaak (Executive — Environment) maintains: "Responsible stewardship plays a vital role in our decision making. Harmony is convinced that mining can be undertaken responsibly and with ensuing benefits to the environment and communities within which we operate".

Our responsible stewardship encompasses:

- promotion of energy efficiency at our deep-level operations in South Africa
- the design and development of renewable-energy driven operations in Papua New Guinea (PNG)
- optimisation of our asset portfolio through the decommissioning of operations where payable reserves are not meeting rising energy demands
- promoting an alternative energy mix, and
- aligning our rehabilitation programme with the green energy agenda





RESPONSIBLE STEWARDSHIP MEANS...

OPERATING EFFICIENT DEEP LEVEL MINES

Harmony is conscious that energy costs account for 16% of operational costs. We work closely with Eskom to manage electricity use. This includes demand-side management (DSM) strategies to reduce electricity consumption in peak periods. This includes the scheduling of pumping to coincide with cheaper off-peak periods, making more efficient use of Eskom tariffs that reward load-shifting and improving the efficiency of pumping operations.

To combat rising energy costs, supply constraints and an ambitious reduction target in our carbon footprint:

- Nine DSM energy efficiency projects have been implemented, resulting in monthly load reductions of 21.4MW and energy savings of 10 626MWh
- Ten other energy-saving initiatives were implemented outside the Eskom DSM process, resulting in an additional reduction in monthly energy demand of 14.81MW and 10 984MWh
- An additional 14 DSM projects are scheduled for completion in FY14 with planned monthly load reductions of 32.4MW during evening peak times.
- Savings of a further 5 557MWh are expected from other initiatives currently under way, and
- Another ten projects are planned for FY15

DEVELOPING ENERGY-EFFICIENT OPERATIONS IN PNG

We are striving to increase our use of renewable energy at our PNG operations, subject to the technical and economic feasibility of those projects.

The Hidden Valley plant was designed with the latest technology to ensure optimal renewable energy use on general lighting (PV).

All motors are energy efficient and the mill is equipped to recover losses and regenerate power to the grid.

Hidden Valley was connected to the new hydropower transmission line, part of the Papua New Guinea electricity grid, in 2011. While Hidden Valley is currently only drawing 65% of its requirements from the national grid, this is reducing reliance on diesel-generated power on site and the amount of fuel that needs to be trucked to this remote site.

In constructing the Golpu project, we are drawing on lessons learned at Hidden Valley to ensure that its design is as environmentally responsible as possible. Hydropower and liquid natural gas are under consideration as the main power source.

OPTIMISING OUR ASSETS

Harmony's asset portfolio is being rebalanced and energy intensive operations are being closed. The focus in the long term is on the development of lower-carbon intensity assets. This will secure a constant, reliable supply of lower-carbon energy and minimise the impact of increased energy costs and our potential exposure to carbon tax. To date, four shafts have been closed where payable reserves were not meeting rising energy demands.

In FY13, Harmony reduced its South African electricity consumption by 186.6GWh and emissions by 184 767t CO₂e (FY12: 74.4GWh and 74 400t CO₂e). Our challenge remains to create an enabling environment and allocate adequate resources to achieve our goals and commitments.



PROMOTING AN ALTERNATIVE ENERGY MIX

Harmony is assessing various energy-generating options for the land it owns in South Africa. The generation of additional power will help to alleviate current supply concerns and the cost of energy.

• Bio-energy

Apart from hydropower in PNG, in South Africa, Harmony is also implementing a bio-energy project involving the propagation of biocrops on mine-impacted land in the Free State to generate natural gas as a substitute for fossil fuels in its elution plants and carbon regeneration circuit. Phase 1 of the project aims to deliver 71GJ of energy within 18 months with production being ramped up to generate 187GJ within 36 months. This project aims to turn mine-impacted land to account by creating a value adding use for it and, in so doing, to promote skills development and job creation for communities and ensure a sustainable legacy in the Free State.

• Solar power

Harmony is participating in a group that is to submit a proposal for approval in terms of the government's renewable energy power programme later this year, for an 18MW solar park at Kalgold.

Other solar initiatives underway include:

- Tshepong 5-10MW PV power plant
- Phakisa – Eland shaft 10MW PV power plant
- ARM 1 shaft 40MW plant on Harmony property

REHABILITATION

Several energy intensive shafts have been decommissioned. A rehabilitation programme has begun which will restore mine land ecologically, enabling it

to be used to generate socio-economic value beyond mine closure. As part of this programme, Harmony identifies alternate uses, whether it be the alternate use of infrastructure or the establishing of green projects on rehabilitated land and has thus had reduced its overall rehabilitation liability by 3% at the end of FY13. To date, 25 shafts (including vent shafts, but excluding plants) have been rehabilitated and rehabilitation of three additional shafts is planned for FY14.

A five-year programme has been developed to address our current rehabilitation needs. Liberated land is earmarked for among other things conservation programmes, solar parks, carbon sink and bioenergy generating initiatives.

A carbon sink feasibility study is underway to investigate the potential of locking in carbon on tailings dams. We have identified a unique opportunity to grow biomass on tailings and we envisage propagating a hybrid Giant King Grass on tailings facilities.



Energy savings from DSM initiatives – reducing our Scope 2 emissions

Estimated
annual CO₂e
savings (GWh)

COMPRESSED AIR ENERGY EFFICIENCY PROJECT

Harmony has implemented projects at its Saaiplaas plant and Tshepong, Kusasaletu, Bambanani, Steyn 2 and Unisel mines to reduce total energy consumption by 31.8GWh annually. Compressed air is used in mines for pneumatic drilling, instrumentation, refuge bay ventilation and air agitation. Surface and underground compressed air-control valve units and hydraulic equipment to monitor, optimise and automatically control demand have reduced the amount of compressed air required, and lowered electricity consumption by the compressors. Harmony is registering this as a carbon credit project under the clean development mechanism of the United Nations framework convention on climate change.

31 482

MINE COOLING

Harmony has implemented cooling optimisation on the existing cooling plant at Kusasaletu to reduce total energy consumption by 9 38GWh annually.

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WATER MANAGEMENT

Energy efficiency projects initiated to optimise underground water consumption and pumping at Kusasaletu and Tshepong have reduced total annual power consumption by 9.38GWh.

9 286

MAIN FAN VANE CONTROL AND LOAD CLIPPING

Main surface fans circulate large volumes of air underground at our South African operations. The project to improve the energy efficiency of these fans began in 2011. By installing rotational inlet vane controls at each main fan to reduce the volume of air flow when mining activities are minimal, we are reducing annual electricity consumption by 6GWh per year.

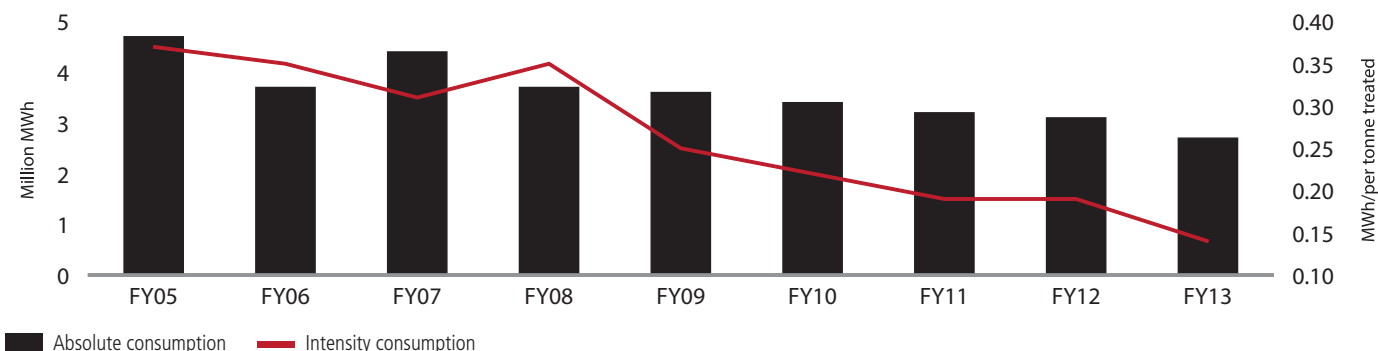
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VENTILATION FAN PROJECT

A project is underway to replace underground auxiliary fans with more energy-efficient fans equipped with impellers that reduce electricity drawn by 30%, while delivering the same air flow and pressure as before. This will reduce total energy consumption by 59.4GWh annually. Forty 40 fans are being installed at Kusasaletu and the project will also be implemented at Bambanani, Doornkop, Masimong, Phakisa, Target, Unisel and Joel. This project will be registered as a carbon credit project under the clean development mechanism of the United Nations framework convention on climate change

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Annual electricity consumption



In FY13, total electricity consumption fell by 12% to 2.7 million MWh (FY12: 3.1 million MWh). This compares with the 3.7 million MWh of electricity consumed in FY08

FOR MORE DETAILS CONTACT:

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