NEDGROUP SECURITIES

Special exposé: Mining in Zimbabwe

Cautiously optimistic

October 6, 2009 | Country Report | Zimbabwe

Objective

The purpose of our visit to Zimbabwe was to establish the extent to which the mining sector has recovered and to identify possible entry points for investors. We approached our analysis from a macro and a bottom-up perspective. Our qualitative analysis of the companies we visited is based on information and impressions gained on site. By meeting several stakeholders we were able to develop an understanding of the extent to which the inclusive government is willing to support the industry and implement policy change. The trip also gave us the opportunity to assess the quality of Zimbabwe's infrastructure – roads, power, water and telecommunications.

Early signs of economic recovery

STERP (government's short-term emergency reform programme) has already led to some tangible success with the de facto dollarization of the economy and removal of price controls and surrender requirements. The success of further policy reform depends on the extent to which the government of national unity can come to unanimous decisions.

Government sending the right signals

At the first Zimbabwean Mining Indaba, high-ranking government officials made a point of addressing pertinent issues concerning investors. In particular the Indigenisation Act and security of tenure were discussed and officials went out of their way to dispel any fears of a scenario similar to the land grabs occurring in the mining sector. The Indigenisation Act is under review and will probably target a broader-based empowerment that would involve mining communities.

Operators more concerned with power outages, lack of skills and access to capital

Security of tenure and the Indigenisation Act seemed to be the least of mining companies' concerns. Most troubling in our view is the restricted access to credit. After years of hyperinflation and the state monopoly on gold sales depleting capital reserves, the lack of maintenance became quite apparent on our site visits. Operators are doing their best with limited resources and operating cash flows to refurbish their mines.

We are cautiously optimistic on the recovery of Zimbabwe's mining sector

Most of what we saw is promising. Miners are re-establishing their operations and increasing production capacity. We believe the stark reality of Zimbabwe's demise, and the government's reliance on tax income and foreign-currency earnings post the dollarization of the economy, forces the government to support the mining sector. In terms of infrastructure and mining legislation – bar the Indigenisation Act – we find little that differentiates Zimbabwe from other mining destinations in Africa.

Investors currently have limited investment channels into Zimbabwe

Zimplats and Aquarius are the only entry points of scale, but have only partial exposure to the country. In our view, the most direct play on the recovery of mining in Zimbabwe is the gold sector which benefits from a very buoyant gold market and from direct exposure to dollar prices.

Biggest value-unlock lies in the consolidation of a very fragmented industry

This again is especially true for the gold sector. Increasing the scale of production may also ease miners' access to capital and increase investor interest. In our view the best positioned to drive this consolidation is New Dawn Mining and Mwana Africa.

Key catalysts for renewed investment in the mining sector

Ultimately, until the controversial mines and mineral amendment bill, which gives greater power to indigenisation legislation, is revised and until we see a democratic change in leadership, the mining sector remains clouded in uncertainty and investors are likely to stay on the sidelines. Until then we recommend keeping growth plays and potential consolidators like Mwana Africa and New Dawn Mining on a watch list.

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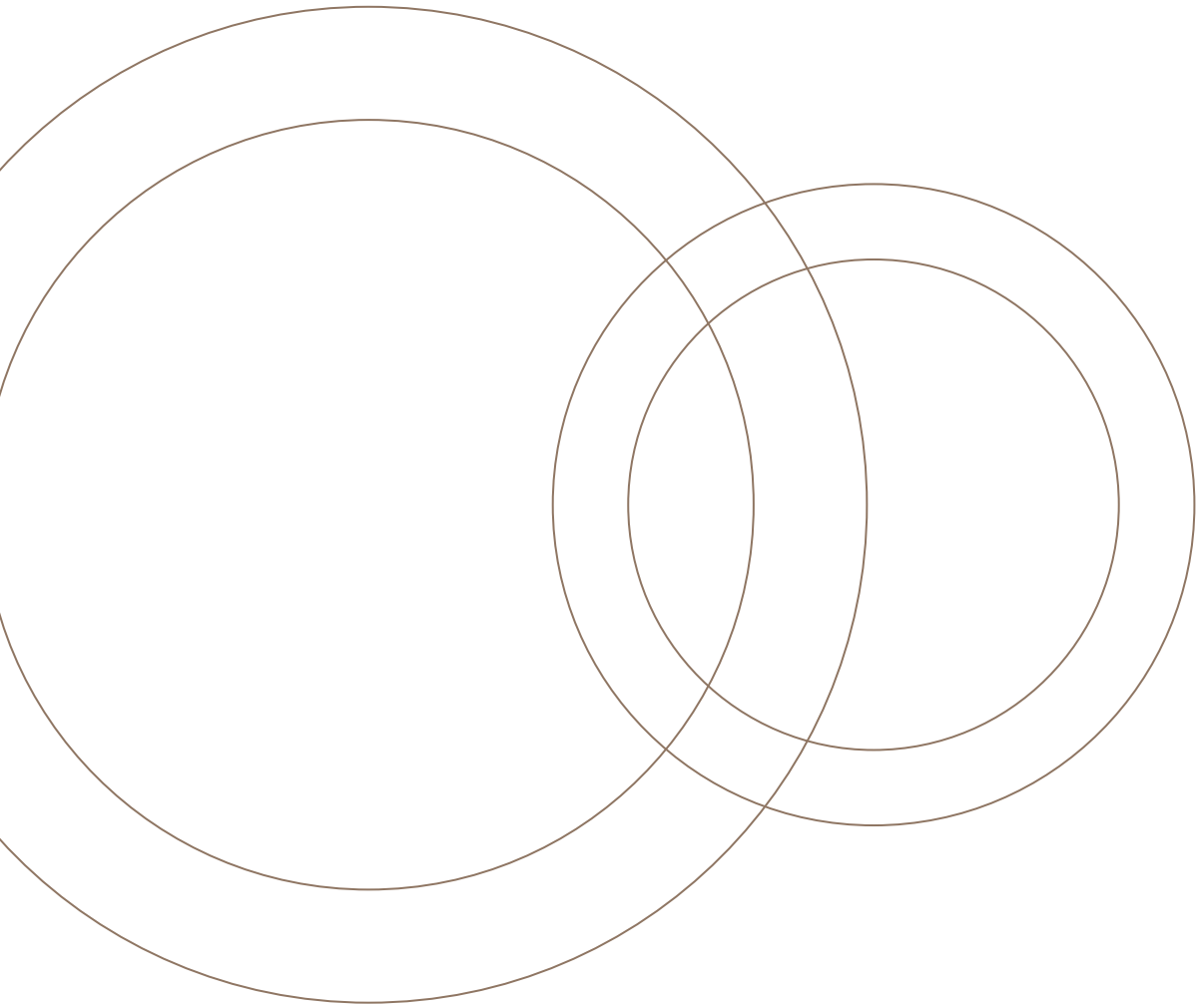
Investment implication



Key investment themes

The mining industry enjoys a preferential tax rate of just 15%.

Apart from the Indigenisation Act, which to date has never been implemented, and poor administration, Zimbabwe's mining legislation is conducive to investment and is competitive by global standards (ie preferential tax rate of 15%). Also, Zimbabwe's government appears to have learned from the failed South African black economic empowerment (BEE) model and any changes to the act are likely to be more favourable and broad-based. This and government's apparent supportive stance towards mining make it likely that the resource sector will lead the recovery. Nonetheless, until Zimbabwe's constitution and mining legislation have been revised, the resource sector as an investment vehicle remains clouded in uncertainty.

The stark reality of Zimbabwe's economic demise leaves the inclusive government with little choice but to implement meaningful policy and economic reform. The pace at which this happens depends on the extent to which the government of national unity can settle differences between Zanu-PF and the MDC (Movement for Democratic Change) and come to unanimous decisions. With the de facto dollarization of the economy and the removal of price controls and surrender requirements, STERP (government's short-term emergency reform programme) has already led to some tangible success.

Zimbabwe has become a very emotional issue.

For most, given the sensitive issue of land grabs and Robert Mugabe's persona, Zimbabwe has become a very emotional issue. However, looking closer, there is actually very little that differentiates Zimbabwe from the rest of Africa. Its infrastructure still compares favourably with most African countries. Mining legislation – apart from the never-implemented Indigenisation Act – complies with global standards and supports investment. Even with the problems over the last decade, the country still has a comparatively high level of education. An erratic power supply has also been a very pertinent problem for miners operating in other counties like Ghana. Furthermore, Zimbabwe is inhabited by only two ethnic groups – Shona and Ndebele; the DRC has more than 200. This and the absence of any major civil unrest should facilitate political reform.

Investors currently have limited investment channels into Zimbabwe. The only entry points of scale are Zimplats and Aquarius. These, however, only have partial exposure to the country and, in our view, the most direct play on the recovery of mining in Zimbabwe is the gold sector, which benefits from a very buoyant gold market and from direct exposure to dollar prices.

Value can be unlocked through consolidation of a very fragmented industry.

The biggest way to unlock value lies in the consolidation of a very fragmented mining industry. This, again, is especially true for the gold sector with an estimated 20 operations each producing between 14 000 and 100 000 ounces per annum scattered along the greenstone belt. Bigger scale of operation may also ease miners' access to capital and increase investor interest. In our view, the best positioned to drive this consolidation are New Dawn Mining and Mwana Resources.

Ultimately, the extent to which Zimbabwe's economy can be revived and the Zimbabwean dollar reintroduced depends on the recovery of agriculture. On our site visits, the dramatic demise of farming became very apparent, and a country with very limited reserves and little foreign earnings cannot afford to rely on importing basic commodities. Given that Robert Mugabe came to power on the promise of land reform, this has become a highly sensitive issue and is unlikely to change as long as he stays in power. In our view this is the biggest threat to Zimbabwe's recovery and its ability to attract foreign investment.

We are cautiously optimistic on the recovery of Zimbabwe's mining sector.

We nevertheless saw promising signs that the mining sector will recover. Investors should keep growth plays and potential consolidators like Zimplats, New Dawn Mining and Mwana Resources on their watch lists. Bottom line – we are cautiously optimistic on the recovery of Zimbabwe's mining sector.

First steps on the path of reform

The next 12 months, until the October 2010 deadline for constitutional amendments, will be a 'make or break' period for Zimbabwe. The government of national unity lacks legitimacy in the eyes of many investors and few are likely to return until President Robert Mugabe is removed from office and real democracy established.

Attracting donor funding and renewed investment is key to the government's (and particularly to Morgan Tsvangirai's) hopes of reviving the economy. The International Monetary Fund (IMF) has already allocated a loan of USD510m to Zimbabwe. However, further grants or loans depend primarily on reformation and implementation of an effective economic policy.

After a series of failed attempts ranging from the first five-year national development plan to the Zimbabwe millennium economic recovery programme, the latest incarnation of policy reform – STERP (short-term emergency reform programme) – may well be a step in this direction.

STERP – already leading to tangible change

The government of national unity inherited an economy in deep crisis which hit rock bottom in 2008. The challenges this government has to resolve include:

- GDP is estimated to have fallen by about 14% in 2008 in addition to a 40% cumulative decline between 2000 and 2007;
- Unprecedented levels of inflation peaking at above 500 000 000%;
- The collapse in economic activity has resulted in capacity utilisation of less than 4%;
- A severe shortage of basic commodities with an estimated 70% of the population in need of food assistance;
- The depleted government budget resulting in a collapse of public services;
- Forced surrender requirements on proceeds from exports and the retention of foreign exchange earnings in the gold and agricultural sectors at an unrealistic exchange rate;
- A government with gross reserves of USD6 million and external debt of more than USD4 billion.

With the de facto dollarization of the economy and the removal of price controls and surrender requirements, STERP has already led to some tangible success.

Shops are relatively well stocked with merchandise for those fortunate to have an income. Gold miners have re-/opened their Zimbabwean operations as they are now able to export bullion to the Rand Refinery in South Africa and retain dollar earnings. Cash budgeting by government has apparently replaced quasi fiscal expenditure, helping to curb inflation.

Outstanding issues

To attract investors and donors, Zimbabwe will have to establish a track record of sound policy implementation.

The most pressing issues still facing Zimbabwe are:

- Review of the Indigenisation Act;
- Imposition of appropriate budgets for parastatals;
- Proper implementation and administration of policies.

While the Indigenisation Act (51% ownership by indigenous Zimbabweans) has never been implemented, it is unlikely that it ever will be, even though it has been written into law. A revision of this act can only be expected by the second half of 2010 and it is unlikely that any major funds will flow into Zimbabwe's mining sector until it becomes clear what the new indigenisation requirements will be.

Ultimately, to attract investors and donors, Zimbabwe will have to establish a track record of sound policy implementation.

Inaugural Zimbabwe Mining Indaba sends positive signals

This conference was extremely well attended with around 700 registered delegates from Zimbabwe and abroad. All relevant stakeholders had an opportunity to voice their views and were able to discuss these openly and frankly with the president and prime minister of Zimbabwe, government ministers and high-ranking officials.

Figure 1. President Robert Mugabe at the Mining Indaba

Source: Nedgroup Securities

Figure 2. Finance Minister Tendai Biti at the Mining Indaba

Source: Nedgroup Securities

Our impression, after talking to several participants, was that the Indaba was very well received and, while much still needs to happen in terms of legislation and implementation, the conference demonstrated good intent and gave an indication of the way forward.

First to present was Finance Minister Tendai Biti who highlighted the following:

Government's primary target is macroeconomic stabilisation.

- Mining was likely to be at the forefront of Zimbabwe's reconstruction, followed by tourism and construction;
- There are four building blocks that need to be established and/or restored to revive the economy:
  - General access to water and the quality of supply;
  - Stability and capacity of power supply (the minister mentioned increasing Kariba's existing capacity by 35%);
  - Infrastructure, ie roads, highways and railways, which are critical to a coal-driven economy;
  - Telecommunications.
- The Zimbabwe dollar cannot return until the economy is sufficiently restored to support its own currency;
- Government needs to devise economic strategies which recognise that Zimbabwe is on its own and cannot rely on outside help;
- Through supportive measures like the liberalisation of marketing, government plans to increase capacity in the mineral resources sector;
- Mining taxation needs to be made more efficient and transparent. Income tax for mining companies currently stands at 15%, but due to capital allowances, the effective tax rate is only 8%. Mining companies will have to expect an upward revision of the tax rate and of royalties that would benefit the communities;

- The minister stated that, in his view, the South African model for black economic empowerment (BEE) had failed. A revision of Zimbabwe's Indigenisation Act would target a broader-based empowerment involving communities where miners operate. This model could include a scorecard that takes issues like development of skills, empowerment of women and beneficiation into account.

Reading between the lines, we believe a new taxation and royalty regime may well include a second royalty that benefits communities directly.

Also, while the minister raised some very pertinent issues, the details of how these will be resolved and funded remain murky. Investors are likely to stay on the sidelines until new policies are signed off and implemented.

Risks

Unanimous policy reform

Differences of opinion are already apparent over the distribution of US$510m received from the IMF.

The key risk to mining and investing in Zimbabwe is whether the inclusive government has the ability to come to a unanimous decision on how to implement economic reform. Whereas Finance Minister Tendai Biti said funds received from the IMF should be used to rebuild the country's crumbling infrastructure, central bank boss Gideon Gono wants the money to be invested into mining and manufacturing as well as public entities.

Gideon Gono himself is the subject of a dispute as the MDC has wanted to replace this close ally of President Robert Mugabe since forming a government of national unity earlier this year.

Security of tenure

We do not believe the Indigenisation Act as it stands will ever be implemented but it is still the law and likely to deter investors until it has been revised.

Further risk comes from a scenario similar to the land grabs. Certain forces within government or the military may seize gold dore from remote mining operations. This, in our view however, carries only a small probability, ie 10-15%.

Effective implementation and administration

Any policy or law is only as good as its implementation and administration.

To effectively implement new policy, the government will also have to overcome a defunct administration run by underpaid civil servants in poor working conditions.

Access to capital

Credit is unavailable in Zimbabwe and after depleting their working capital, operators are forced to rely on operating cash flows to recapitalise their mines. Access to foreign capital is likely to remain limited until policy changes become clearer and more tangible.

Upside risk comes from Zimbabwe's significant exploration potential

Several operators we met have not conducted any meaningful green- or brownfields exploration over the last 15 years due to the lack of funds and disturbing political and economic situation. At the same time, several operators with exploration capacity simply withdrew from Zimbabwe. Hence current resource and reserve figures may well be understated as the latest exploration methodologies and technologies have not yet been applied.

The industry's stance – 'getting on with it'

Government is sitting on the fence.

The emergence of the government of national unity, the dollarization of the economy and the end of the state's monopoly on gold has brought several operators back to Zimbabwe, but conditions are far from ideal and the industry is still dealing with a number of constraints.

Most companies we spoke believe the government of national unity has, to date, been sitting on the fence. The implementation of any legislative reform is hindered by governmental role players preoccupied with maintaining their position and too afraid of making the wrong decision and upsetting the ruling powers.

In this environment some companies we met with take a proactive role in engaging the government through the Chamber of Mines. Others prefer to keep a low profile and try to avoid any unwanted attention.

Power supply

Many operators consider this their biggest problem. Some have to deal with scheduled power outages of four hours a day, six times a week. The frequency of unscheduled outages has apparently dropped but the impact on production levels and plant efficiency is substantial.

Access to capital

This is, in our view, the biggest dilemma for the industry. Crippling inflation and the state's monopoly on buying and selling gold have drained companies' working capital. This became quite apparent on our site visits where lack of maintenance was clear.

Miners are in desperate need of capital.

Now that several operators have returned, they are in desperate need of capital to complete or refurbish their projects. This ranges from as little as USD2.5m to around USD15m. Credit is not available in Zimbabwe and foreign lenders shy away from the perceived political and operational risks.

In our view this is exacerbated by fragmentation of the industry. With some operations producing as little as 14 000 ounces per annum, the lack of scale makes it difficult to attract any form of investment.

Exodus of skills

Skills on all levels have, to a very large degree, left the country. Enticing these to return before there is any significant turnaround in the political and economic situation will undoubtedly come at a premium.

This exodus of skills has led to companies outsourcing certain functions (ie exploration). This often leads to an increase in costs but also facilitates mines picking up production sooner.

Indigenisation and security of tenure

The Indigenisation Act was at the root of several disputes between the Zimbabwe government and the mining and banking sectors. This act forces companies to hand over 51% of their equity to local Zimbabweans. To date the Indigenisation Act has not been implemented and there is little reason to believe it ever will.

There is little reason to believe the Indigenisation Act will ever be implemented in its present form.

This appears to be almost the least of the industry's concerns. Mining is the most obvious sector that will be at the forefront of Zimbabwe's recovery and it is surely not in government's interest to interfere.

The Indigenisation Act is under review and ownership clauses likely to be revised downwards. Most operators we spoke to seemed comfortable with figures of between 15% and 25%.

A more tangible threat is the possible attack on mines by war veterans, similar to the farm invasions witnessed over the last eight years. Given the complexity of mining, we believe permanent invasions are highly unlikely, although the possible theft of gold dore bars from mines cannot be discounted.

Personal insights from our field trip

Our field trip included several site visits as well as attending the Zimbabwe Mining Indaba in Harare. We flew from Johannesburg to Bulawayo, returned via Harare and, in five days, drove around 1 500km through Zimbabwe as reflected in our summarised itinerary.

- Day one: Site visit to Turk Mine (New Dawn Mining) approximately 70km north of Bulawayo;
- Day two: Site visit to Blanket Mine (Caledonia Mining) near Gwanda, about 150km south of Bulawayo. From here we travelled via Mbalabala, Zvishavane and Masvingo to Harare (approximately 680km);
- Day three: Zimbabwe Mining Indaba (Harare);
- Day four: Chartered flight to Renco Mine (RioZim) close to Triangle;
- Day five: Site visit to Freda Rebecca Mine (Mwana Africa) near Bindura.

We found officials to be helpful and friendly.

Immigration procedures at Bulawayo Airport went smoothly and efficiently. At several roadblocks on the way to Harare we were generally just waved through and encountered none of the attempted bribery for missing radio licences and the like that we had been warned about.

Roads were not nearly as bad as we expected.

The general deterioration of roads was evident, although not nearly as bad as we expected. On most stretches of our trip, we were able to safely travel at the national speed limit of 120km/h even if it was a little bumpy. However, especially in the outer limits of Harare, we encountered large potholes in some major roads. Only seldom did we come across any major road repairs in progress. In our view this was no different to, and possibly better than, other accepted African mining destinations like Mauritania, Mali, Ghana, Tanzania or the DRC.

Figure 3. Road between Bulawayo and Gwanda

Source: Nedgroup Securities

Figure 4. Secondary narrow tarred road near Gwanda

Source: Nedgroup Securities

The deterioration of Zimbabwe's economy over recent years was evident.

Driving thorough Harare and Bulawayo highlighted the deterioration of Zimbabwe's economy over recent years. Parks and other public areas were mostly unkempt and overgrown. Numerous public and private buildings were in need of a fresh coat of paint and renovations. Again, not significantly different to the countries mentioned above. However, this should not be interpreted as a general statement as certain pockets of both Harare and Bulawayo were well maintained. Also, affluent suburbia was alive and well and a number of the suburbs we drove through were no different to upmarket suburbs in Johannesburg or Cape Town.

Figure 5. Africa Unity Square, Harare

Source: Nedgroup Securities

Figure 6. Centenary Park, Bulawayo

Source: Nedgroup Securities

Shops were generally well stocked but we did not see many people shopping. Most people we met indicated that the dollarization of the economy had dramatically improved their lives but this only applies to those who are employed. According to some sources, the unemployment rate in Zimbabwe is as a high as 85% and, in some areas, Zimbabweans had reverted to bartering.

Cell phone reception was often poor, even in major centres like Harare. Connecting to the internet via 3G connection was not possible.

Figure 7. Shop in Bulawayo's city centre

Source: Nedgroup Securities

Figure 8. Upmarket suburb in Harare

Source: Nedgroup Securities

Farming was virtually non-existent.

The only evidence of commercial agriculture we came across was in Mazowe land between Harare and Bindura, where we saw some citrus orchards and underutilised wheat fields. We saw hardly any cattle except some malnourished cross-breeds and larger dairy herds outside Harare. We also passed several abandoned farming houses surrounded by mud huts, but again no sign of any meaningful farming. Zimbabwe has had to rely on food imports since 2001, after the farm invasions began.

This is, in our view, the biggest problem the economy faces and the recovery of the agricultural sector will be the ultimate benchmark for the recovery of the country.

Quotable quotes[1]

"We eat what we kill – just like Fred Flintstone".

Tendai Biti, Minister of Finance on the implementation of cash budgeting.

"It must be because the name of our country starts with a Z".

Tendai Biti, Minister of Finance on Zimbabwe's second-to-last ranking on the global competitiveness index.

"We've got the energy, we've got the vision and we've got God on our side – God is a Zimbabwean".

Tendai Biti, Minister of Finance.

"Zimbabwe respects property rights, except when it comes to land that has been acquired via the land reform process".

Elton Mangoma, Minister of Economic Planning and Investment Promotion.

"Indigenisation is not a destination, it is a journey".

Murisi Zwizwai, Deputy Minister of Mines and Mining Development on indigenisation.

"We have this law to try and cure a mischief".

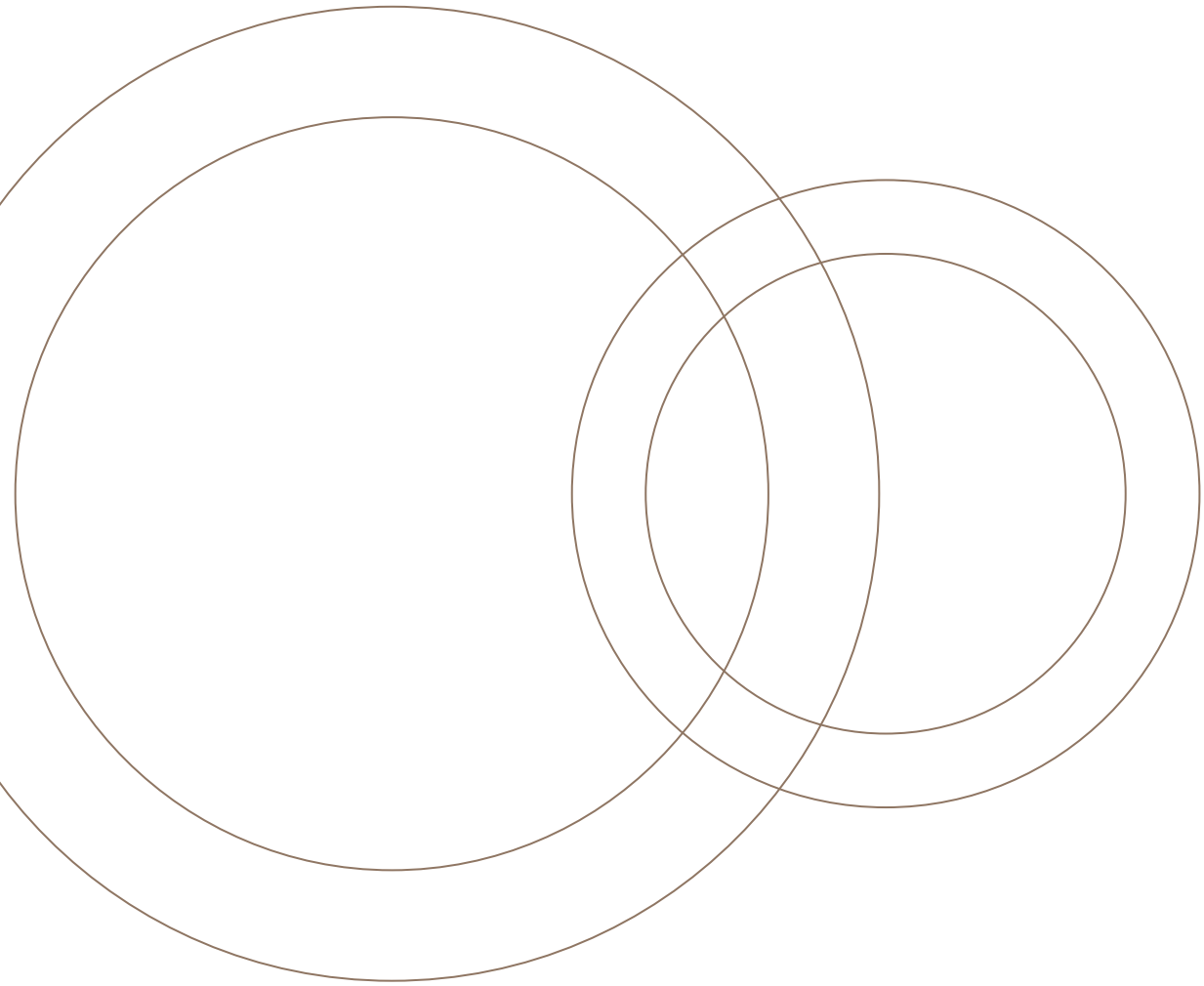
Savior Kasukuwere, Deputy Minister of Youth Development and Employment Creation

"Yes there is a difference. The difference is that it is exactly the same".

An immigration official's response to my query whether a South African ID would reduce the cost of a visa.

[1] Not necessarily verbatim.

Country profile



Overview

With GDP per capita of approximately USD200, Zimbabwe is one of the poorest countries in the world.

Zimbabwe is a landlocked country in southern Africa. It borders South Africa, Botswana and Mozambique to the south and south-east and Zambia to the north.

Robert Mugabe has been in power from independence in 1980 up to September 2008 when a power-sharing deal was sealed and opposition leader Morgan Tsvangirai sworn in as prime minister with Robert Mugabe remaining president of the country.

The nearly 30 years of independence have not been without political and economic problems. Although the economic situation in Zimbabwe is still extremely depressed, the country has substantial potential in the mining, agriculture and tourism sectors.

Figure 9. Geographical location of Zimbabwe

Source: Graphic Maps.com

Political backdrop

Zimbabwe's political backdrop is marred by a troubled political past. British settlers arrived in what is now known as Harare in 1890, where they were immediately met by Ndebele opposition. The settlers quickly opted for independence from Rhodes's British South Africa Company and for the next 40 years tensions between the settlers and the indigenous people of Zimbabwe mounted, as the Land Apportionment Act of 1930 restricted black people from owning land.

In 1964 Ian Smith became prime minister of Southern Rhodesia after which he unilaterally declared independence from Britain under white minority rule. This caused an international outcry and economic sanctions were imposed on the country.

After some 15 years of guerrilla war against white rule in Zimbabwe, Ian Smith stepped down and, in 1980, Robert Mugabe and his Zanu-PF party won the independence elections.

Zanu-PF was formed in 1987 and Robert Mugabe changed the country's constitution and became executive president. After that, several following events plagued the country:

1997/8/9:	Economic crisis accompanied by strikes and riots.
2000:	Seizures of white-owned farms began, along with economic downturn.
2001:	IMF and World Bank cut aid because of Mugabe's land-seizure programme.
2002:	A state of disaster declared as food shortages threaten famine; 2 900 white farmers given 45 days to abandon their farms; 35 million acres of land seized. Freedom of the press limited by new law.
2003:	Opposition MDC leader Morgan Tsvangirai arrested twice for treason. Zimbabwe withdrew from the Commonwealth
2005:	Government destroyed informal settlements leaving 700 000 people homeless and UN humanitarian initiative declared that Zimbabwe was in a meltdown.
2006:	Inflation breached 1 000%; three zeros deleted from currency. Presidential polls moved out by two years, extending Mugabe's rule.
2008:	MDC won parliamentary elections. MDC leader Tsvangirai pulled out of the presidential poll, citing free and fair elections were impossible amid violent intimidation of his supporters. Mugabe sworn in for a sixth term as president. Annual inflation rate reached 231 000 000%. Power-sharing talks between Tsvangirai and Mugabe started. Dollarisation of the economy.
2009:	Power-sharing deal concluded. Tsvangirai sworn in as prime minister.

Zimbabwe's political outlook[2]

Zimbabwe remains trapped in transition.

The new power-sharing government lacks legitimacy in the eyes of most nations which will remain unwilling to lend money or grant aid until Robert Mugabe is removed from office and real democracy is restored. However, attracting donor funding is key to the government and particularly Morgan Tsvangirai's hopes of restoring economic growth. Without the estimated USD9 billion in funds needed for reconstruction projects and credit facilities, the nascent recovery could flounder. Without real economic change, the MDC, which ran on a ticket of economic revival, may well battle at next year's polls. Alternatively, if people see that economic conditions have improved and credit the MDC with the economy's turnaround, ZANU-PF may crack down on its opponents, particularly in rural areas, which could end in instability.

Economic overview

Policy trends

Political tussle between MDC and ZANU-PF still dominates the agenda.

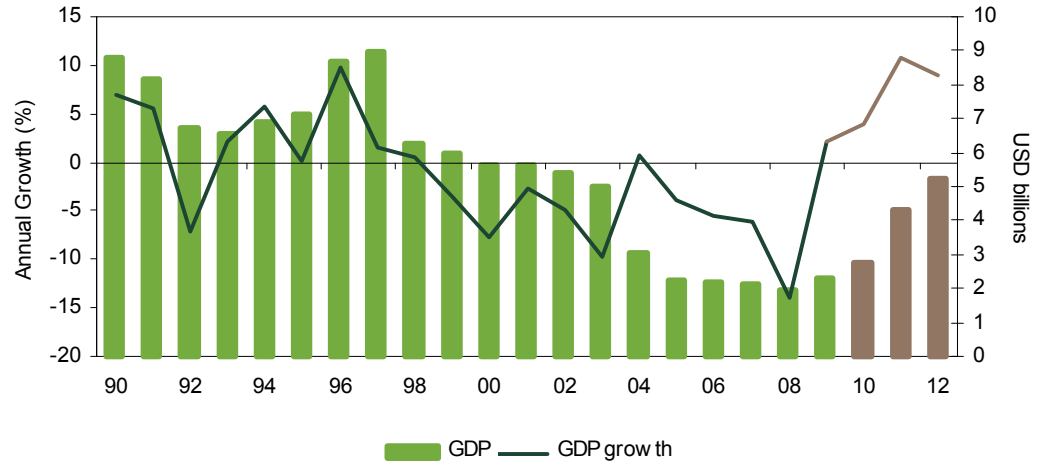
Progress on fundamentally improved economic policy will remain slow and piecemeal until the government gains legitimacy. The IMF has noted that the government has made some progress towards stabilising the budget, but the budget is still in massive shortfall this year and requires additional aid.

Growth prospects

Zimbabwe recorded its worst economic performance last year, contracting by an estimated 14%, following nearly a decade of worsening conditions, which saw per-capita income fall from USD840 in 1990 to just USD110 in 2008. This year the government believes the economy will grow by 3.7%, due to a modest recovery in mining and manufacturing as well as a sharp increase in agricultural output. However, this could be too optimistic, with the Economist Intelligence Unit expecting the economy to contract by a modest 1.3% this year, while Global Insight expects the economy to grow by 2.2%. Most agree that once reconstruction starts, as in most post-conflict states, growth will be quite impressive given the scale of destruction, with the economy expected to recover over the next few years.

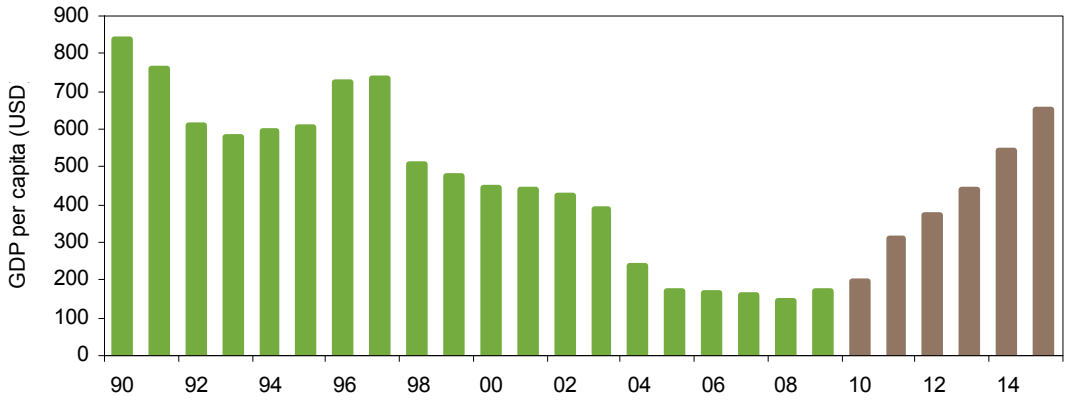
[2] This section has been supplied by Nedbank Economic Unit.

Figure 10. Growth prospects



Source: Global Insight

Figure 11. GDP per capita (USD) – improving disposable income



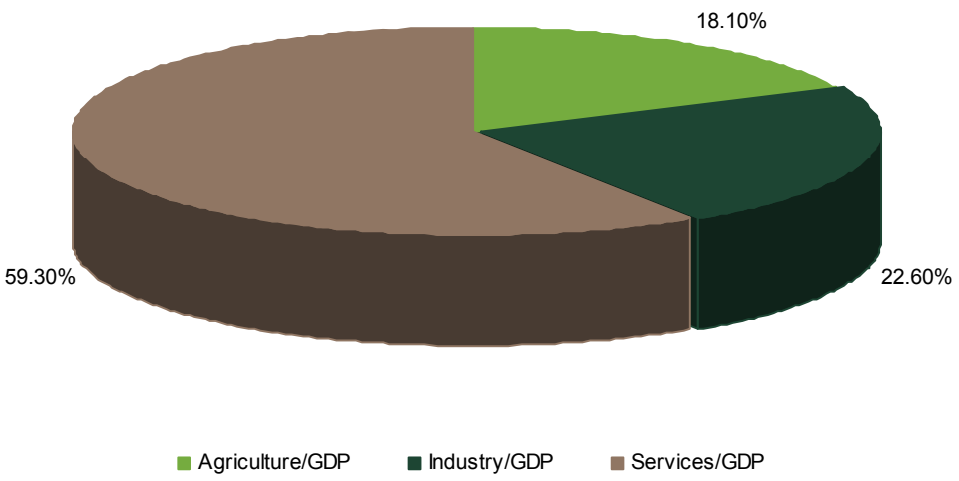
Source: Global Insight

Sustainable recovery partly hinges on the government's ability to access concessional funding and aid.

However, the international community – including the IMF, World Bank and Paris Club members – remains concerned about factors such as the high level of political risk, lack of property rights, corrupt judicial system and hostile business environment including the Indigenisation Act, continued farm invasions and mounting arrears. The government is looking to raise USD1 billion for 2009 and a further USD9 billion over the coming years. The IMF, despite initial reluctance to provide funding until official creditors had been repaid, announced it would provide a USD510 million loan to the country. Although this will provide short-term relief, the economy is still in a severe liquidity shortage, so this loan is unlikely to solve Zimbabwe's problems long term. Western governments remain reluctant to lend, although the IMF's re-engagement with the Zimbabwean government may lay the groundwork for new loans and additional aid in future.

Mining is included under industry

Figure 12. Composition of GDP (2009)



Source: Global Insight

The agricultural sector has shrunk significantly due to government's land-reform policy and the country is now heavily dependent on food imports.

Before 2000, agriculture was the main source of economic growth, with strong links between the financial and manufacturing sectors.

The mining sector has fared marginally better, but has come under renewed pressure after the introduction of the Indigenisation Act, announced in 2008, which forces companies to hand over 51% of their equity to local Zimbabweans. Modest improvements in the operating environment, such as the introduction of the multi-currency system and the state's abandonment of its monopoly on gold sales, are helping to stabilise the sector. In addition, Control Risks notes that some of the more informal pressures that have constrained the sector, such as the need to give 'loans' (bribes) as well as onerous site visits, are declining.

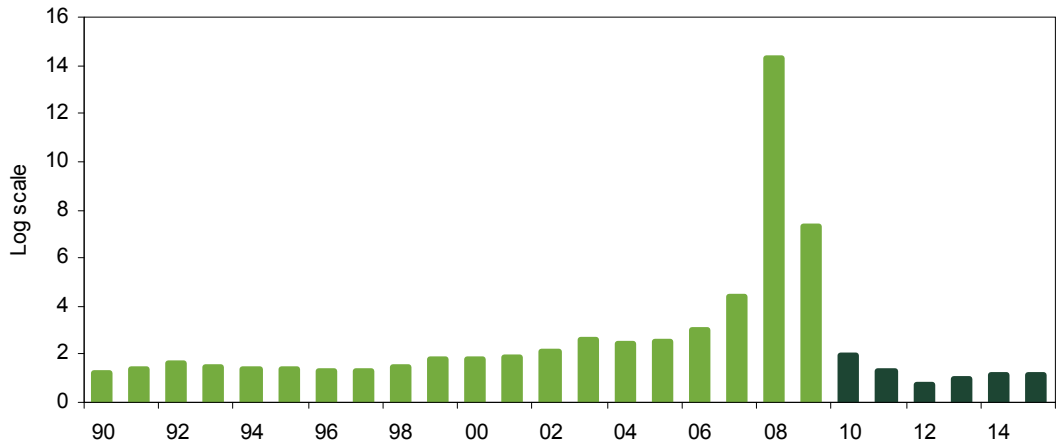
Despite President Mugabe's friendly overtures in his opening address to parliament, where he pledged that the government was "committed to ensuring that the policy environment is stable, predictable and sufficiently attractive to guarantee investors good returns", there is still, justifiably, much scepticism among investors and operators.

Critical issues such as the controversial mines and mineral amendment bill, which would give greater power to indigenisation legislation, have yet to be resolved. The services sector contributes around 60% to GDP and is made up of bloated public services. In the past, tourism contributed significantly to this sector, but this is no longer the case.

Monetary policy and inflation

When the government stopped producing official inflation estimates in August 2008, prices were rising by around 231 000 000% y-o-y. Inflation was driven by the combination of a shortage of foreign exchange and the Reserve Bank's regular monetisation of the government deficit. Since April 2009, the effective dollarization of the economy has rendered domestic monetary policy largely ineffective, bringing inflation under control by preventing the government from printing money and stabilising the currency. As a result, inflation is expected to fall below 10% by 2012, before picking up momentum again.

Figure 13. Zimbabwe's inflation



Source: Global Insight

Fiscal policy

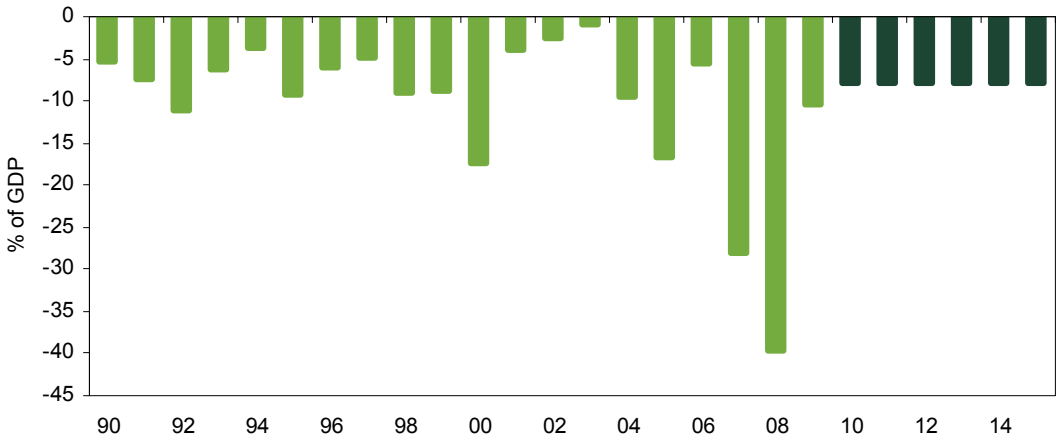
Government spending is expected to rise by 39% this year, which will mainly be funded via an increase in grants as it is unlikely that the government will be able to raise additional revenue from the private sector. The additional revenue is expected to be spent on supporting small-scale farmers as well as higher salaries for civil servants. However, spending will probably turn out to be less than expected, particularly as aid is likely to be insufficient to meet the fiscal gap. As a result, government spending on healthcare and education is expected to deteriorate further.

Situation in 2010 depends on whether Mugabe remains in power.

If Mugabe leaves office, international donors will be more willing to provide support and the IMF will increase its involvement, particularly in formulating more prudent fiscal policies. However, if Mugabe retains power, the fiscal situation will remain challenging.

Figure 14. Budget deficit (as a % of GDP)

Due to severe shortage of hard currencies, 'pro-Zimbabwean dollar' lobby likely to grow stronger.

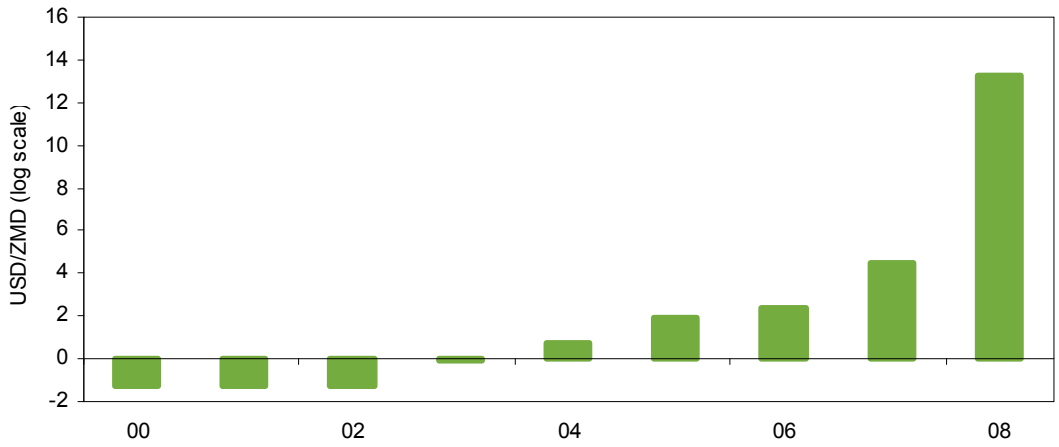


Source: Global Insight

Exchange rates and the external sector

The Reserve Bank of Zimbabwe re-denominated the currency twice in six months, first taking off ten zeros and then another 12 in 2008. However, rampant inflation quickly resulted in the currency losing its value again. In the April 2009 budget government formally announced the demonetisation of the currency. There is still confusion over the future exchange rate regime. The MDC finance minister has excluded the return of the Zimbabwean dollar until the economy has sufficiently recovered to support it.

Figure 15. Exchange rate (USD/ZMD)



Source: Global Insight

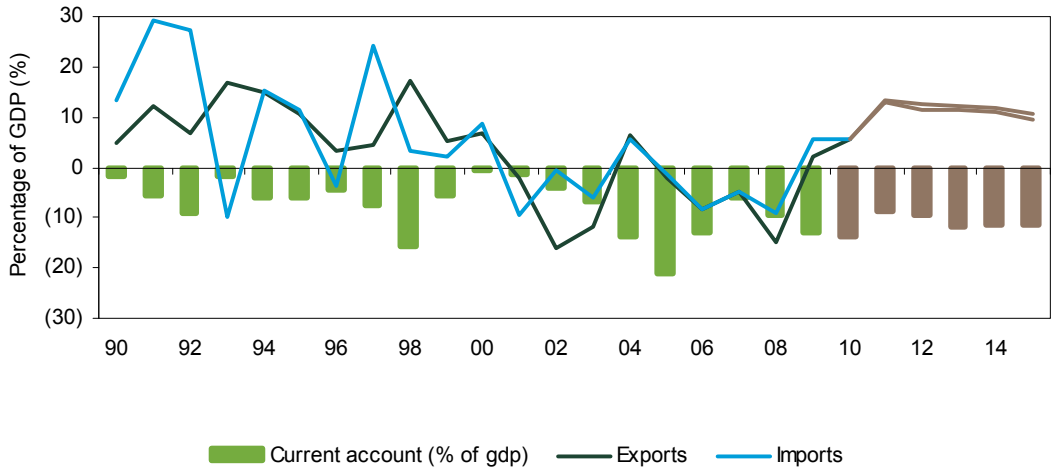
Zimbabwe's foreign exchange earnings are very sensitive to the global economic cycle as well as climatic conditions. The tobacco and mining industries used to earn significant foreign exchange, but the policies of Mugabe's administration have resulted in the near-destruction of these industries. As a result, exports have shrunk by 50% over the past five years. Exports continued to perform poorly this year, due to falling commodity prices as well as declining production.

Exports have benefited from strong gold price, expected to remain buoyant near term.

During 2010, exports are expected to show a modest recovery, due to a slight improvement in production and higher commodity prices. Imports were boosted by the importation of maize, as well as other aid-financed imports for humanitarian purposes. The USD2 billion foreign credit line the government has negotiated is also supporting imports.

Overall, exports are expected to fall slightly in 2009, while imports will rise, and the EIU expects the current account deficit to remain unsustainably high at over 50% of GDP. Exports should rise in 2010, but imports will also increase, so the deficit is expected to moderate to around 31% of GDP.

Figure 16. External balances

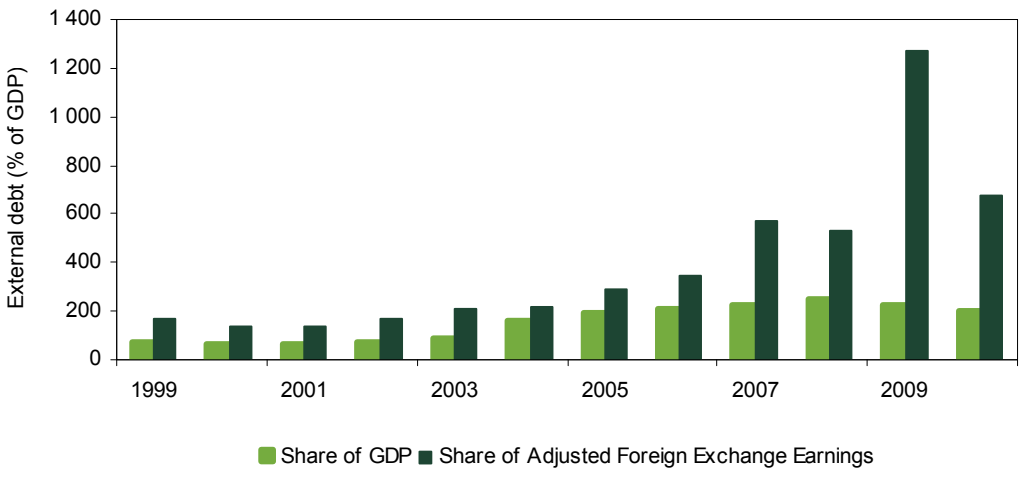


Source: Global Insight

External debt and reserves

Between 2000 and 2006, foreign debt as a percentage of foreign exchange earnings rose from 129% to 321%, among the highest on the continent. Zimbabwe's suspension from most official and unofficial sources of external debt since 2000, as a result of non-payment, has limited the country's ability to accumulate additional debt. By 2006, the last point for which reliable data is available, arrears made up around 50% of Zimbabwe's total debt burden. Despite the new political dispensation, access to international credit remains extremely limited. South Africa and Botswana have pledged some assistance. South Africa provided a R500-million revolving credit line to the Zimbabwe government, with an option to increase the limit depending on usage and fund management. An additional R300 million could be provided for direct budget support, which will be released in three tranches. The Zimbabwe government also secured a USD950-million credit line from China in mid-2009. Without debt rescheduling or cancellation, Zimbabwe's external debt holding as a percentage of foreign exchange earnings could touch 1 000% in 2009.

Figure 17. External debt



Source: Global Insights

Reserves cover around six days imports.

Zimbabwe's foreign exchange reserves have been extremely low for many years, but the exact level is unknown. It is estimated that reserves cover around six days worth of imports.

Economic outlook

Zimbabwe will need the financial assistance and policy expertise of the IMF, World Bank and other donor countries before a sustainable economic recovery is likely. Without this, aid growth beyond the short-term post-conflict rebound will remain severely constrained.

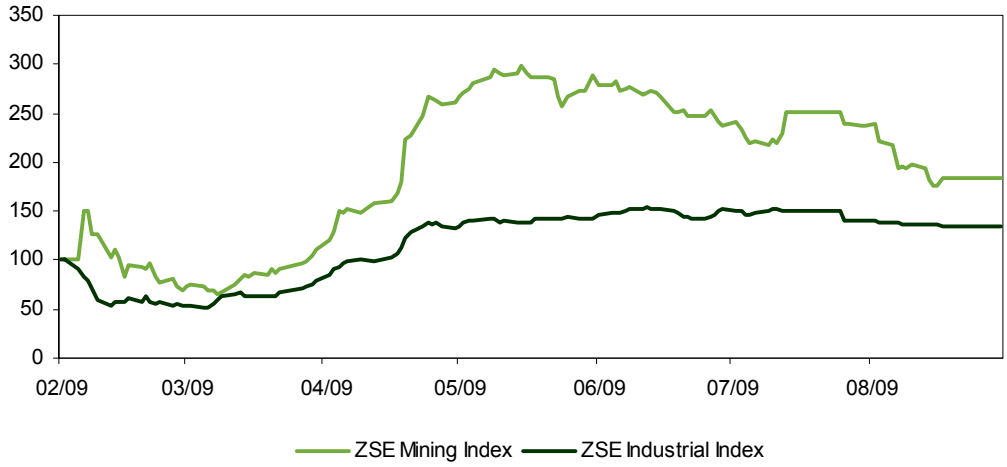
In addition, the country's long-term growth potential has been severely eroded. The well-functioning education and health system has collapsed, infrastructure has been eroded and property rights as well as investor confidence have been severely affected over the past few years.

Stock exchange

Zimbabwe has a small, but historically active stock exchange.

The Zimbabwe Stock Exchange (ZSE) is open to foreign investment and has approximately 80 listed securities and two indices, namely the Zimbabwe Industrial Index and the Zimbabwe Mining Index. The ZSE was reopened on 19 February 2009 after being shut for two months and started trading in US dollars. Both the industrial and mining indices were reset to 100 on reopening.

Figure 18. ZSE mining and industrial indices



Source: Bloomberg

The market capitalisation of shares listed on the exchange was valued at USD3.9 billion on 18 September 2009. The following mining companies are listed on the ZSE:

Table 1. Mining companies listed on the ZSE as at 25/09/2009

Company	Bloomberg code	Ownership	SISS	Price (USc)	Market cap (USDm)
Bindura Nickel Corporation	Bindura ZH	53% held by Mwana Africa, 20% by Zimbabwe government	126 048 000	18	22.69
Rio Tinto Zimbabwe	Riozim ZH	56% held by Rio Tinto	44 922 000	264	118.59
Hwange Colliery Corporation Ltd	Hwange ZH HWA SJ	38% held by government	180 855 000	36	65.11
Falcon Gold Zimbabwe Ltd	Falgold ZH	84.7% held by Central African Gold plc	111 165 131	8	9.17

Source: Bloomberg

Infrastructure and transport

Power

Irregular power supply is one of the biggest constraints to the mining industry.

Zimbabwe imports approximately 40% of its electrical power needs from neighbouring countries, most notably Mozambique. However, it has large untapped coal resources as well as enormous hydro-electrical potential. All Zimbabwe's oil requirements are imported, although oil only accounts for 15% of the country's power needs. The country has been plagued by fuel shortages due to poor economic management and low foreign currency reserves.

Zimbabwe has five main sources of potential power supply, namely:

- The coal-fired Hwange power station, with installed capacity of 920MW (operating sub optimally due to lack of maintenance);
- The Hydro Kariba South Bank power station, with installed capacity of 750MW (operating at/near full capacity);
- The coal-fired Munyati power station, with installed capacity of 100MW (closed);
- The coal-fired Bulawayo power station, with installed capacity of 90MW (closed);
- The coal-fired Harare power station, with installed capacity of 80MW (closed).

Load shedding and power cuts are a common occurrence in Zimbabwe.

The country's power needs total approximately 2000MW. In June 2009 it was reported that Zimbabwe was generating 80MW at Hwange, 750MW from Kariba and importing 270MW from Mozambique's power utility Cahora Bassa Hydro Electric (HCB) and 50MW from DRC's electrical utility, SNEL, totalling 1150MW, only half the country's requirements. Load shedding and power cuts are therefore a common occurrence in Zimbabwe.

Of the four thermal power stations in Zimbabwe, only Hwange is operational, but producing at sub-optimal levels. The country does, however, have an extensive network of power lines.

Roads, railway and rivers

Zimbabwe has a total of 97 267km of paved roads, generally in need of maintenance and repair. It is also host to 3 077km of railway lines, with all major cities linked by rail as well as linking Zimbabwe to South Africa (via Beit Bridge), Botswana (via Plumbtree) and Mozambique (via Mutare).

The Zambezi River forms Zimbabwe's north-western boundary with Zambia and is host to Lake Kariba, one of the largest man-made lakes in the world.

Figure 19. Roads, railways, rivers and towns in Zimbabwe

Source: UN cartographic section

Airports

The country has 227 airports, 20 with paved runways. The capital, Harare, has an international airport.

Telecommunications

Zimbabwe's telecommunication system was one of the best in Africa, but is now reported to suffer from poor maintenance.

Internet connections are only available in the major towns, Harare and Bulawayo, and even this connectivity is often not available.

Telecommunications were highlighted at the Mining Indaba as one of government's key focus areas, in an attempt to bring Zimbabwe in line with international standards.

Mining in Zimbabwe

Mining accounts for 50% of total export earnings.

Zimbabwe has a long history of mining, with evidence of gold mining dating from the ninth century AD. Gold was rediscovered in Zimbabwe by Henry Hartley in 1865 and, by the 1980s, Zimbabwe was Africa's third-largest producer, after South Africa and Ghana. Gold remains one of Zimbabwe's most economically important minerals. More recently, nickel, ferrochrome and platinum group metals (PGMs) have been added to this list. Currently mining contributes 4% to Zimbabwe's real GDP and accounts for 50% of total export earnings.

The country is reasonably well endowed in mineral wealth and over 40 minerals are known to occur, with gold, platinum, chrome, copper, diamonds and coal being the main economic minerals in the country. Over and above the obvious minerals, Zimbabwe also has huge potential in other industrial minerals such as granite, limestone, tantalite, tin and tungsten and energy minerals including uranium and natural gas.

Mining has always played a major part in Zimbabwe's economy, and since the collapse of the tourism and agriculture industries in recent years, is now even more important. The government of Zimbabwe participates in the minerals sector through a wholly-owned company, Zimbabwe Mining Development Corporation (ZMDC).

Zimbabwe has substantial exploration potential.

Due to the country's economic collapse over the past ten years or so, mineral exploration of any kind has been largely curtailed, and the country has not been able to take advantage of recent developments in exploration technology. As such, we believe Zimbabwe has upside potential for new discoveries, or even old mining resources being increased via these new exploration methods.

Some of the mining companies currently operating in the Zimbabwe, and their most prominent Zimbabwean projects, include:

- African Consolidated Resources – Giant and Pickstone-Peerless gold mines;
- Anglo Platinum – Unki platinum project;
- Caledonia Mining Corporation – Blanket mine;
- CanAfrican Metals and Mining – Indirama Mining Lease which consists of 18 historical mines;
- CAMEC – Bokai Platinum project (60% CAMEC, 40% ZMDC);
- Central African Gold – 85% stake in Falcon Gold of Zimbabwe, Olympus gold mines;
- Duration Gold Zimbabwe (private company wholly owned by Clarity Capital) – Vubachikwe, Athens/Falcon and Queens groups of gold mines;
- Hwange Colliery (38% held by Zimbabwe government) – Chaba, 3 Main;
- Impala Platinum – Zimplats and Mimosa platinum mines;
- Kameni – Bougai platinum project;
- Mwana Africa – Freda Rebecca gold mine, Bindura Nickel Corporation;
- Metallon Inc (Metallon Gold Zimbabwe) – Shamva, Mazoe, Penhalonga, Arcturus, How;
- New Dawn Mining (Casmyn Mining) – Turk/Angelus gold mine;
- RioZim Ltd – Renco gold mine, Sengwa coal mine;
- Rockover Resources – Tsholotsho diamond project, Dokwe gold project;
- Rio Tinto – Murowa Diamond mine (78% Rio Tinto, 22% RioZim);
- TransAfrica – gold-mining claims in Harare and Kadoma area, nickel claims in Snakes Head area of Dyke (northern-most point);
- ZIMASCO (owned by Sinosteel).

Zimbabwe's mining legislation

All mineral rights in Zimbabwe are vested in the state.

All mineral rights in Zimbabwe are vested in the state and application must be made to the government to exploit minerals. The process of obtaining a licence for mining or exploration is managed through the Mines and Minerals Act No 38 of 1961 (Chapter 21:05), last amended by Act No 22 of 2001.

A licence must be obtained from the Mining Commissioner to explore or mine for minerals. Local and foreign companies/individuals are permitted to apply for such licences. The following types of licences are available:

Table 2. Zimbabwe mining and exploration licences

Purpose	Type of licence	Description	Valid for	Comments
Exploration	Prospecting licence	No drilling or excavation work to be undertaken, no minerals can be removed	2 years	Similar to South African reconnaissance permit
	Exclusive prospecting order (EPO)	Exploration, drilling can be undertaken	3 years plus 3 years	
	Special grant (SG)	For exploration in reserved areas		
Mining	Claims	1 Precious metals claim (10ha) 2 Base metals claim (25 or 150ha)	1 year	No limit to number of claims that can be held
	Special grants	For mining in reserved areas		1 Coal and energy minerals 2 All except coal and energy minerals
	Mining lease (ML)	A consolidation of more than one contiguous mining location		
	Special mining lease (SML)	A package of incentives granted to an investor who invests >USD100m in one project	25 years, renewable for 10-year periods	Investment must be wholly or principally in foreign currency and production meant for the export market

Source: Summarised from Mines and Minerals Act

The mines and minerals amendment bill has been tabled in parliament for over five years.

The mines and minerals amendment bill is being reviewed and the Zimbabwean government urged to complete this process to boost foreign investment into the country. The proposed new act however contains numerous contentious issues such as ownership and royalties. The outcome of discussions is keenly awaited.

On 10 July 2009, the Honourable Obert Mpofu, minister of Mines and Mining Development gave a speech that addressed the mines and minerals amendment bill and made the following comments:

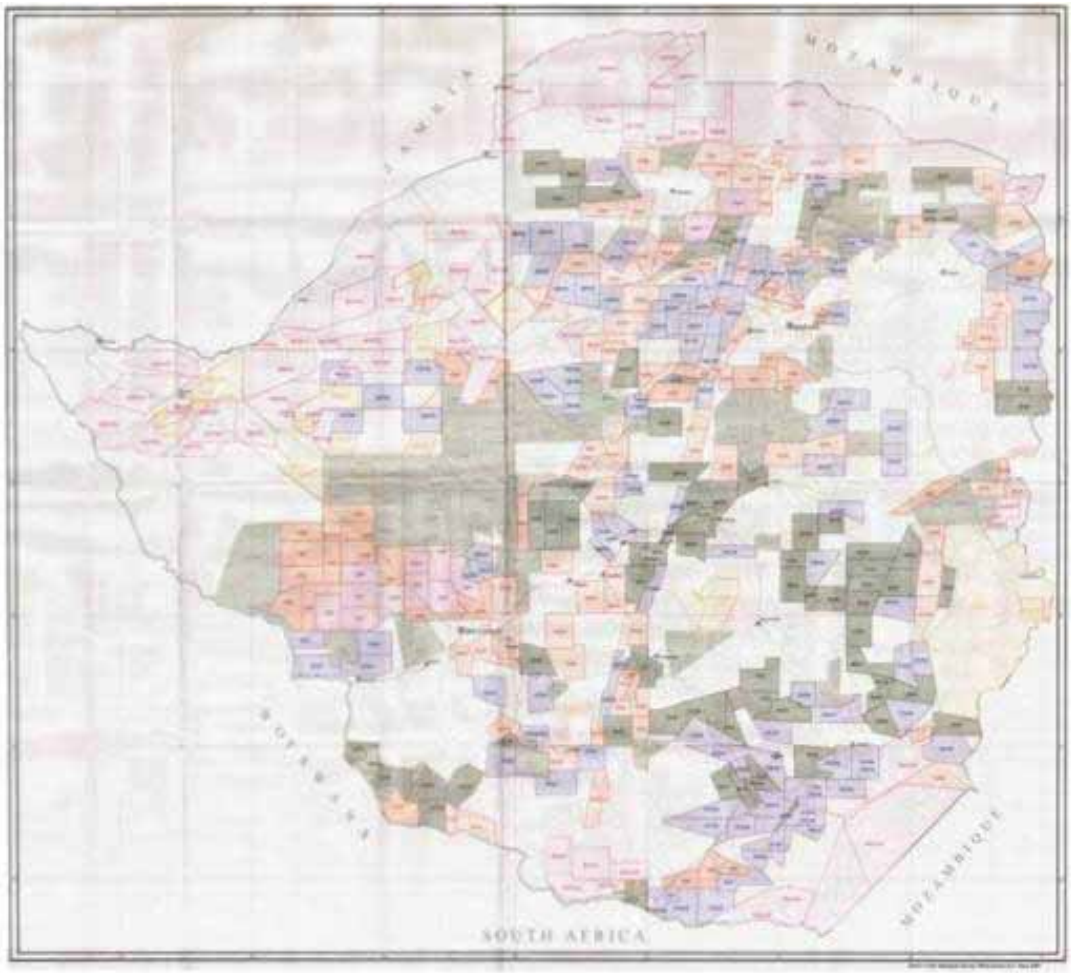
- Sections of the bill are being revised to develop a more user-friendly operating mining environment;
- Levies and taxes were being addressed to reflect prudence in applying mineral rents;
- Indigenisation in mining is being addressed to ensure indigenous Zimbabweans participate in the exploitation of the country's mineral resources. However, this cannot be at the expense of foreign investment (the current Indigenisation Act prescribes that 51% of mineral projects are held by indigenous Zimbabweans and the government);
- As the period in which parliament had to comment had lapsed, the bill was again open for public comment and stakeholders would again be consulted for comments.

The new law will include a 'use it or lose it' concept, as well as a re-evaluation of all mining contracts currently outstanding. This announcement puts additional pressure on Zimbabwe's mining industry as further uncertainty is introduced. It will, on the other hand, free up land that is being held but not utilised, to new entrants to the Zimbabwe mining industry.

Mr Mpofu made a further announcement on 1 September 2009, stating that government will insist on 50% shareholdings in all diamond-mining ventures in Zimbabwe. If this is the case, it will negatively affect Rio Tinto's Murowa diamond mine and the privately owned River Ranch Mine as the government is unlikely to be able to pay for the shareholding it is demanding. The minister however later stated that he had been misquoted.

The map below illustrates the current licences that have been issued in Zimbabwe. The map was last updated in 2007, but discussions with government officials confirm that no mining licences have been issued since then. Although the map is not particularly clear, it illustrates that the majority of the country has been taken up in terms of exclusive prospecting orders or EPOs. This picture may, however, change dramatically if the 'use it or lose it' policy comes into law.

Figure 20. Location of mining and exploration licences in Zimbabwe



Source: Zimbabwe Geological Survey
Notes: Different colours represent dates on which EPOs were issued

Taxation for mining companies

Mining companies only pay 15% income tax.

Currently, the mining industry in Zimbabwe enjoys a preferential income tax rate of 15%, which is substantially lower than normal company tax of 30%. The following also pertains to mining companies operating in Zimbabwe:

- Tax losses of mining companies may be carried forward indefinitely;
- Withholding tax of 5% is levied on dividends declared for both residents and non-residents for companies listed on the ZSE. For all other companies, the rate of withholding tax is 10%. An additional 5% withholding tax is levied on interest paid on both residents and non-residents;
- Interest paid on borrowings is allowable as a tax deduction for borrowings by a company with a debt-to-equity ratio up to a maximum of 3:1. Any payments in excess of this figure are treated as dividends and taxed accordingly;
- No export duties are levied on mineral commodities.

Incentives and allowances

The following allowances apply to the minerals sector:

- Exploration costs, pre-production costs and capital costs can be either fully expensed in the year incurred or carried forward to be expensed fully in the first year of production;
- Capital allowances can be made for passenger motor vehicles, staff housing, schools, hospitals and clinics;
- Exemption of customs duty, import tax and surtax on all capital goods used during the exploration phase of a mining project (for a period of up to five years);
- General and administration costs incurred by head office or by a parent company are limited to a maximum deduction of 0.75% of allowable deductions during the pre-production phase of a project and a maximum of 1% of gross income for producing mines per annum.

Royalties

Royalties have recently been reinstated.

Royalties have been reinstated and are calculated as a percentage of the gross fair-market value of minerals produced and sold (ie revenue). The royalties are not deductible for income and profits tax purposes. The following royalties are levied against minerals mined:

- Precious stones: 10%
- Precious metals: 3%
- Base metals: 2%
- Industrial minerals: 2%
- Coal-bed methane: 2%
- Coal: 1%

All royalties were suspended from 2004 to 2009, but have now been reintroduced.

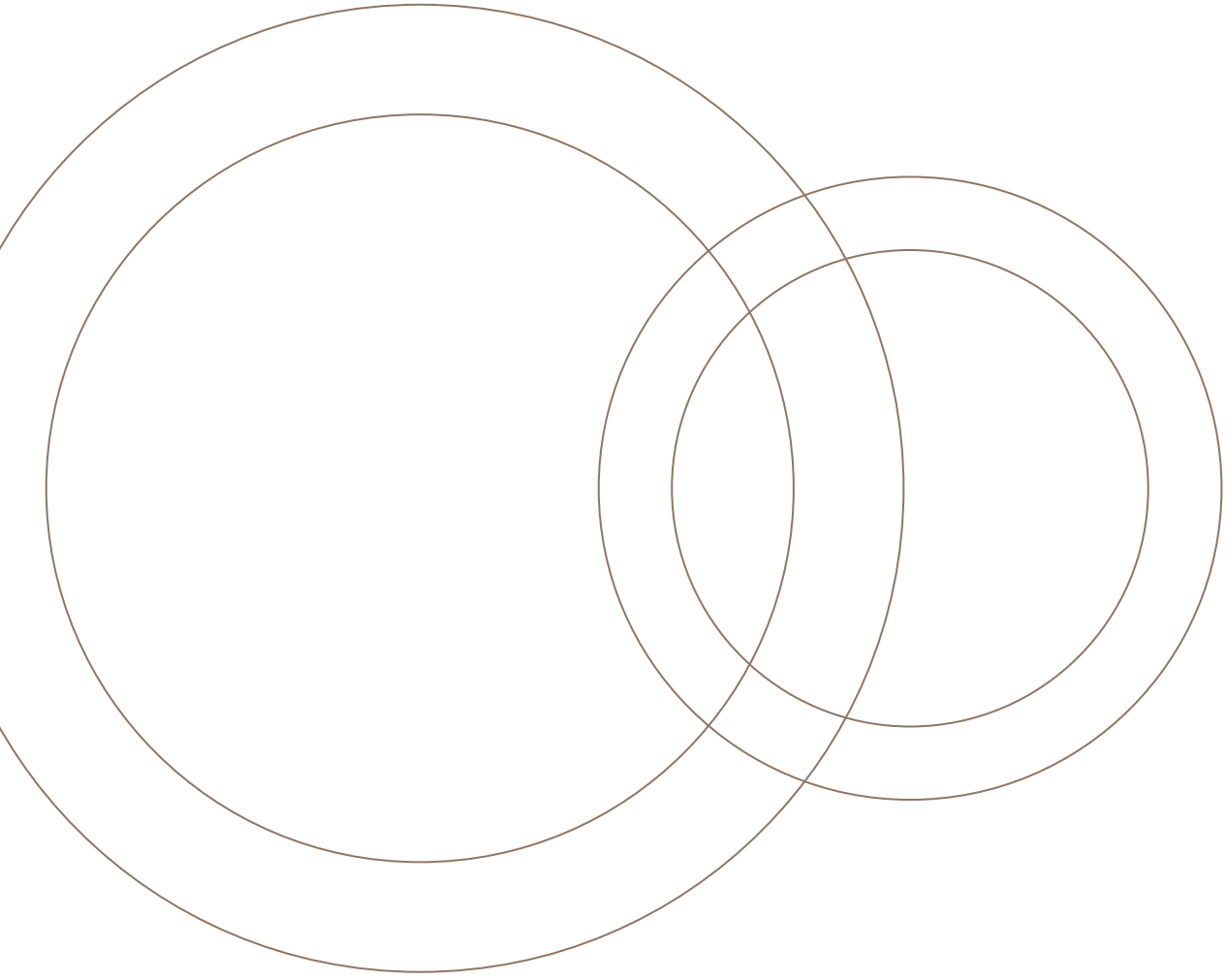
Mining skills base

Zimbabwe's literacy rate is stated as 90% (CIA World Fact Book), the second-highest in Africa after Tunisia.

The country has a long history of mining and a large labour force of both skilled and unskilled workers with extensive experience in the mining industry.

However, due to the recent economic situation in Zimbabwe, many mining-sector workers have left the country to seek employment in neighbouring countries, such as South Africa, the DRC and Namibia. The exodus of skills was cited as a major constraint to mining operations in the country. It is hoped that as the country and the industry recover from recent troubles, this workforce will return to Zimbabwe. In the meantime, mining companies are outsourcing positions to consulting firms and contactors (at a premium), mostly located in South Africa.

Geology of Zimbabwe



Overview

Up to 1980 Zimbabwe was one of Africa's best-explored and mapped countries.

The geology of Zimbabwe can broadly be broken up into lithologies formed during the following broad timelines (from oldest to youngest, with 'ma' indicating million years ago):

- Dolerites, gabbros and gneisses of Precambrian age (590 – 4 000ma);
- Gneisses and metasediments/metavolcanics of Archaean age (2 500 – 4 000ma);
- Sediments of Proterozoic age (590 – 2 500ma);
- Sedimentary and igneous lithologies of Phanerozoic age (25 – 360ma);
- Recent sediments of Cenozoic age (2 – 25ma).

The Archaean Zimbabwe craton, which covers most of central Zimbabwe, comprises numerous separate terranes, namely:

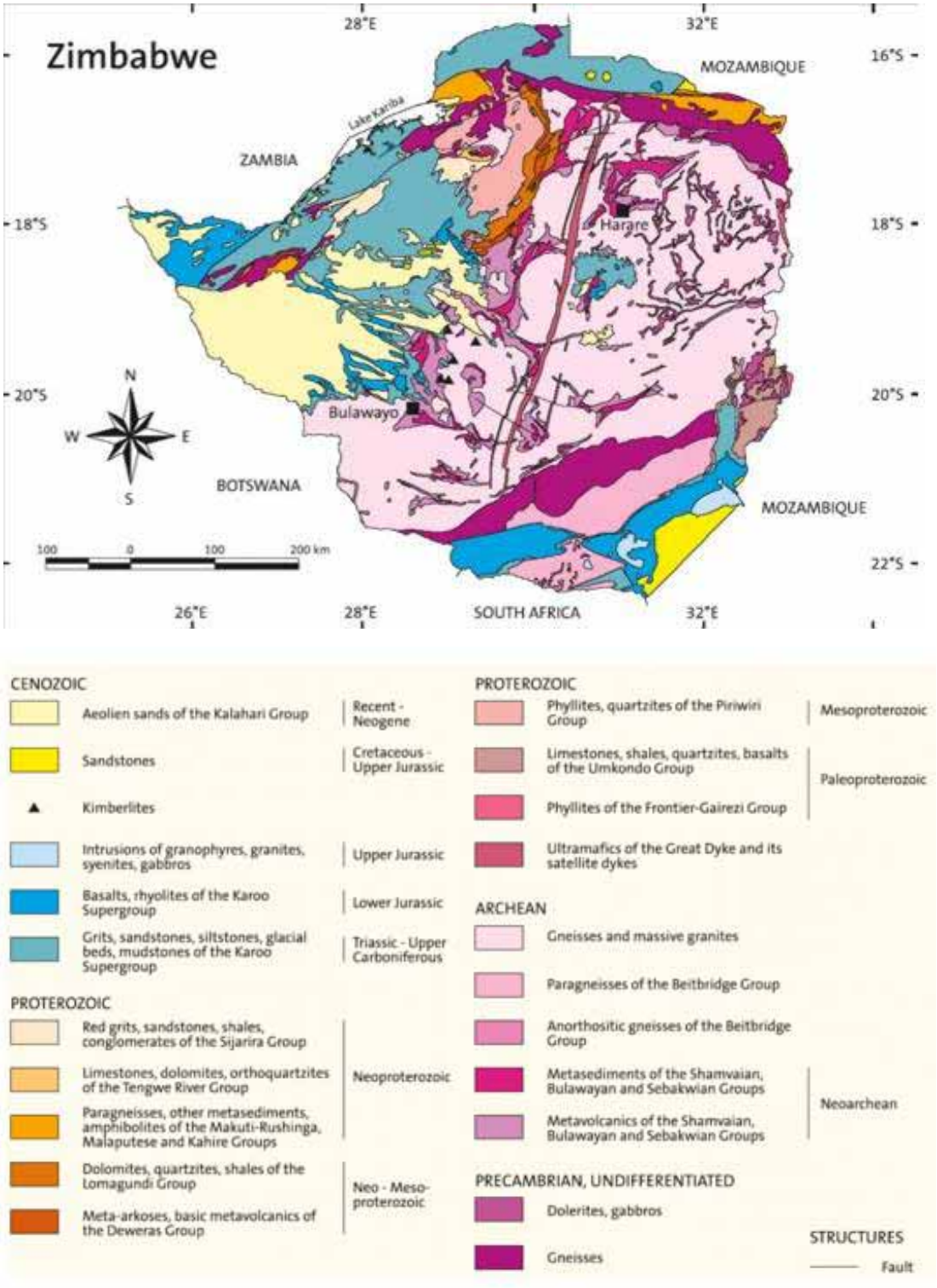
- Central Tokwe terrane (gneisses and greenstone inliers);
- Mafic and felsic volcanic rocks and conglomerates, which unconformably overlie Tokwe terrane;
- Two greenstone belts flanking the Tokwe terrane;
- Calc-alkaline lava and sedimentary rock greenstone belts to the north-west of the Tokwe terrane, intruded by synvolcanic plutons;
- Greenstone belts, comprising basalts overlying ultramafic lavas and older gneisses to the south-east of the Tokwe terrane.

The famous mafic/ultramafic Great Dyke cuts across the craton in an NNE-SSW direction (pink linear structure in the diagram below).

The Zimbabwe craton (illustrated in light pinks and dark pinks below) is bordered by the following mobile belts:

- West: Magondi Supergroup including the Damara-Zambezi metamorphic belt;
- North: Zambezi metamorphic belt;
- East: Mozambique metamorphic belt;
- South: Limpopo metamorphic belt.

Figure 21. Geology of Zimbabwe



Source: Geological Atlas of Africa, T Schluter, 2008

Zimbabwe has over 4 000 recorded gold deposits.

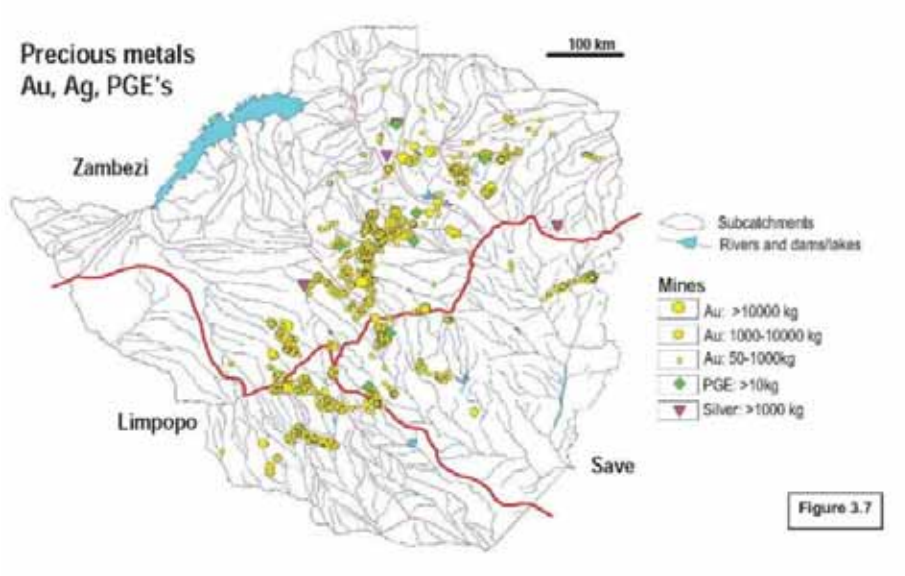
Gold (Au) deposits in Zimbabwe are clustered on the Zimbabwean craton and mostly associated with the greenstone belts. These greenstone belts are thought to have formed on the basement of older granitic gneisses and are grouped as the Sebakwian, Bulawayan and Shamvaian groups. The Renco mine and surrounding deposits are not located in the greenstones, but rather on the Limpopo mobile belt. The gold here is, however, thought to have been remobilised during the deformation of the belt from the greenstones.

Silver (Ag) is mined mainly as a by-product from gold mining, although silver production has declined at a faster rate than gold production over the last 15 years.

The Great Dyke is the second-largest PGM deposit in the world.

Zimbabwe's platinum group metal/element (**PGM/PGE**) deposits are all located along the Great Dyke, which is covered in greater detail later in this chapter. PGMs are located in an approximately 4m thick zone within the dyke, namely the Main Sulphide Zone. Of this 4m zone, often only less than 1m is economically extractable due to grade constraints. Overall the grade in the dyke is lower (<4g/t) than the Bushveld Igneous Complex in South Africa, the world's largest PGM deposit. As the economically extractable zone is not easily recognisable to the naked eye, 'on reef' is often challenging and grade control is extremely important.

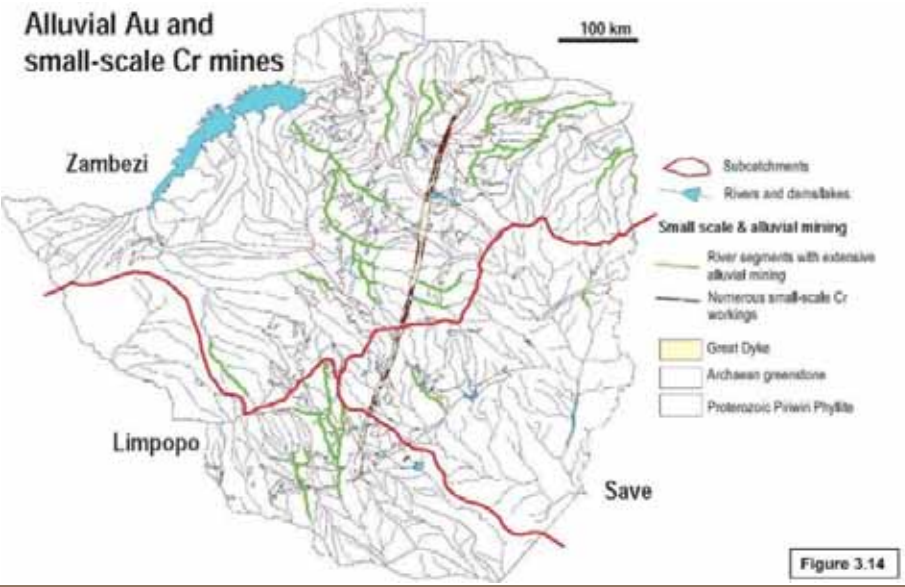
Figure 22. Location of precious metal mines/deposits



Source: International Institute of Environment and Development

Small-scale alluvial gold and **chrome (Cr)** mining has been reported at the locations shown below.

Figure 23. Alluvial gold and chrome mining occurrences



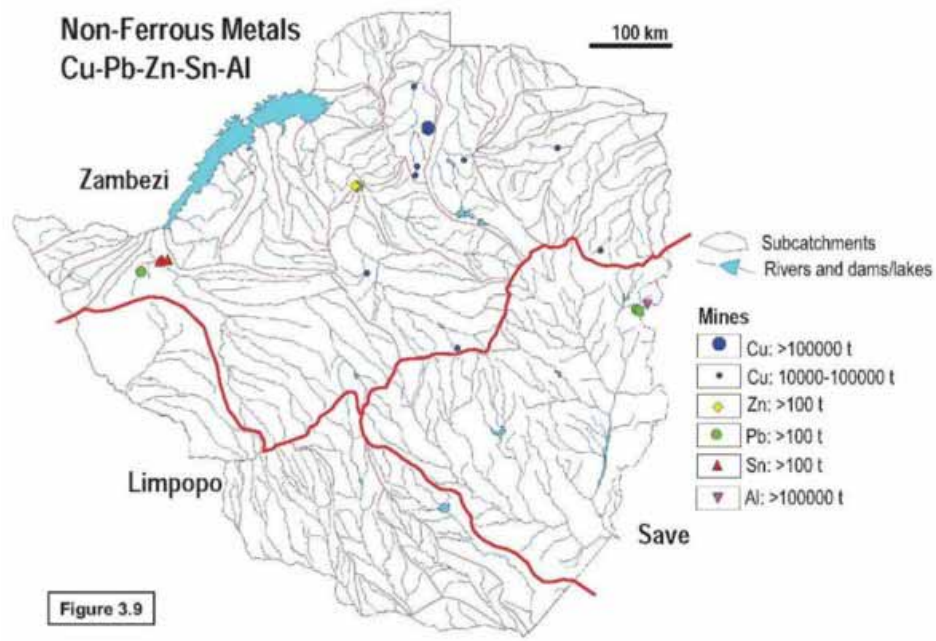
Source: International Institute of Environment and Development

A few **copper (Cu)** deposits also occur on the Zimbabwean craton or on the contact of the craton and the mobile belts. The copper deposits are stratiform and hydrothermal origins have been suggested.

One tin (Sn) deposit is noted in Zimbabwe, the Kamativi deposit, located in the north-western region, on the Magondi Supergroup.

The Mutare greenstone belt is host to **lead (Pb)** and **zinc (Zn)** resources and Zimbabwe is also host to **arsenic, antimony** and **tungsten**. However, none of these metals is exploited.

Figure 24. Copper, lead, zinc, tin and aluminium mines/deposits



Source: International Institute of Environment and Development

Like neighbouring South Africa, Zimbabwe has enormous **iron (Fe)** ore resources (>40% Fe), located near Redcliffe (currently being exploited), Charter Mwenesi range and near Mazowe. The deposits are associated with banded ironstone formations in the greenstones and, to a lesser extent, the Limpopo mobile belt. Iron ore is mined by the Zimbabwe Iron and Steel Company.

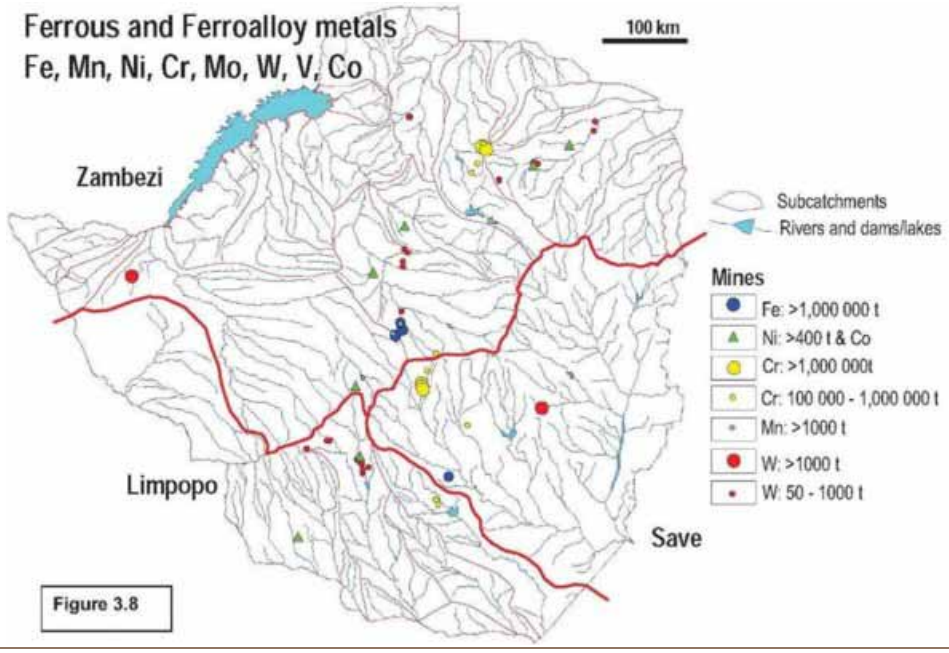
Nickel (Ni) deposits are associated with komatiites, mafic intrusions or the Great Dyke. Bindura Mining dominates the nickel-mining industry. The five main deposits in Zimbabwe include Epoch, Hunters Road, Trojan, Madziwe and Bindura. These deposits are close to gold deposits and located on the craton. Nickel is also produced as a by-product from PGM mining activities on the Great Dyke.

Cobalt (Co) is produced as a by-product of nickel production.

Most of Zimbabwe's prolific **chrome (Cr)** resources are located in the Great Dyke. Other resources are found in ultramafic rocks in the Basement Complex and the Limpopo mobile belt. Examples of these are the Shurugwi and Mashava ore bodies, which are the source of most of Zimbabwe's production.

Tungsten (W) deposits are found in association with gold in the midlands greenstone belt. Tungsten was historically mined at the Kakonde Tungsten mine.

Figure 25. Location of ferrous and ferroalloy metal mines/deposits



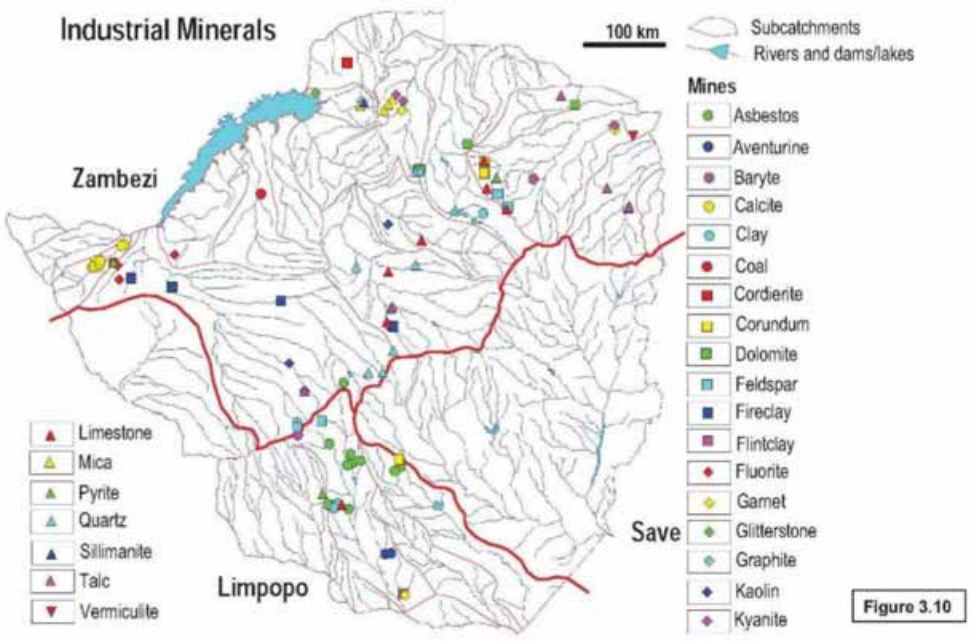
Source: International Institute of Environment and Development

Zimbabwe has enormous coal reserves.

Zimbabwe has enormous reserves of coal associated with overlying Karoo sediments located in the north-western, western and southern part of Zimbabwe.

Among the industrial minerals produced are **limestone, kyanite, corundum, tantalite, magnesite, pyrites**, **clays, slates** and **phosphates**, albeit in small volumes. The highly sought-after **Zimbabwe black granite** is also produced.

Figure 26. Location of industrial mineral mines/deposits

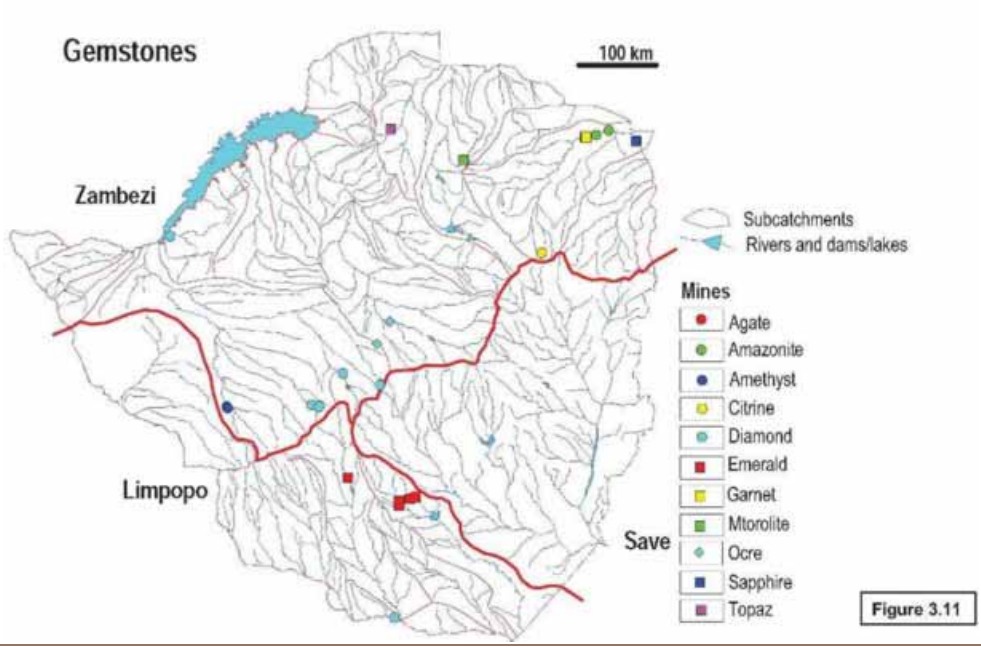


Source: International Institute of Environment and Development

Diamond-bearing kimberlites are found in association with the mobile belts. Four diamond-bearing kimberlites (Marange, Murowa, Tsholotsho and Ngulube) are noted in Zimbabwe. This is far fewer than in neighbouring South Africa and Botswana, two of the largest diamond-producing countries in the world.

Emeralds were discovered in Zimbabwe in 1956 and are mined at the Sandawana underground mine in the Bikita area. The stones are associated with schists with pegmatite and quartz vein intrusions.

Figure 27. Location of gemstone mines/occurrences



Source: International Institute of Environment and Development

The Great Dyke of Zimbabwe (PGM, copper, nickel deposits)

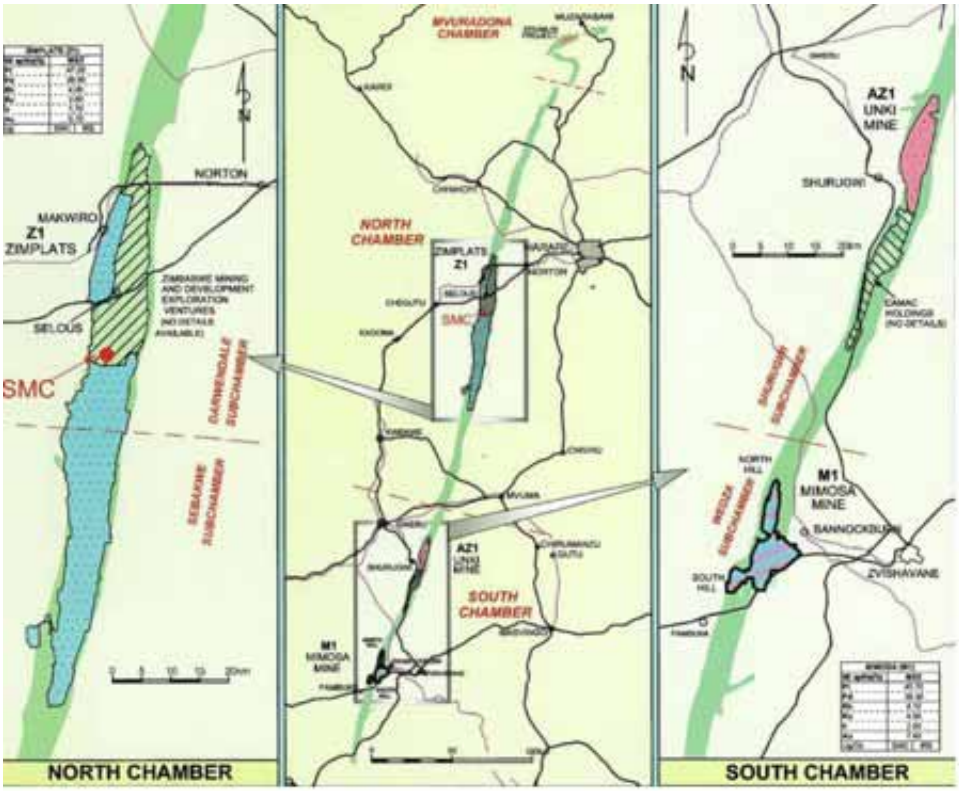
The Great Dyke, as it is commonly referred to, stretches approximately 530km across the craton and varies between 3km and 12km wide along its length. The dyke is host to vast ore deposits, including gold, silver, chromium, PGMs, nickel and asbestos.

Geologically, the Great Dyke is not technically a dyke but a lopolith and is Y-shaped in cross section.

It is a layered intrusive complex, with a broadly lower ultramafic sequence and an overlying mafic sequence. Chromite occurs towards the base of the ultramafic sequence and is mined throughout the dyke. The ultramafic sequence is host to the P1 pyroxenite, which occurs directly below the mafic-ultramafic contact. This in turn is host to the PGM-bearing main sulphide zone or MSZ, which is generally between 2m and 4m thick. For ease of reference though, this structure will be referred to as the Great Dyke.

The intrusion has five distinct sub-chambers, namely (from north to south) Musengezi, Darwendale, Sebakwe, Selukwe and Wedza. The sub-chambers are elongate in shape and form doubly plunging synclinal structures.

Figure 28. Geology of the Great Dyke and location of the chambers



Source: Banzi Geotechnics

The layering of the dyke is clearly visible in the figure below:

Figure 29. Aerial photograph of a section of the Great Dyke of Zimbabwe

Source: Visible Earth

Greenstone belts (gold, silver, copper, zinc and lead deposits)

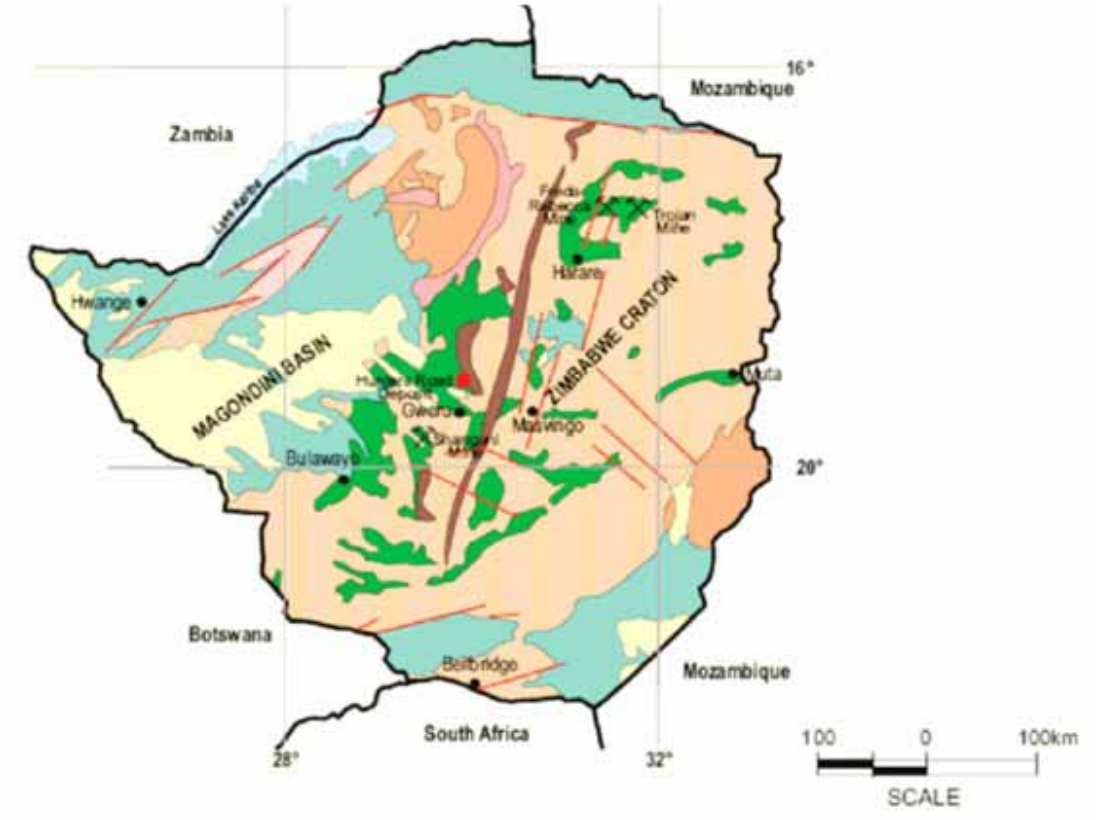
Most of Zimbabwe's gold deposits are associated with greenstone belts.

Greenstone belts are defined as zones of variably metamorphosed mafic to ultramafic volcanic sequences with associated sedimentary rocks that occur within Archaean and Proterozoic cratons between granite and gneiss bodies. The name 'greenstone' refers to the greenish colour of the metamorphic minerals (chlorite, green amphiboles, etc) often associated with these lithologies. The greenstone belts contain ore deposits of gold, silver, copper, zinc and lead.

The greenstone belts in Zimbabwe are made up of volcano-sedimentary sequences. The greenstones are divided into three main groups, the volcano sedimentary Sebakwian group (3 500ma), the extensive volcanic Bulawayan group and the sedimentary Shamvaian group.

The Bulawayan group is split via an unconformity and divided into the lower greenstones (2.9ga or billion years ago) and upper greenstones (2 700ma). The Shamvaian group unconformably overlies the lower greenstones and is also estimated at 2 700ma.

Figure 30. Location of greenstone belts in Zimbabwe



Source: SRK technical report on Freda Rebecca 2007
Notes: Green areas depict greenstone belts

Coalfields of Zimbabwe

Zimbabwe has vast coal resources in the Zambezi (north-west) and Sabi-Limpopo (south-east) coalfields.

Coal in Zimbabwe is preserved in the Ecca group of the Lower Karoo succession. The coal was deposited in a palaeo-shoreline, with the seams thickening at depth. The entire Karoo has been subject to intense faulting, including the coal sequences, and the remaining coalfields were preserved as a result of subsidence due to the break up of the supercontinent Gondwana.

There are up to 20 known coal deposits in Zimbabwe containing approximately 30 billion tonnes of bituminous coal. Two main coalfields have been described, namely the Zambezi River basin and the Sabi/Limpopo basin. The Zambezi River basin is the larger of the two and has been estimated to contain more than 20 billion tonnes of coal resources.

The Wankie coalfield is the best researched of all, as it has been exploited for over 100 years. It still hosts over 500 million tonnes of reserves of coking-quality coal in the 160km^2 field.

The 3-13m thick Main seam is the best-quality seam and occurs in the lower part of a multi-seam package. Above this, the coal is all of thermal quality. The Wankie Main seam is a medium to high volatile bituminous coal, comprising a lower coking coal (<4m thick) and an upper steam coal (<8m thick). This coal generally has a low sulphur (S) content. The coal in the south-eastern coalfield has variable qualities and is not exploited on a commercial scale.

Other coalfields in Zimbabwe have been subject to far less exploration, but are found to contain significantly less coking-quality coal and have a much higher ash content.

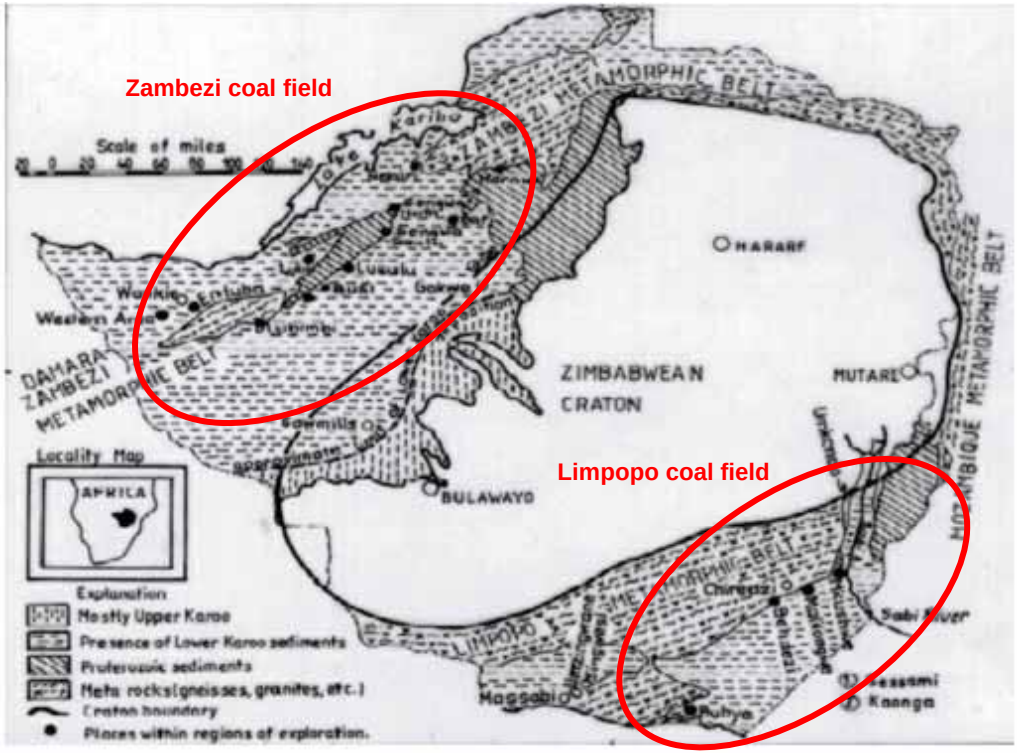
Table 3. Zimbabwe coal resources (2003)

Coalfield	Coal deposit	Estimated in-situ tonnes (Mt)	Short description
Zambezi	Hwange	418	All incorporated under Hwange
	Sinamatella	96	Thermal coal with a bottom coking coal fraction.
	Western Area	952	
	Entuba	532	
	Lubimbi	21 083	Poor-quality coal
	Lusulu	1 200	High ash content (26%) but can be washed to high volatile thermal coal
	Sengwa	400	Lower quality than Hwange but low S and P, therefore suitable as metallurgical coal
	Lubu-Sebungu	83	High ash coal
	Marowa	14	High ash coal
	Chaba	103	No further information
	Total Zambezi	**24 881**	**No thick overburden**
Sabi-Limpopo	Sessami-Kaonga	1 000	Non-coking bituminous coal, high ash
	Bubi	60	Disrupted by dykes, sills and faults
	Sabi	569	Very high ash coal, many faults and dykes
	Tuli	115	High ash, thin seam, highly faulted
	Total Sabi-Limpopo	**1 744**	**Generally covered by thick overburden**
Total		**26 625**	

Source: Coal Resources. Baruya, Benson, Broadbent. et al. 2003

The location of the Zimbabwe coalfields and their coal deposits are shown below. The black dots illustrate the location of coal deposits detailed in the table above.

Figure 31. Zimbabwe coalfields



Source: Mineral Deposits of Southern Africa

Coal has been mined at Wankie (Hwange) since 1903 and this coalfield had, until recently, managed to supply coal for the country's entire power needs. The most important coal seam in this field is the Main seam, which is up to 13m thick and contains both coking and steam coal. The coking coal fraction of this seam occurs at the bottom of the sequence. The coal has the following qualities (run-of-mine):

Table 4. Hwange coal qualities (total seam ROM)

Parameter	Unit	Value
Volatile matter	%	23.77
Fixed carbon	%	65.70
Ash	%	9.77
Moisture	%	0.76
Calorific value	MJ/kg	31.40

Source: Mineral Deposits of Southern Africa

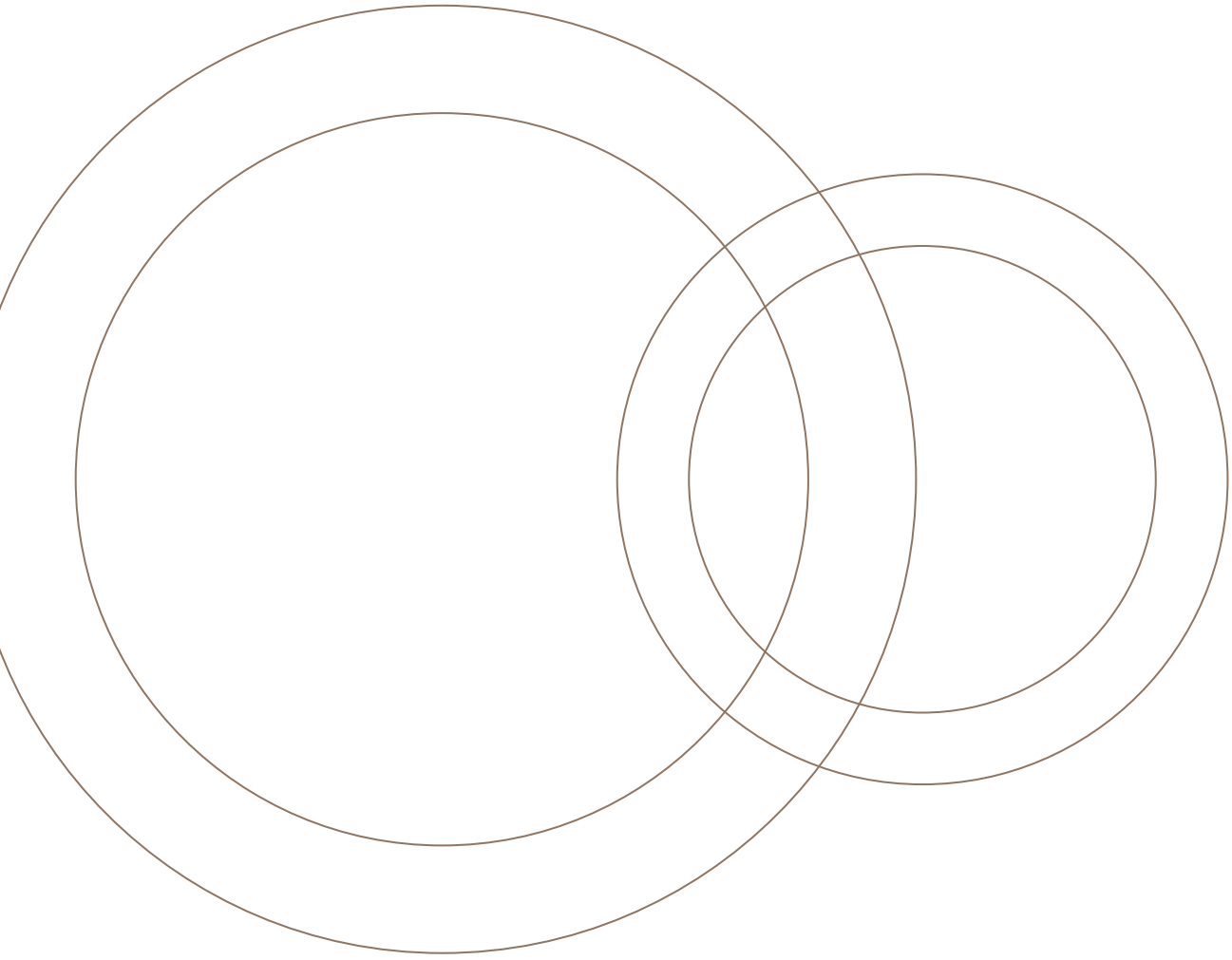
Exploration activities – history and potential

Modern exploration techniques are expected to increase the country's prospectivity.

Although the country has been extremely well mapped historically, the economic situation in the last ten to 15 years has repelled companies from laying out the necessary capital on exploration. This has put the country at a disadvantage compared to other African states, where exploration activities were accelerated during the commodity boom.

Techniques such as remote sensing, satellite data and aeromagnetic surveying were not available when most of the mapping of the country was undertaken (early 1900s until 1970s). Geographical information systems or GIS, which did not exist at this time, provide an extremely powerful tool for geological exploration. It is expected that once these tools and techniques are employed in Zimbabwe, there will be an even better understanding of the geology in the country.

Commodity overview



Gold

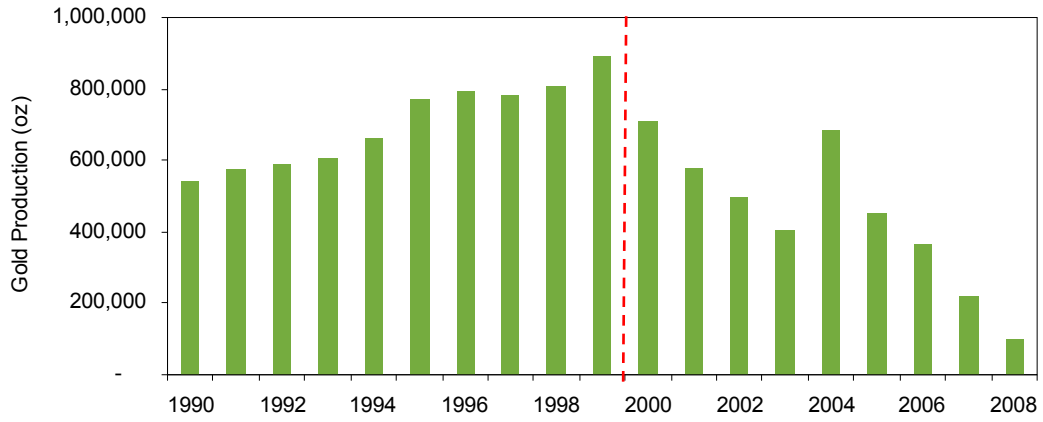
Production overview

Zimbabwe's gold production has fallen dramatically since 2000.

Zimbabwe's gold production has fallen dramatically since the government enforced the policy that all gold be sold directly to the central bank at an unrealistic exchange rate. This ruling has subsequently been revoked and sparked renewed activity in the gold mining sector with a number of operations reopening in Q2 2009. It was also announced in February 2009 that gold miners would be allowed to retain foreign currency earnings. Although the state monopoly on gold has been lifted, the uncertainty on ownership laws is likely to keep big mining houses away from exploring the country's gold deposits. However, developments in 2009 may well revive Zimbabwe's gold mining industry.

The graph below illustrates the steep decline in gold production since 1999. The economic downturn in Zimbabwe began in earnest in 2000. Prior to this, gold production was increasing year on year, reaching almost 900 000 ounces in 1999.

Figure 32. Zimbabwe's annual gold production (oz)



Source: United States Geological Survey

Gold mining potential

Over 4 000 gold deposits have been discovered in Zimbabwe to date.

Most of Zimbabwe's 4 000 plus deposits are quartz vein type deposits, associated with localised shear zones. The majority of deposits that have been exploited have been those previously mined by artisanal miners and those that outcrop on surface. This implies there could well be scope for further discoveries with no surface expression. Further exploration, using modern exploration methodologies, may well lead to the discovery of additional resources.

Now that the state's monopoly on buying and selling gold has been lifted, production levels and exploration activity are likely to increase.

Developments in gold sector

The table below summarises developments in the gold mining industry in Zimbabwe from 1994 to date:

Table 5. Developments in the Zimbabwean gold mining industry

Date	Gold news
1994	Gold production was Zimbabwe's leading mineral sector and accounted for 44% of mineral exports and 48% of the value of total mineral exports.
1995	Gold production remained country's leading mineral sector.
	Gold Trade Act gave government monopoly on buying and selling all gold and silver produced.
1996	More than 500 gold companies registered in Zimbabwe.
1997	Gold production remained flat.
	Government closed all foreign currency accounts and mining companies were forced to pay for equipment and supplies using devalued local currency.
	Government pursued indigenisation policy to increase black Zimbabweans' equity interests in multinational mining operations.
1998	Gold still the country's leading mineral sector and production remained at around 25t despite closure of several large mines.
1999	Gold production increased to 27.7t (+11%), despite the closure of several mines.
2000	Gold production declined for the first time in 20 years.
	Gold miners at a disadvantage to other companies as all gold had to be sold to the central Reserve Bank of Zimbabwe with payment in local currency at a fixed rate, which was lower than the rate at which the companies could buy foreign exchange.
2001	Gold sector (second-largest in Zimbabwe after tobacco) suffered from weakened economy and government policies. Gold production decreased by 35%.
	In June, Reserve Bank announced it would increase its hard currency holdback of export proceeds to 40% from 25%.
	20 gold and granite mines temporarily occupied by war veterans.
2002	40 significant gold mines closed due to government policies. Gold production decreased by 45%, but gold remained second-largest export earner after tobacco.
2003	Gold industry continued to suffer due to government policies.
2004	All gold to be sold to Fidelity Printers and Refiners.
2005	Gold contributed approximately 50% of the value of total mineral production in Zimbabwe.
	Several small gold producers closed by the government for failing to keep records of gold sales.
2006	Gold production decreased by 19% but still accounted for 26% of the value of minerals produced in Zimbabwe.
2007	Many smaller gold mines closed due to non-compliance with environmental legislation.
	Numerous gold producers did not receive payment for gold produced.
2008	Gold production decreased by 55% y-o-y.
2009	Announcement by the central bank in February 2009 that it would relinquish its role as mandatory sales agent for gold sales. At the same time, it was announced gold miners would be allowed to retain foreign currency earnings.

Source: United States Geological Survey

Historical ownership of gold mines

The table below details changes in ownership of the gold mines that operated and are currently operating in Zimbabwe:

Table 6. Summary of mining companies active in Zimbabwe from 1994 to present

Date	Mining companies	Mine/project	Status
1994	Cluff Resources Zimbabwe Ltd (Cluff)	Freda Rebecca	UG (underground) mine operating
	Falcon Gold Zimbabwe Ltd (Falgold)	Golden Quarry Mine	Acquired mine
	Olympus Gold Mines	Old Nic Mine	Expansion
	Kinross Gold Corp (Kinross)	Golden Kopje Mine	Expansion
		Blanket Mine	Under construction
	Antares Mining and Exploration Corp (Antares)	Lady Lina Project	Exploration (UG)
	ZMDC	Sabi Mine	Seeking JV partner to expand
	Rio Tinto Zimbabwe Ltd	Patchway Mine	Refurbishing
	Independence Mining (Pvt) Ltd	Athens Mine	Refurbishing
	(Lonrho subsidiary)	Shamva and How Mines	Expansion
1995	Kinross	Blanket Mine	Expansion
	Trillion Resources Ltd & ZMDC	Jena Mine	Producing
		Kadoma E, Mutare W&E projects	Exploration
	Oliver Gold Corp	C Mine and Camp Mine	Acquired 50% from Maple Leaf
	Easton Minerals	Goodenough Mine	Acquired majority interest
	ZMDC	Sabi Mine	Guyana Gold Corp acquired as partner
	Antares	Lady Lina Project	UG development
	Casmyn Corp (Casmyn)	Turk, Peter Pan, Lonely Mines	Casmyn acquired mines from Matabeleland Minerals (Pvt) Ltd
1996	Ashanti Goldfields	Freda Rebecca	Acquired mine from Cluff 106 000oz produced
	Falgold	Golden Quarry Mine	Cut back on mining operations
	Lonrho	9 mines	Laid off workers
	Casmyn	Turk Mine	Tailings reprocessing
	Delta Gold	Globe and Phoenix mines, Bell Riverlea Mine and Dalling Mines	Acquired from Falgold
	Kinross	Blanket Mine	Producing
		Golden Kopje Mine	Sold
	Oliver Gold Corp	C Mine and Camp Mine	Increased shareholding in Maple Leaf Mining
	Trillion Resources Ltd & ZMDC	Jena Mine	Deepened shaft
		Indarama Mine	Bought and renamed Ndarama
	African Gold plc	Beehive Mine	Started production
	Anglo American	Bubi Mine	Started production
	Delta Gold	Chaka Mine	Expected to produce in 1998
		Eureka Mine	Expected to produce in 1999
	Cambrian Resources NL	Giant Mine	Option to acquire 55%
	Reunion	Maligreen Project	Feasibility started
		Magondi Project	Drilling
		Silobena Project	JV with Prospecting Rift Resources Ltd

Date	Mining companies	Mine/project	Status
1998	Ashanti Goldfields	Freda Rebecca	108 450oz gold produced
	Battlefield Minerals Corp	Pickstone Peerless Mine	Treatment plant in construction
	Casmyn	Turk Mine	Producing 21 000oz/annum
		Queens Group of Mines	Production
	Falgold	Dalny and Venice Mines	Closed – option for mine acquired by Bayham Mining Ltd
	Kinross	Blanket	Produced 35 000oz of gold
	Delta Gold	Chaka Mine	Commissioned
		Eureka Mine	Under construction
	Sabi Gold Mines Ltd	Sabi Mine	Expansion
	Trillion Resources	Ndarama Mine	Proposed expansion
1999	Casmyn	Turk Mine and 18 other smaller gold mines	Filed for bankruptcy
	Delta Gold	Eureka Mine	Commissioned
2000	First Quantum Minerals Ltd	Connemara Mine	Closed
	Delta Gold	Eureka Mine	Closed
	Falgold	Venice Mine	Closed
	Ashanti	Freda Rebecca	Produced 112 200oz
		RAN Project	Exploration
	Battlefield Minerals Corp	Pickstone Peerless Mine	Operated at a loss, claims transferred to UDC Holdings Ltd
	Cluff Mining Plc	Maligreen project	Acquired project from Reunion First gold mined in Aug 2000
	Falgold	Dalny Golden Quarry	Produced 41 800oz gold
	Trillion Resources	Jena Mine	Sold its stake to partner ZMDC
	Kinross	Blanket Mine	34 550oz gold produced
	Lonmin	Arcturus, How, Mazowe, Muriel, Redwing Shamva Mines	189 000oz produced
	Rio Tinto Zimbabwe	Renco and Patchway Mines, Cam dump	70 400oz produced
2001	Consolidated Trillion Resources	All	Closed
	Delta (now Aurion Gold)	All	Closed
	Falcon Gold	All	Closed
	First Quantum	All	Closed
	ZMDC	Sabi Mine	Placed on care-and-maintenance
	Cluff Mining	Maligreen project	Produced 12 500oz gold
	Rio Tinto Zimbabwe	Renco and Patchway Mines, Cam dump	70 000oz produced Dump completed
	Kinross	Blanket Mine	Produced 39 500oz
	Lonmin	Arcturus, How, Shamva Mines	169 000oz gold produced
		Muriel Mine	Closed
2002	Ashanti Goldfields	Freda Rebecca Mine	Produced 102 600oz
	Rio Tinto Zimbabwe	Renco Mine Patchway Mine	Produced 38 000oz gold
	Kinross	Blanket Mine and tailings	43 000oz gold produced
	Lonmin	Arcturus, How and Shamva Mines	178 500oz gold produced Company sold assets to Pemberton Int Investments Ltd
	Cluff Mining Plc	Maligreen project	Closed
	Falcon Gold	Dalny and Golden Quarry	Production declined

Date	Mining companies	Mine/project	Status
2003	AngloGold Ashanti (ANG)	Freda Rebecca	51 000oz produced, company seeks buyers for the mine
	Rio Tinto Zimbabwe	Renco Mine	Production dropped to 25 000oz
		Patchway Mine	Patchway Mine sold
	Kinross Gold Corp	Blanket Mine	No gold produced
	ZMDC	Elvington Mine	Placed on care-and-maintenance
	Falgold	Dalny and Golden Quarry Mines	27 200oz gold produced
2004	ZMDC	Sabi Mine	Reopened mine
	Mwana Africa Holdings (Mwana)	Freda Rebecca	Purchased from ANG
2005	Metallon Corporation	Arcturus, How and Shamva Mines, Mazowe	Acquired Independence Minerals from Lonmin
	ZMDC	Elvington Mine	Reopened
	Mmakau Mining / Shaft Sinkers	Eureka Mine	Acquired mine
	Duration Gold Ltd	Wanderer Mine	Acquired mine
		Athens, Durban, Gaika, Wueens, Sunace, Umviga Mines	Duration agreed to acquire mines
2008	Metallon Gold	Arcturus, How and Shamva Mines, Mazowe	Mines put on care-and-maintenance in Nov
	New Dawn Mining	Turk and Angelus Mines	On care-and-maintenance
2009	Metallon Gold	Arcturus, How and Shamva Mines, Mazowe	Two reopened, rest on care-and-maintenance
	New Dawn Mining	Turk Mine and Angelus Mine	Mine reopened
	Mwana Africa	Freda Rebecca	Mine expected to be reopened
	Caledonia Mining	Blanket Mine	Mine reopened

Source: United States Geological Survey

Gold mining companies currently operating in Zimbabwe

Metallon Gold

Metallon Gold is a private company with gold mines in Zimbabwe.

Metallon Gold is a private company with gold mines in Zimbabwe. It is owned by Mzi Khumalo, a South African businessman, through Metallon Corporation. Production capacity is estimated at 150 000 ounces per annum, but the company closed all its mining operations in 2008 due to the economic crisis and not receiving payment for gold delivered.

Since then, however, the How and Shamva mines have reopened. The company stated it would need to raise USD6 million to restart its mines. Metallon used to produce more than 50% of Zimbabwe's gold output.

Table 7. Metallon Gold Zimbabwe project summary

Project name	Status	Reserves	Resources
How Mine	Operating	Unknown	5.3m ounces gold (reported as at Nov 2005)
Shamva Mine	Operating		
Redwing Mine	Care-and-maintenance		
Arcturus Mine	Care-and-maintenance		
Mazowe Mine	Care-and-maintenance		

Source: Company reports

New Dawn Mining

New Dawn is a TSX-listed company (TSX: ND) with operations in Zimbabwe and South Africa.

New Dawn is a Toronto-listed company (TSX: ND) with operations in Zimbabwe and South Africa. It wholly owns the Turk and Angelus gold mines in Zimbabwe. The mines were bought by Casmyn Mining in 1995 and since then have produced 120 000 ounces of gold from surface dumps, opencast and underground mining operations. Turk mine has resumed operations and is again producing after being placed on care-and-maintenance in 2008.

Table 8. New Dawn Mining Zimbabwe project summary

Project name	Status	Reserves (koz)	Resources (koz)
Angelus Project	Exploration	0	59
Turk Mine	Mining	160	1 088

Source: Company reports

Mwana Africa

Mwana is an AIM-listed exploration and junior mining company focused on gold, nickel, base metals, and diamonds in Zimbabwe, the DRC, South Africa and Ghana. Only the Bindura Nickel, Freda Rebecca gold (both in Zimbabwe) and Klipspringer diamond mines (RSA) have published reserves.

Table 9. Mwana Africa Zimbabwe gold project summary

Project name	Status	Reserves (koz)	Resources (koz)
Freda Rebecca	Opening	350	1 000

Source: Company reports

Freda Rebecca is expected to resume production towards end 2009 after it was also placed on care-and-maintenance. The Bindura mines have been placed on care-and-maintenance due to the low nickel price.

Caledonia Mining

Caledonia Mining is a Canada-registered company, with a focus on mining in Africa. It holds the Nama cobalt project in Zambia, Rooipoort platinum project in South Africa and Blanket Gold mine in Zimbabwe.

Table 10. Caledonia Mining Zimbabwe project summary

Project name	Status	Reserves (koz)	Resources (koz)
Blanket Mine	Operating	464	932

Source: Company reports

The Blanket mine, which was acquired from Kinross in 2006, resumed operations in mid-2009 and expects to resume annual production of 24 000 ounces by year end.

African Consolidated Resources (ACR)

ACR is an AIM-listed company with exploration and development projects for gold, platinum, nickel, and diamonds in Zimbabwe. All projects are still at the exploration phase. The only deposits with stated mineral resources are the Giant and Peerless Pickstone gold projects, detailed below:

Table 11. ACR Zimbabwe project summary

Project name	Status	Reserves (koz)	Resources (koz)
Giant	Exploration	None	334
Peerless	Exploration	None	546

Source: Company reports

RioZim

Renco mine produced 14 700oz gold in 2008, down 30% from 21 150oz in 2007.

RioZim is a ZSE-listed mining company with gold, coal and diamond operations in Zimbabwe, as well as a nickel refinery.

Table 12. RioZim project summary

Project name	Status	Reserves (koz)	Resources (koz)
Renco	Producing	82.8	368
Spot	Care-and-maintenance	0.8	

Source: Company reports

Central African Gold (CAG)

CAG is an AIM-listed gold exploration company with gold assets in Zimbabwe and other African countries. Trading was suspended as the company failed to publish its annual report in time. No production is currently taking place. Production in FY2006 totalled 21 000oz.

Table 13. CAG Zimbabwe project summary

Project name	Status	Reserves (koz)	Resources (koz)
Falgold	Care-and-maintenance	1 400	505
Olympus	Care-and-maintenance	280	400

Source: Company reports
Note: Falgold is 80% held and Olympus 100% held by CAG

Duration Gold Limited

Duration Gold Limited is a private company wholly owned by Clarity Capital. It is focused on gold mining and exploration in Zimbabwe and has a total resource base of 3.61Moz. Although it holds 73 historical gold mines and deposits, it is focused on the Gaika, Athens and Vubachikwe gold mines. Other advanced projects include the Peter Pan, Durban, Sundance, Hope Fountain, Queens and Wanderer gold mines.

The company was formed in 2006, but operations were closed in 2008 due to the political situation. The mines reopened in February 2009. The company is aiming to produce 250 000oz per annum from the operating mines. The company has stated that “acquisition of additional producing and advanced-stage assets is also expected to bolster the company's annual production”.

The company recently announced the closing of the first tranche of a USD8m private placing. Proceeds will be used for resource and reserve confirmation, expansion of the Vubachikwe mine's CIL processing plant, general working capital and for acquisitions.

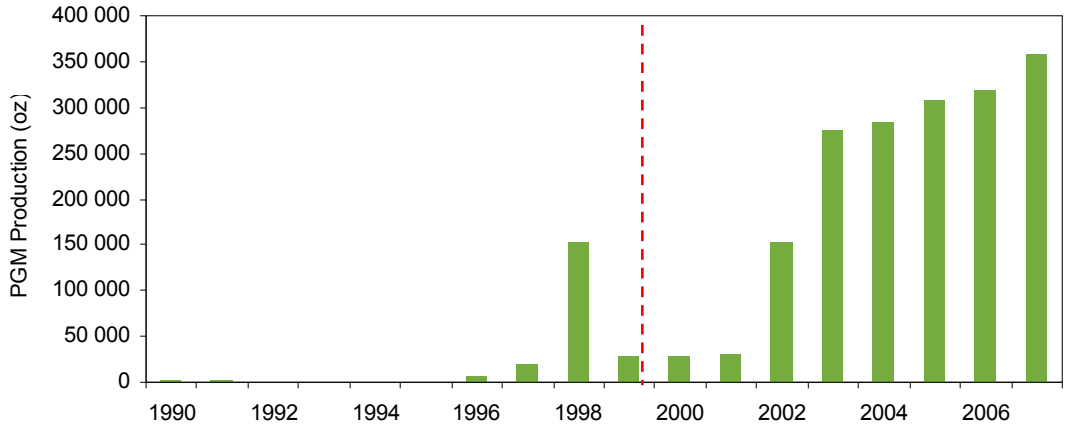
PGMs

Zimbabwe hosts the world's second-largest PGM deposit.

Zimbabwe production overview

Zimbabwe hosts the world's second-largest PGM deposit, but only produces 3% of the world's platinum. PGM production began in Zimbabwe in 1996 and only gathered momentum in 2002. Since then, production has been increasing and the latest figures available indicate that 2008 production would have been very similar to 2007 (approximately 350 000oz). All current PGM production comes from Impala Platinum's Zimplats (87% held by Impala) and Mimosa (50:50 JV with Aquarius Platinum) mines, with a 55%:45% split. Production from these two operations is expected to increase by some 55% once the Zimplats expansion is complete.

Figure 33. Zimbabwe's annual PGM production (oz)



Source: United States Geological Survey

The locations of the largest PGM producers in Zimbabwe are illustrated in the diagram below:

Figure 34. Platinum occurrences on the Great Dyke

Source: Impala Platinum

Platinum potential

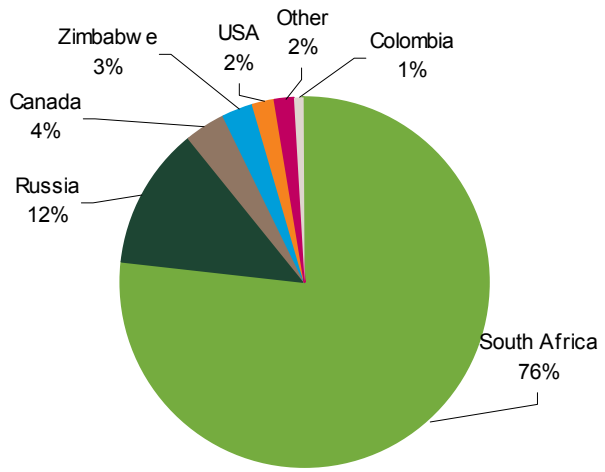
Zimbabwe's platinum production could reach 1moz in 10-15 years.

The Chamber of Mines president Victor Gapare has estimated that Zimbabwe's platinum production could reach up to a million ounces in ten to 15 years.

Anglo Platinum's Unki mine is scheduled to be commissioned in late 2009 and, if it does come into production, it will add a further 175 000 ounces (4E) per annum to Zimbabwe's PGM production profile. Other platinum projects currently being evaluated include Camec's Bogai project and Kameni's Bougai project, which are one and the same. This project will, however, only come into production in 2012, if ownership issues are resolved and the feasibility study proves positive.

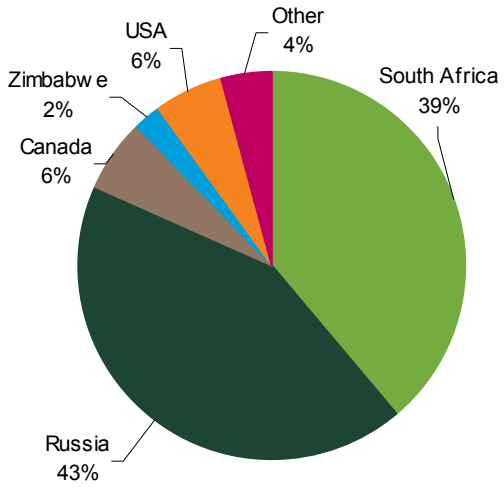
This represents an increase of almost 500% from current levels of 170koz per annum. This target seems very ambitious, but considering that Zimbabwe has the world's second-largest PGM deposits, if exploration starts again and new projects are brought on line, this target could become a reality.

Figure 35. World platinum production (2008)



Source: United States Geological Survey

Figure 36. World palladium production (2008)



Source: United States Geological Survey

Even though Zimbabwe has the second-largest platinum deposit in the world, it is still only the fourth-largest producer of platinum (3% of world production) and palladium at 2% of world production (2008).

Developments in platinum industry

Table 14. Developments in the Zimbabwean platinum mining industry

Date	Platinum news
1918	Platinum discovered on the Great Dyke
1996	First platinum produced by Hartley Mine
1998	Mimosa came on line
2000	Platinum production dropped by 80% with only Mimosa Mine operating
	Zimplats controlled all the PGM assets in the Hartley, Ngezi, Mhondoro and Selous areas (resources totalled 9.7 million kilograms of PGMs)
	Anglo American put Unki project on hold due to loss of confidence in Zimbabwe
2002	PGM production increased by 500% with the Makwiro project (Zimplats) in operation
2003	Mining costs affected by revised foreign exchange control system, which included a controlled currency auction system that resulted in a decrease in the exchange rate
2005	Unki underground infrastructure development started
2006	Zimplats and Mimosa only mines producing PGMs, Unki still under development
2009	Zimplats and Mimosa only mines producing PGMs, Unki still under development

Source: United States Geological Survey

Historical ownership of Zimbabwe's platinum mines

Table 15. Summary of platinum mining companies active in Zimbabwe from 1994 to present

Date	Mining companies	Mine/project	Status
1994	BHP Minerals	Hartley	Construction begins
	Zimasco	Mimosa	Trial mining
	Rio Tinto Zimbabwe/Delta Gold	Mhondoro project	Exploration
	Delta Gold	Selous project	Exploration
1995	BHP Minerals	Hartley	Construction continuing
	Zimasco	Mimosa	Producing 40 000tpm ore
	Rio Tinto Zimbabwe/Delta Gold	Mhondoro project	Exploration
	Delta Gold	Selous project	Exploration
1996	BHP Minerals	Hartley	Construction continuing
	Zimasco	Mimosa	Producing 20 000tpm ore
	Rio Tinto Zimbabwe/Delta Gold	Mhondoro project	Exploration
	Delta Gold	Selous and Ngezi projects	Exploration
	Anglo American	Unki project	Exploration
	Zimbabwe Geological Survey/ Metal Mining Agency of Japan	Snakes Head	Exploration
1997	BHP Minerals	Hartley	Producing 60 000tpm ore
	Anglo American	Unki project	Pre-feasibility study completed
	Delta Gold	Ngezi project	Feasibility study under way
1998	BHP Minerals	Hartley	Plagued by technical problems
	Anglo American	Unki project	Feasibility study completed
	Zimplats	Ngezi project	Feasibility study expanded
1999	BHP Minerals	Hartley mine	Closed, sold to Zimplats
		Mhondoro project	Interest sold to Zimplats
2000	Zimasco	Mimosa mine	Producing
	Zimplats	Ngezi	Seeks finance to develop project
	Anglo American	Unki project	Put on hold
2001	Zimplats	Makwiro project (near Ngezi)	Commissioned
	ZCE Platinum (Aquarius/Implats)	Mimosa mine	Planned increase in production
2002	Zimplats	Makwiro project (near Ngezi)	Producing
		Ngezi mine	In full production (included under Makwiro)
	ZCE Platinum	Mimosa mine	Increasing production
2003	Anglo American	Unki project	Plans to proceed with project
	Zimplats (Makwiro PGM mines)	Ngezi mine	In full production
	ZCE Platinum	Mimosa mine	Completed expansion
2004	Zimplats	Ngezi mine	Producing
	ZCE Platinum (Mimosa Investments Ltd)	Mimosa mine	Producing
2005	Zimplats	Ngezi mine	Proposed new expansion
	Mimosa Investments	Mimosa mine	Proposed Wedza Phase IV project
	Anglo Platinum	Unki	
2006	Zimplats	Ngezi mine	Producing, mostly from UG
	Mimosa Investments	Mimosa mine	Wedza project completed
	Anglo Platinum	Unki	UG infrastructure development
2007	Mimosa Investments	Mimosa mine	Producing
	Anglo Platinum	Unki	Developing slowly
	Zimplats	Ngezi mine	Producing
2008	Mimosa Investments	Mimosa mine	Producing
	Anglo Platinum	Unki	Developing slowly
	Zimplats	Ngezi mine	Producing

Source: United States Geological Survey

Platinum companies currently operating/exploring in Zimbabwe

Zimplats (held 87% by Impala Platinum)

Zimplats is listed on the ASX.

Zimplats is a PGM mining company listed on the ASX. It is exploiting the Ngezi mine in Mhondoro, Zimbabwe. The mine began as an open-pit operation, but has since opened up underground mining sections and is slowly moving towards being an underground mine.

Table 16. Zimplats's Zimbabwe mine/project summary

Project name	Status	Production (000oz/a)	Reserves Moz) 6PGE	Resources (Moz) 6PGE
Ngezi Mine	Operating	184	26	151
Hartley Project	Exploration	N/A	0	22
Other oxides	Exploration	N/A	0	4.5

Source: Company reports

Implats/Aquarius 50:50JV

Impala Platinum and Aquarius Platinum hold the Mimosa platinum mine in a 50:50 joint venture. The mine is located in the southern section of the Great Dyke in the Wedza complex.

The Mimosa lease comprises four areas, North, South, Far South Hill and the Mtshingwe Block with each of the areas separated by faults. Unlike much of the Great Dyke, Mimosa has a well-defined grade profile with an identifiable reef horizon marker facilitating grade control.

Table 17. Impala Platinum and Aquarius Platinum's Zimbabwe mine/project summary

Project name	Status	Production (000oz/a)	Reserves (Moz) 4PGE	Resources (Moz) 4PGE
Mimosa Mine	Operating	163	4	16

Source: Company Reports

Anglo Platinum (80% Unki)

The Unki project is located near the town of Gweru.

The Unki project is located near the town of Gweru, Zimbabwe, on the south-central section of the Great Dyke. The project, once up and running, is expected to produce 175 000 ounces per annum. Construction of the concentrator plant is well under way, with commissioning planned for December 2009 and the mine reaching steady state in 2010.

Table 18. Anglo Platinum's Zimbabwe mine/project summary

Project name	Status	Production (000oz/a)	Reserves (Moz) 4PGE	Resources (Moz) 4PGE
Unki	Exploration	N/A	4.7	13

Note: ounces are quoted as attributable to Anglo Platinum
Source: Company reports

Central African Mining & Exploration Company Plc (CAMEC)

Camec is an Africa-focused mining and exploration company involved in many projects in numerous countries including copper and cobalt (DRC), coal (Mozambique and South Africa), platinum (Zimbabwe and South Africa), fluorspar (South Africa) and bauxite (Mali). The company holds the Bougai (also referred to as Bokai) and Kironde platinum projects in Zimbabwe, held through its 60% ownership of Todal Mining, the licence holder. ZMDC holds the remaining 40%.

Table 19. Camec's Zimbabwe mine/project summary

Project name	Status	Production (000oz/a)	Reserves (Moz) 4PGE	Resources (Moz) 4PGE
Bokai	Exploration	120-150 (once in production)	0	10.69

Source: Company reports

Kameni

Kameni is a relatively new company, focused on PGM and chrome exploration in South Africa and Zimbabwe. The company recently raised R300 million in seed capital to develop both the South African and Zimbabwean projects. The Bougai project's tenure is, however, currently under dispute, as CAMEC claims to hold the same licence.

The Bougai project is located approximately 40km south of Anglo Platinum's Unki development project. Historical drilling has been carried out to some extent on the project, but all this drilling will have to be verified before it can be used to estimate a SAMREC-compliant resource for the project.

Table 20. Camec's Zimbabwe mine/project summary

Project name	Status	Production (000oz/a)	Reserves (Moz) 4PGE	Resources (Moz) 4PGE
Bougai	Exploration	none	none	10*

** not SAMREC compliant*

Source: Company reports

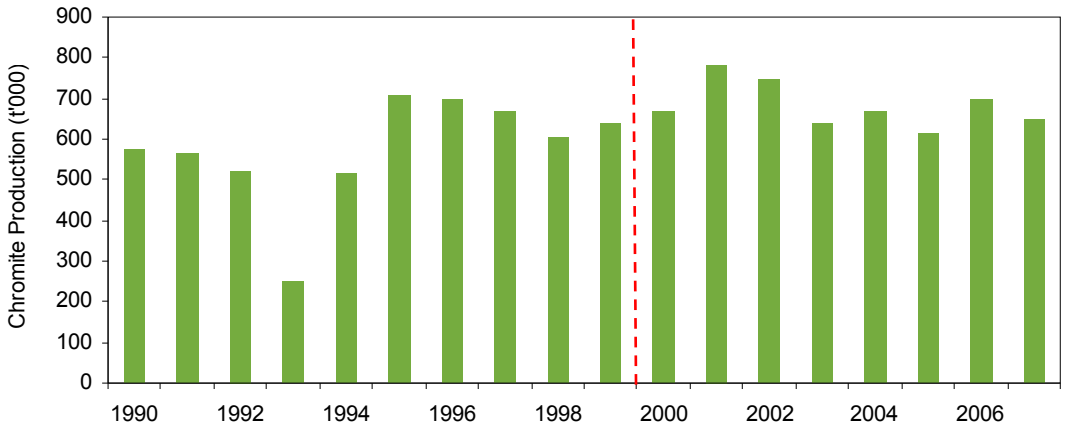
Chromite

Production overview

Chrome production in Zimbabwe has remained relatively constant, around the 600 000tpa level, over the past 15 years and does not seem to have been affected by Zimbabwe's economic difficulties.

Zimasco and Zimalloys have historically been the major miners of chromite and producers of ferrochrome in Zimbabwe, with chromite production coming from Inyala, Middle Dyke, North Dyke and South Dyke (Zimalloys) and Peak, Railway Block, Valley, South Dyke, Middle Dyke and Mutorashanga (Zimasco). The ore is processed at either the Gweru (Zimalloys) or KweKwe (Zimasco) smelters.

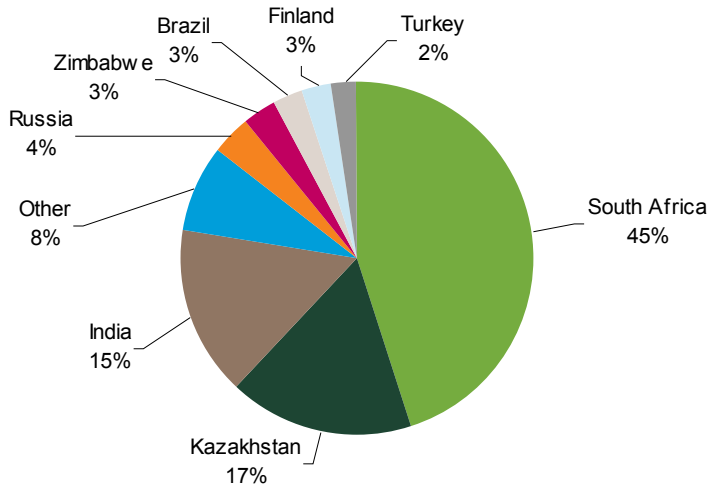
Figure 37. Zimbabwe's annual chromite production (000t)



Source: United States Geological Survey

Zimbabwe produced 3% of global ferrochrome in 2007.

Figure 38. World chromite production by country (2007)



Source: United States Geological Survey

Future potential

Zimbabwe's chromite mining and ferrochrome production is monopolised by Chinese Sinosteel as the company now holds 73% of Zimasco. Kameni has also stated it will be exploring for chrome on its Bougai exploration property, which is currently undergoing a tenure dispute. Numerous opportunities exist for further exploration and development of projects on the Great Dyke.

Developments in chromite mining industry in Zimbabwe

The following table summarises activities in the Zimbabwean chromite mining and ferrochrome production industry:

Table 21. Developments in the chromite mining industry

Year	Chromite mining and ferrochrome production news
1994	Union Carbide Zimbabwe (Pvt) Ltd bought out Union Carbide Corp (ZIMASCO a subsidiary of Union Carbide Zim) – KweKwe smelter reopened.
	Zimalloys (a subsidiary of Anglo American Corporation) – mining from Zimalloys North Dyke Mine.
1995	Zimalloys, Japan Metals & Chemicals and Mitsui&Co entered into a joint venture.
1996	Zimalloys began mining chromite at Airstrip Mine near Inyala mine.
1997	Low FrCr prices forced Zimalloys to suspend mining at Great Dyke II and Inyala chrome mines.
2000	Zimasco increased production.
	Zimalloys also increased production – experienced problems at Nyala mine, and bought most of its ore feed from local independent miners.
2001	Zimalloys closed its low-carbon FrCr plant at Gweru to convert it to a high-carbon FrCr plant.
2003	Zimasco only operated at 30-70% capacity.
2005	ZimAlloys sold by Anglo American to Benscore Investments (Pvt).
	Chinese consortium proposed building a high-carbon ferrochrome smelter at Selous.
2006	Price of chromium increased exponentially.
	ZMDC and a Russian firm formed Ruscole Investments to explore for chrome on the Great Dyke.
	Exploration also in the Ngezi area for chrome.
2007	Sinosteel Ltd of China acquired 73% of Zimasco.

Source: United States Geological Survey

Chromite mining companies currently operating in Zimbabwe

The table below summarises the two main producers of chromium in Zimbabwe:

Table 22. Chromite producers in Zimbabwe

Company name	Owned by	Mines	Smelters	Capacity
Zimalloys	Benscore Investments	Inyala, Middle Dyke, North Dyke, South Dyke	Gweru	40 000tpy (LCF) 45 000tpy (HCF) 30 000tpy (ferrosilicon)
Zimasco	Sinosteel	Peak, Railway Block, Valley, South Dyke, Middle Dyke, Mutorashanga	KweKwe	220 000tpy (HCF)

Source: United States Geological Survey

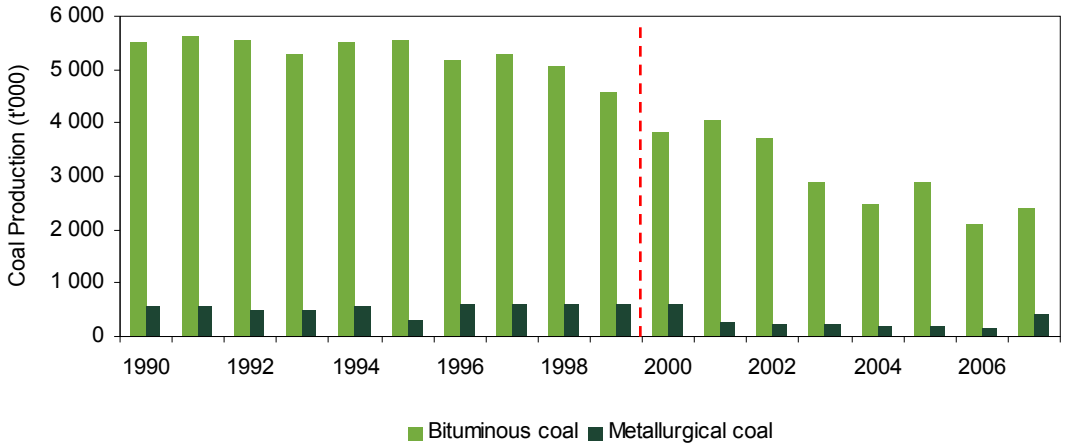
Coal

Production overview

Hwange Colliery has historically been the country's only coal producer.

Hwange Colliery, located in the western portion of Zimbabwe, has historically been the country's only coal producer. Production has, however, been steadily declining as the company is plagued by high operating costs, ageing equipment and government policies that set the price of coal below the company's operating costs. The company has recently secured USD25 million from three South African institutions, which will be used to restore ageing equipment. Current capacity utilisation at the mine is only around 30% or 150 000tpm. If this improves, the company will be able to supply greater quantities of coal to Hwange power station, located next to the mine. Zimbabwe requires 380 000tpm or 4.56Mtpa for power to be restored to historical levels.

Figure 39. Zimbabwe's annual coal production (000t)



Source: United States Geological Survey

Potential

Zimbabwe has a substantial Karoo covering.

As evident from Figure 22 in the Geology section, Zimbabwe has a substantial Karoo covering, which hosts the coal horizons. Some exploration has been carried out in each of the coalfields, however all this has been curtailed as the coal in many of the coalfields was found to be of low quality.

The best potential lies in the Zambezi coalfield around the existing Hwange coalfield, as well as to the north of this area, where RioZim is developing the Sengwa mine. Infrastructure (road, rail) is the major constraint in coalfield development and Zimbabwe's infrastructure is currently in disrepair.

Recent developments in coal mining in Zimbabwe

The following table details recent developments in the Zimbabwe coal industry:

Table 23. Recent history of coal mining in Zimbabwe

Date	Zimbabwe coal industry news
1996	Hwange is the only coal mining company in Zimbabwe. RTZ planned to develop Sengwa coalfield.
1997	Hwange production constrained by local demand. Shagani Energy and Discovery Exploration developing coal-bed methane resources in Lupane.
1998	Hwange developing M block mine to supplement No 3 Mine.
2000	RTZ conducting feasibility study on developing Gokwe North Coal project to support a new 350MW power plant to be developed by the government. This was never built.
2002	Coal prices set at Z$1 300/t of power station coal, above Hwange's production costs.
2003	Lack of foreign exchange and spare parts for maintenance caused Hwange's production to decline by 24% per annum. Company planned to expand coking coal capacity to take advantage of rising prices of coke used in the ferrochrome and steel industries.
2004	Hwange's M Block closed due to lack of reserves. Beta Holdings leased Sengwa coal mine from RTZ.
2006	Hwange commissioned Chaba open-pit mine. 3 Main underground mine continued to produce coal for electricity generation and metallurgical facilities. RTZ resumed mining coal at Sengwa Mine.
2007	Hwange's Chaba and 3 Main continued production. Steelmakers Chiredzi Mine operating. RTZ Sengwa Mine operating. Firmo Pty Ltd and Kutamba Family Trust Tuli Mine operating. Signet Mining Ltd in JV with Firmo to evaluate the Massaabi coalfield.

Source: United States Geological Survey

Coal mining companies currently operating/exploring in Zimbabwe

The following companies have active coal mines in Zimbabwe.

Hwange Colliery (38% held by government of Zimbabwe)

Hwange is Zimbabwe's leading coal mining company. It is listed on the ZSE.

Hwange is Zimbabwe's leading coal mining company. The Hwange colliery produces thermal coal for the country's only operational coal-fired power station, coke and associated by-products at a rate of approximately 2Mtpa.

Table 24. Hwange reserves (March 2009)

Type of coal	Production (Mtpa)	Reserves (Mt)	Resources (Mt)
Coking/industrial	1.8	112.9	Not stated
Power/thermal		92.6	Not stated

Source: Hwange Colliery Company Ltd annual report 2008

RioZim

RioZim is a ZSE-listed mining company with gold and coal operations (Sengwa Colliery) in Zimbabwe, as well as a nickel refinery. The Sengwa colliery is not currently operating.

Table 25. Summary of Sengwa Colliery (2008)

Project name	Status	Production (Mtpa)	Reserves (Mt)	Resources (Mt)
Sengwa	Care-and-maintenance	1.053	519	1 500

Source: Company reports

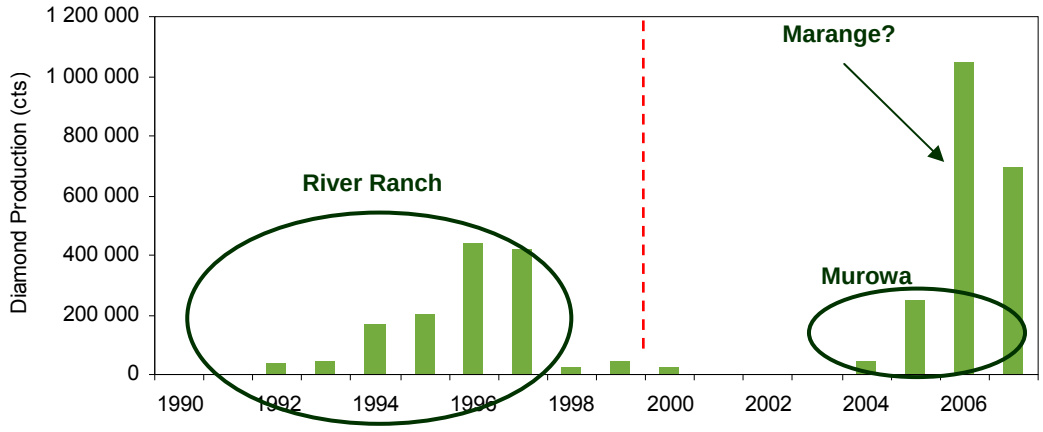
Diamonds

Production overview

Diamonds were first discovered in Zimbabwe in 1903 (alluvial) and 1907 (kimberlite).

Diamonds were first discovered in Zimbabwe in 1903 (alluvial) and 1907 (kimberlite). To date approximately 80 kimberlites have been discovered in Zimbabwe, mostly by De Beers and Rio Tinto. Zimbabwe's first diamond mine opened in the 1990s (River Ranch). The Murowa diamond mine (Rio Tinto) followed in the early 2000s and became operational in 2004.

Figure 40. Zimbabwe's annual diamond production (carats)



Source: United States Geological Survey

The massive increase in production in 2006 is thought to be due to the invasion of the Marange diamond fields by illegal miners. Recorded production for 2006 from the other two producers in the country was:

- River Ranch: 0 carats
- Murowa Diamond Mine: 240 000 carats

Production in 2007 was also influenced by Marange, as Murowa only totalled 145 000cts for this period.

Potential

Further discoveries of kimberlites considered unlikely.

Only a handful of economic kimberlites have been identified in Zimbabwe. All these discoveries were made by either Rio Tinto or De Beers, both companies having spent considerable time exploring the country for diamonds prior to the 1990s. As only a few discoveries were made by these diamond-focused companies, further discoveries are considered unlikely, with the only potential lying below the thick Karoo covering in the east of the country.

Diamond mining companies currently operating in Zimbabwe

River Ranch Ltd

The River Ranch Diamond Mine is located near the border with South Africa, close to Beit Bridge. The River Ranch kimberlite was discovered by De Beers in 1971, but was first exploited by an Australian company, Auridium, which entered into a joint venture with a Canadian company Redaurum. It started producing in the early 1990s and production peaked at 400 000 carats per annum in 1996.

The mine closed in 1998.

The mine closed in 1998 due to low international diamond prices. At this time the mine was held by Bubye Minerals (Pvt) Ltd. Presently it is owned by River Ranch, which is owned by Saudi Arabian billionaire Adel Aujan and Solomon Mujuru, Zimbabwe's former army commander and husband of the country's vice-president Joyce Mujuru.

River Ranch was, however, not permitted to sell its diamonds, at least up to the end of 2007, because of an ownership dispute. It is now allowed to sell its diamonds under the Kimberley Process, but it is unclear how many stones were sold in 2008 and 2009.

Table 26. Technical summary of River Ranch mine

Project name	Status	Production (cts)	Reserves (cts)	Resources (cts)
River Ranch	Operating	No publicly available information	No publicly available information	No publicly available information

RioZim/Rio Tinto

RioZim holds 22% of Rio Tinto's Murowa diamond mine, which began operating in 2004. Two economically viable kimberlites occur on the property and mining is via open-pit and underground methods.

Table 27. Technical summary of RioZim's diamond operation (2008)

Project name	Status	Production (cts)	Reserves (cts)	Resources (cts)
Murowa	Operating	264 000	11 000 000	500 000*

** Resources additional to reserves*

Source: Company reports

Rockover Resources

The Tsholotsho diamond project, previously owned by SouthernEra, is now held by Rockover Resources. The EPO is located in western Zimbabwe on the border with Botswana. This project area is considered prospective for primary diamondiferous kimberlite deposits and lies within what is known as the Orapa kimberlite track, which is a south-west/north-east trending kimberlite emplacement corridor extending from Botswana into Zimbabwe. No kimberlites have been discovered as yet.

Marange alluvial diamond project

The Marange diamond project was one of the most contentious mineral projects in Zimbabwe.

The diamond fields are spread over a large area of alluvial deposits, in Chiadzwa, Mutare West, Zimbabwe. African Consolidated Resources (ACR) acquired the project in 2006 but by December of the same year the Zimbabwe government, through the Zimbabwe Mining Development Corporation (ZMDC) had expropriated the mine from ACR. ZMDC started mining at Marange and was looking for a partner to increase productivity at the operation (currently producing approximately 60 000cts/m), even though ownership issues had not been resolved.

At the same time as the companies were fighting for ownership, the mine was overrun by illegal miners. The situation became very tense during government crackdowns (2006-2009) when the government sent in the army to clear the project of illegal miners. It is reported that between 86 and 140 illegal miners were shot and killed by the Zimbabwe Air Force in November 2008.

The High Court of Zimbabwe has however subsequently ruled against this expropriation, and the project has been returned to ACR.

Copper

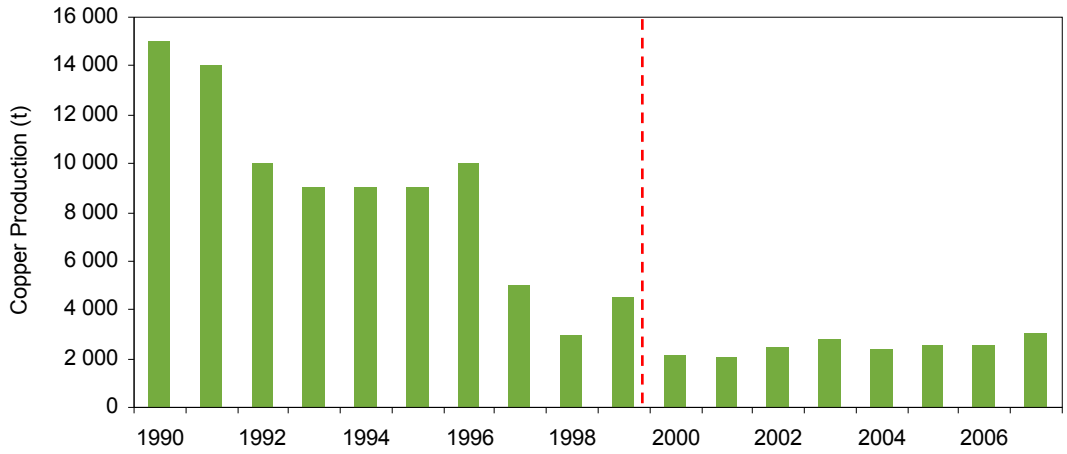
Production overview

Zimbabwe's copper production has declined to current levels of approximately 2 000t per annum since highs of more than 14 000t per annum in the early 1990s. In 2000, the Mhangura Copper Mines were nearly depleted and Munyati Copper Mines suspended operations.

Since 2000, copper has been produced by several small-scale mines located on the Proterozoic Magondi belt in the north-western part of Zimbabwe and as a by-product from PGM mining.

Copper production has been declining in recent years because of the depletion of known reserves and low exploration expenditure.

Figure 41. Zimbabwe's annual copper production (t)



Source: United States Geological Survey

Potential

Little exploration for copper is currently taking place in Zimbabwe.

Zimbabwe is not a typical copper-producing country like its neighbour Zambia or the DRC. Little exploration for copper is currently taking place in Zimbabwe and there is limited potential for future increases in production.

Copper is often associated with gold and PGM deposits, and therefore production is expected to increase, albeit marginally, in line with the expected increases in these commodities.

Recent developments in copper mining in Zimbabwe

Table 28. Recent history of copper mining in Zimbabwe

Date	Zimbabwe copper industry news
1994	Mhangura Copper Mines Ltd was the country's principal copper producer. Production from one remaining mine, the Miriam shaft (low-grade, 0.65% Cu). Sanyati prospect investigated by Reunion Mining plc (oxides and sulphides evaluated).
1995	Munyati Mining Co (owned by Reunion and ZMDC) started producing copper from Sanyati oxides. Bindura Smelter and Refinery Ltd (Bindura) was producing A-grade copper cathode (toll treated matte from Botswana).
1996	Mhangura still operating despite financial difficulties. Lomagundi Smelting and Mining Pvt Ltd stopped mining the Shackleton copper mine in September. Munyati operations on track.
1997	Government stepped in to rehabilitate operations at Mhangura and Lomagundi. Munyati operations continued despite sulphuric acid supply problems.
2000	Mhangura reserves almost depleted and mine placed on care-and-maintenance. Munyati suspended operations as Reunion bought by AAC and withdrew from mine.
2001	Mhangura mine closed.
2003/4	Copper produced as a by-product of the PGM mines.
2006	Zimbao Mining Ventures formed by Wambao Shinex of China (51%) and ZMDC (49%) to evaluate reopening Mhangura and Sanyati copper mines and Lomangundi smelter/refinery.
2007	Copper produced as a by-product of the PGM mines. Copper produced from Bindura's Trojan nickel mine as a by-product.

Source: United States Geological Survey

Copper mining companies currently operating/exploring in Zimbabwe

ZMDC

ZMDC brought the Sanyati copper mine into production in the early 2000s and processes the copper via heap leaching.

Table 29. ZMDC resources and reserves

Project name	Status	Production (Mt)	Reserves (Mt)	Resources (Mt)
Sanyati	Resource development	Not operating	64 000	176 000
Mhangura Copper Mines	Not operating	Not operating	69 000	unknown

Source: Company reports

Mhangura is almost completely mined out and used to buy copper concentrate from the DRC's Gecamines to process through its plant. The agreement is no longer in place and now the mine obtains concentrate from South Africa and other small Zimbabwean operators.

RioZim

The Empress Nickel Refinery produces copper as a by-product of nickel. The concentrate is obtained from mines in Botswana. The company does not have any independent copper mines.

Nickel

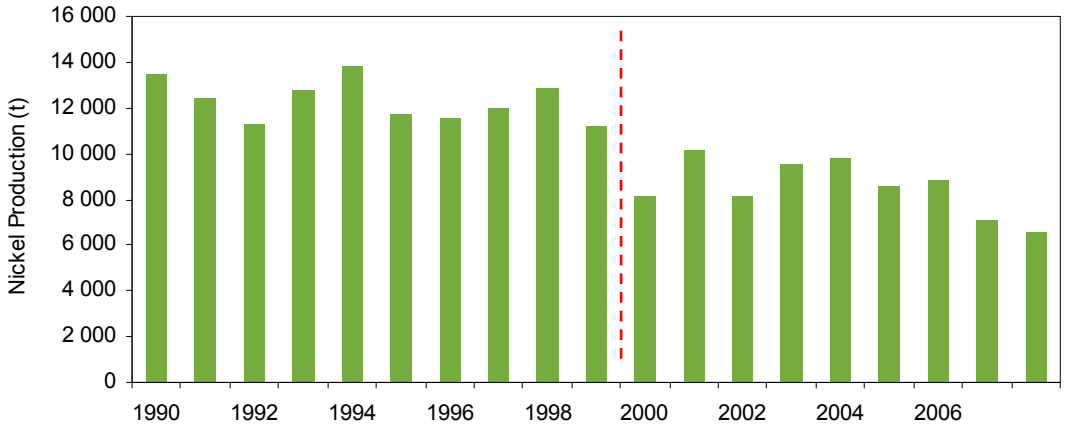
Zimbabwe's nickel production overview

Due to the low nickel price and operational and power problems, Zimbabwe's biggest nickel producer, Bindura Nickel Corporation, placed its two operations (Trojan and Shangani mines) on care-and-maintenance at the end of 2008. This is the only nickel miner in Zimbabwe. A smelter and refinery are also located at the Trojan mine.

A feasibility study on the Hunters Road (Mwana Africa) deposit near KweKwe was completed recently, but Mwana does not intend to produce nickel from this project in the near future as development of the project has only marginally progressed. Nickel production will not, however, come to a complete standstill, as the metal is also produced as a by-product of PGM mining, which is ongoing in Zimbabwe.

Nickel production has steadily been declining, from a high of 14 000t in 1994 to only 6 500t in 2008.

Figure 42. Zimbabwe's annual nickel production (t)



Source: United States Geological Survey

RioZim's Empress Refinery is still operational; however it only produced 4 066t in 2008. The metal is produced from matte (a mixture of sulphides that forms when sulphide metal ores are smelted) sourced from Botswana (previously from Australia and South Africa).

Even though nickel mines in Zimbabwe attempted to take advantage of the massive price hike in the metal by deepening shafts, etc, the country's economic instability destroyed these prospects. Mwana reported that a loss of technical skills, poor mine fleet availability, procurement difficulties and power outages all played a part in decreased production in 2008 and the final decision to place the mines on care-and-maintenance at the end of that year.

Recent developments in nickel mining in Zimbabwe

Table 30. Recent history of nickel mining in Zimbabwe

Date	Zimbabwe nickel industry news
1994	Bindura Smelter and Refinery boasted record nickel cathode production. RTZ's Empress nickel refinery toll treated matte from Selebi Phikwe smelter in Botswana.
1995	Production decreased as Bindura's Shangani mine was closed for two months due to an accident. Empress Refinery expanded capacity.
1997	Proposed that Bindura's Madziwa and Epoch mines be closed and Hunters Road nickel property developed. Empress Refinery's output constrained by limited nickel matte from Botswana.
1998	Trojan mine underwent USD1.1million shaft-deepening programme. Epoch mine closed due to declining nickel prices and poor ground conditions. Hunters Road project shelved temporarily. Toll treatment of matte from Botswana and Australia at both Bindura's smelter and RTZ's Empress Refinery exceeded nickel production from locally sourced concentrates.
2000	Nickel production from Bindura's Madziwa, Trojan and Shangani mines continued. Toll treatment of nickel matte continued at RTZ's Empress Refinery.
2001	Bindura's Madziwa mine closed. Production from Trojan and Shangani mines increased, as did production from the smelter. Both Bindura and RTZ continued toll treating matte from Botswana.
2002	Production from Trojan and Shangani mines continued, but due to lack of feedstock, the Bindura smelter's production decreased by 13%. Because of perceived political risk, Bindura lost its contract to toll treat material from Nkomati nickel mine in South Africa at year end.
2003	**Anglo American sold its 52.9% shareholding in Bindura to Mwana Africa for USD8 million.** Two capital projects were completed at Bindura's operations: rebuilding the nickel smelter and construction of a new decline at Shangani mine. Production declined as a result of decreased matte received from SA and Botswana.
2004	Hunters Road project evaluated again. **Rio Tinto's interest in Empress nickel refinery spun off into Rio Tinto Zimbabwe Ltd.**
2006	Trojan shaft deepened to access further resources and extend the life of mine. Development of a conveyor decline commenced at Shangani to access deeper ore. Hunters Road feasibility in progress.
2008	Trojan/Shangani mines affected by economic problems, reducing cash flows. Nickel production declined by 26%. Hunters Road feasibility completed, indicating a 20-year LOM (life of mine). RTZ produced 4 066t nickel.
2009	Mwana's Bindura Nickel Corporation (BNC) was moved to care-and-maintenance.

Source: United States Geological Survey

Nickel mining companies currently operating/exploring in Zimbabwe

Mwana – Bindura Nickel Corporation

Mwana holds a 52.9% stake in Bindura Nickel Corporation (BNC), stated as being the only integrated nickel mine, smelter and refinery operation in Africa. The company also toll treats material sourced from Botswana at its smelter and refinery. This made up 44% of total nickel production in FY2009.

BNC is currently on care-and-maintenance.

Table 31. Technical summary of Mwana's nickel operation

Project name	Status	Production (t Ni) 2009	Reserves (t Ni)	Resources (t Ni)
Trojan	Care-and-maintenance	2 145	12 385	151 350
Shangani	Care-and-maintenance	960	25 109	57 360
Hunters Road	Feasibility	N/a	175 086	243 230

Source: Company reports

RioZim – Empress Refinery

The Empress Refinery toll treats nickel and copper.

The Empress Refinery toll treats nickel and copper matte from BCL and Tati Nickel in Botswana. Empress mine, which used to supply the refinery, is no longer operational.

The toll treatment contract is set at 17 500t per annum and the refinery has capacity to produce 700t of nickel and 700t of copper per month. It also produces cobalt and PGM concentrates.

The refinery is currently operating at around 80% capacity, producing 550t nickel and 550t copper.

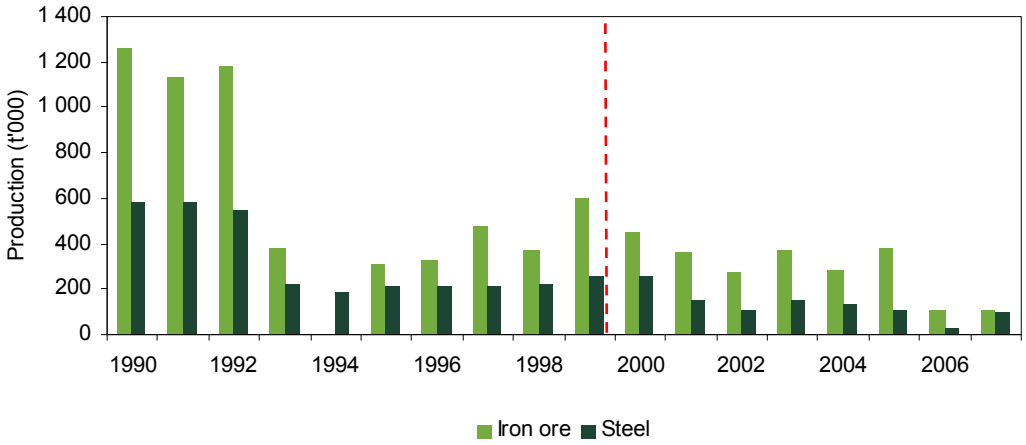
Iron ore

Production overview

Zimbabwe is well endowed with haematite and limonite deposits, such as those found at Buchwa and Ripple Creek, which are currently in production, as well as the unexploited Mwenezi and Nyuni deposits.

Iron ore production has declined from highs of over 1Mt per annum in the early 1990s to less than 100 000t in 2007.

Figure 43. Zimbabwe's annual iron ore and steel production (000t)



Source: United States Geological Survey

Zimbabwe Iron and Steel Company (Zisco) is the largest steelworks in Zimbabwe. It is located outside Kwekwe, in Redcliff. Over the years, the company has faced many operational problems and has been dogged by countless corruption scandals. As of early 2008, the company was producing less than 12 500 tonnes of iron ore, way below the break-even capacity of 25 000t per annum. It is wholly owned by the government of Zimbabwe.

ArcelorMittal SA announced in August 2009 that it had submitted a bid for Zisco.

ArcelorMittal SA announced in August 2009 that it had submitted a bid for Zisco. Further details are expected in due course. This is a clear indication that interest from international mining groups is growing and that upside potential exists in the Zimbabwe iron ore mining industry.

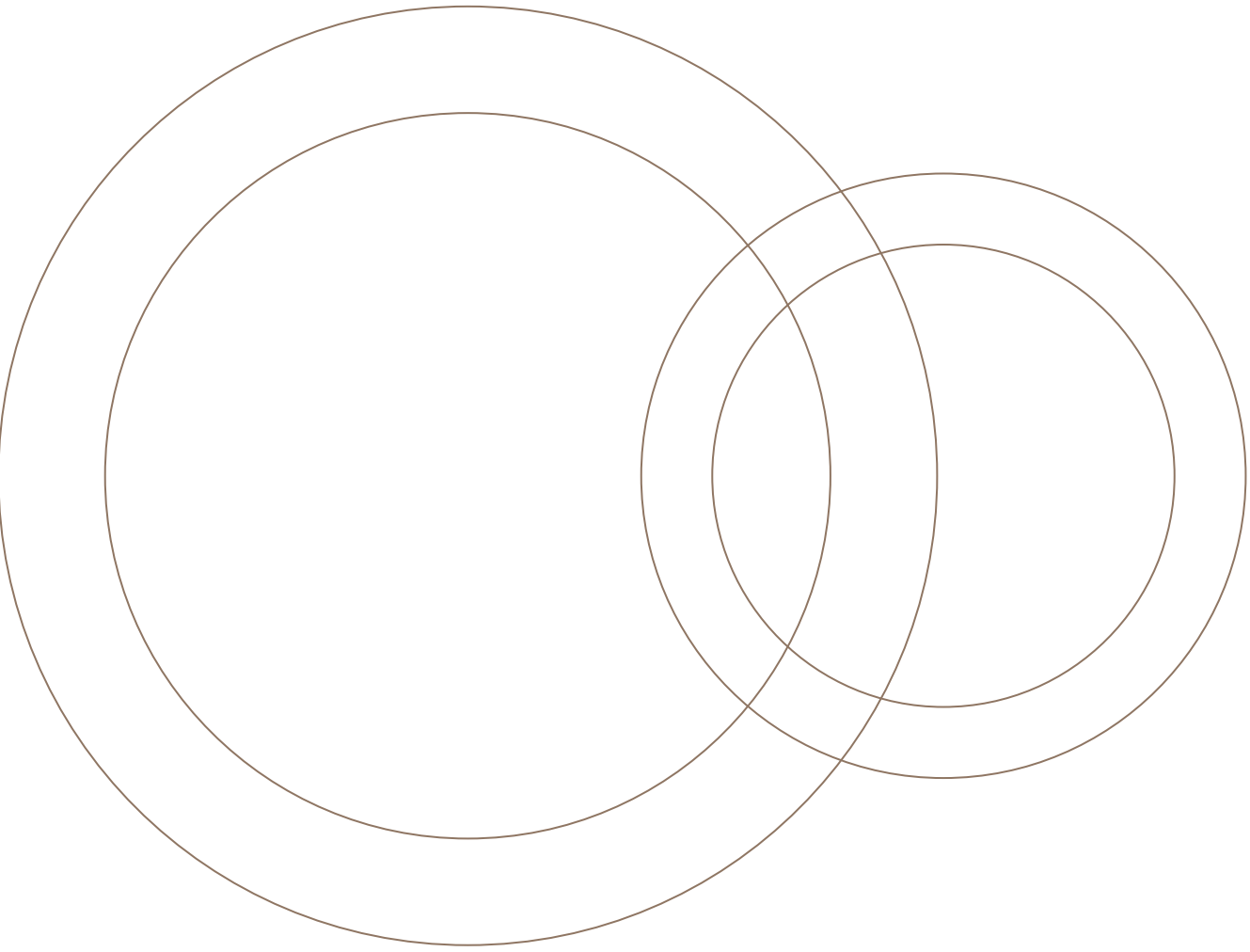
Recent developments in iron ore mining in Zimbabwe

Table 32. Recent history of iron ore mining in Zimbabwe

Date	Zimbabwe iron ore industry news
1994	Buchwa Iron Mining Company (Bimco) operated the Buchwa iron ore mine, where production was minimal. Bimco's new iron mine, Ripple Creek, under construction. Zimbabwe Iron and Steel Co (Zisco) No 3 blast furnace down for three months. Zisco's No 4 blast furnace closed.
1995	Ripple Creek construction continued. Zisco's No 4 blast furnace still closed.
1996	Buchwa iron ore closed. Ripple Creek iron ore mine operating, but below capacity due to No 4 blast furnace being closed. Zisco's No 4 blast furnace still closed.
1997	Ripple Creek ore supplied to new sinter plant in Redcliff. Zimbabwe government initiated a partial privatisation of its 89% interest in Zisco, but only received unsatisfactory bids.
1998	Zisco's No 4 blast furnace still undergoing reconstruction by China's Shougang International.
2001	Zisco's production decreased by 40% after violent protest action due to unsatisfactory wage increases. Zisco had difficulty paying suppliers of coal, electricity and iron ore.
2002	Zisco's crude steel production decreased further to 105 000t.
2003	Zisco received assistance from China to maintain its operations. Lack of working capital reduced operating levels to about 20% of capacity, inadequate to even meet domestic demand.
2005	Zisco sank deeper into debt. Operational issues including coal and electricity supply and rail transportation problems scared away potential investors, Shougang International of China.
2006	Zisco involved in alleged corruption, financial mismanagement and looting of Zisco funds by government ministers and other senior officials. Steelmakers Zimbabwe (Pvt) Ltd commissioned a sponge iron plant in Masvingo.
2007	Redcliff facility doubled capacity. Government continued to seek investors to fund the rehabilitation of Zisco.
2008	ArcelorMittal South Africa showed interest in taking stake in Zisco.

Source: United States Geological Survey

Feedback from our site visits



New Dawn Mining (TSX: ND)

New Dawn Mining is a junior gold mining company.

New Dawn Mining is a junior gold mining company focused on southern Africa. The company owns the Turk and Angelus gold mines in Zimbabwe and the Blue Dot mine, which is on care-and-maintenance, in South Africa. The company was formed 12 years ago and, before the economic collapse in Zimbabwe, New Dawn produced around 14 000 ounces per annum. This declined to 8 651 ounces before it was placed on careand-maintenance in the second half of 2008. Production restarted in February 2009.

Table 33. New Dawn fact sheet (ND_CN)

Quoted on	TSX: ND
Ruling price (CAD ps)	1.40
52-week high (CAD ps)	1.85
52-week low (CAD ps)	0.05
Shares outstanding (m)	29.02
Free float (m)	14.42
Market capitalisation (CAD)	40.62m
Operations	Turk/Angelus, Blue Dot
Resources (million oz gold)	1.161
Reserves (million oz gold)	0.165
Annual production (oz gold)	22 000 – 50 000 (projected), currently 14 000oz
Cash costs (USD/oz)	Approx 500 in ramp-up phase
Capital costs (USDm)	Approx 10-15 (maintenance: USD15/oz)

Source: Company reports, Bloomberg

Key investment themes

Our visit to Turk mine confirmed that this asset is very well developed and that near-term production targets of 22 000-23 000 ounces per annum are readily achievable. In 2007 the company produced 13 784 ounces of gold.

With a sound balance sheet (cash: USD3 million, no long-term debt), New Dawn should be able to complete refurbishment of the Turk mine.

Expansion to 35 000-50 000 ounces per annum depends on the company's ability to raise further funds and the strength of its cash flow. Management estimates capital requirements of USD10-15 million for this expansion.

Management is investigating the installation of a Deswik mill which would reduce particle size and improve gold recoveries. This could increase production levels and reduce unit costs, boosting cash flows. A Deswik mill has already been successfully installed at Aquarius Platinum's Kroondal plant.

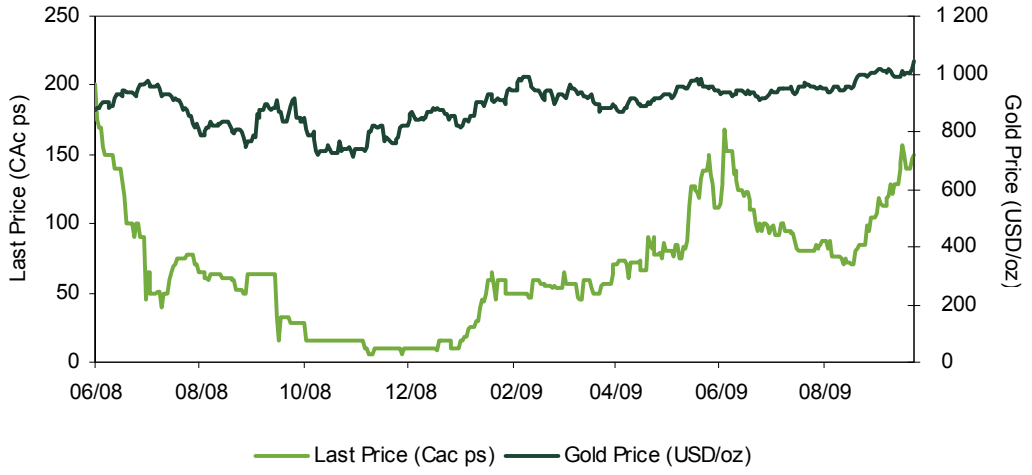
New Dawn currently has three exploration projects in the Bubi, Midlands and Shurugwi goldfields, all past producers. These, in addition to planned brownfields exploration on the Turk/Angelus tenement, are the basis for potential upside to resources and reserves.

In our view the company's sound fundamentals and an aggressive and proactive management team put New Dawn Mining in a strong position to drive consolidation in the very fragmented Zimbabwean gold sector.

On the downside we believe the company's cash cost assumptions of USD325/oz at 22 000-23 000 ounces per annum are too optimistic.

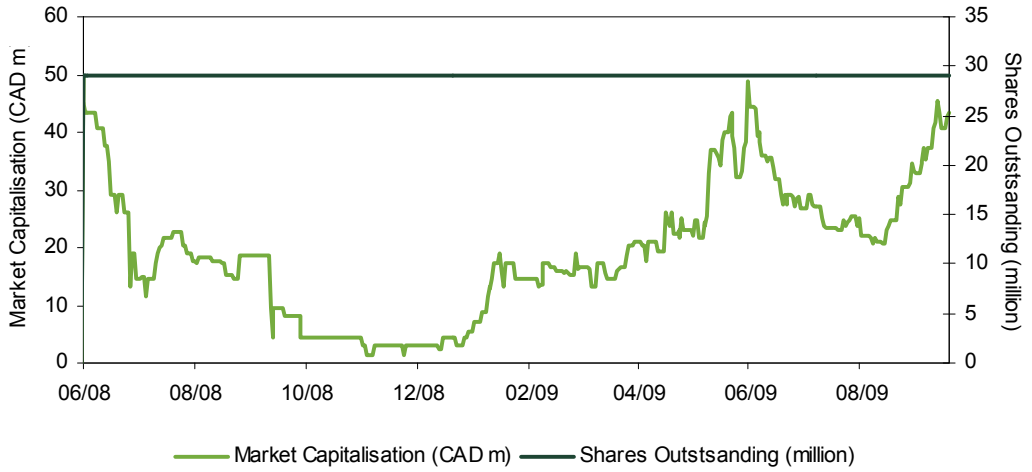
Market data

Figure 44. New Dawn's share price (CAc) versus gold price (USD/oz)



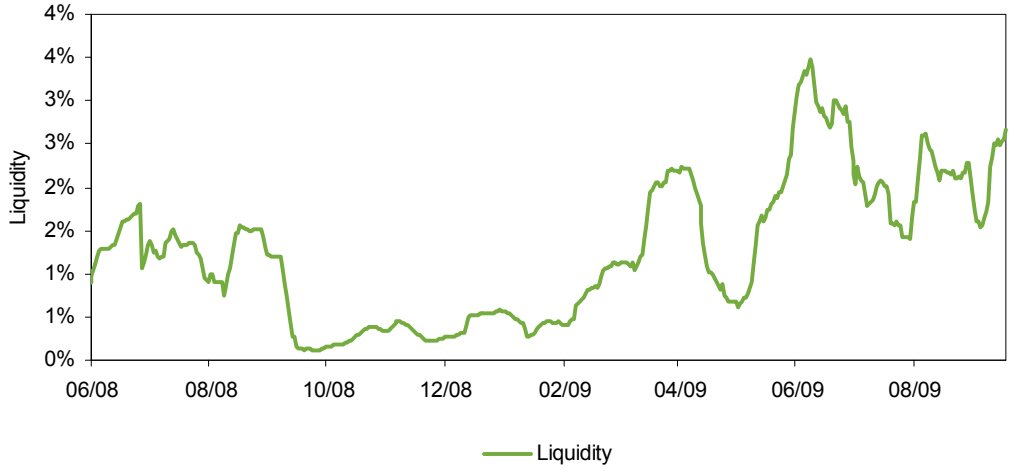
Source: Bloomberg

Figure 45. New Dawn's market capitalisation (CADm) versus shares in issue



Source: Bloomberg

Figure 46. New Dawn's liquidity (monthly)



Source: Bloomberg

Profiling management

The following table summarises New Dawn's senior management team:

Table 34. New Dawn's management team

Name	Designation	Past experience
Ian Saunders	President, CEO, director	Mr Saunders has a background in chemical engineering and worked for a number of Zimbabwean and South African mining companies before joining Casmyn as a metallurgist, becoming general manager in 1997. He was appointed CEO of the company in 2004.
Graham Clow	CFO	Mr Clow is a chartered accountant with over 25 years' experience. He has been working for New Dawn for the past four years.
Robert Weingarten	Director, chairman	Mr Weingarten served as the CFO between 2000 and 2005 after which he became chairman.
Divo Milan	Director	Mr Milan has over 20 years' experience in the fields of corporate finance, investment and merchant banking and venture capital in Mexico and South America.
Jon North	Director	Mr North is an experienced exploration geologist and has worked in the field for over 20 years. He obtained his doctorate from the University of Western Ontario in 1993.

Source: Company reports

Projects

Turk and Angelus mines (Zimbabwe)

The mines are located approximately 55km north of Bulawayo.

The Turk and Angelus mines are located approximately 55km north of Bulawayo. Exploitation of both operations predates the colonisation of Zimbabwe. From the early 1920s to 1963, and again from 1964 to 1995, they were mined by two family-owned companies. Casmyn, a subsidiary of New Dawn, then acquired both mines, along with various other properties in the area. The technical report by SRK Consulting (June 2007) states that the mines operated for long periods without geologists, with mining focused on mineralised fissures and pillar mining. Therefore very little geological information is available prior to 1995.

Figure 47. Turk mine surface infrastructure

Source: Nedgroup Securities

Figure 48. CIL plant at Turk mine

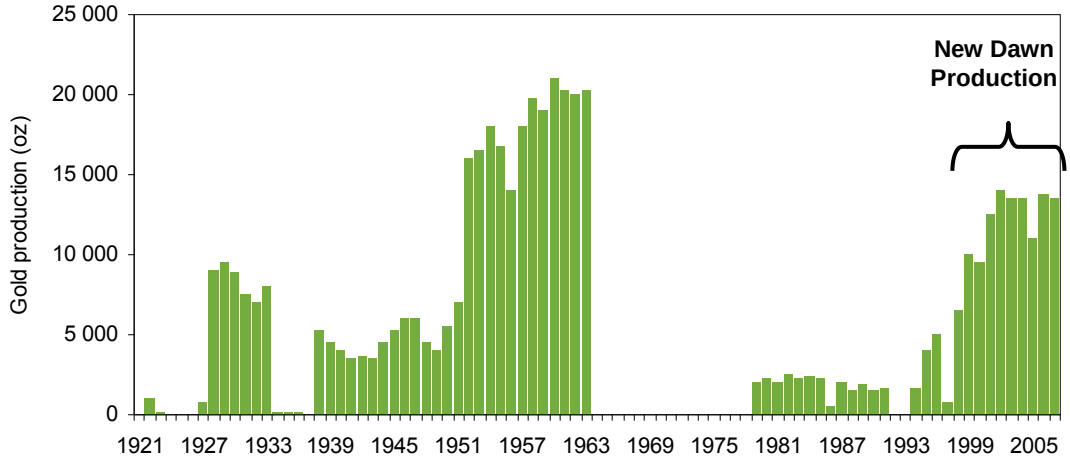
Source: Nedgroup Securities

The Turk and Angelus shafts are located approximately 400m apart, separated by a dyke. The Angelus ore body can be accessed underground via the Turk mine.

Casmyn began producing gold from the Turk mine in 1996 (dump retreatment) and 1998 (underground and opencast). Currently production is only sourced from underground.

The gaps in the chart are the result of missing records rather than periods of non-production.

Figure 49. Known historical production from Turk mine



Source: Adapted from SRK technical report (2007)

Blue Dot mine (South Africa)

The Blue Dot mine is located 28km south west of Sweizer Reneke.

The Blue Dot mine is located 28km south-west of Schweizer Reneke, in North-West province, South Africa. New Dawn has a 74% shareholding in the property, with balance held by a black economic empowerment company, as required by the South African Mineral and Petroleum Resources Development Act. The mine is held under an old-order mining licence which will have to be converted to a new-order mining right in the near future.

The mine only produced an estimated 17 000 ounces per annum between 1984 and 2002. Infrastructure currently consists of three shallow (less than 120m) surface shafts and a plant that is capable of processing up to 7 000 tonnes per month. The Blue Dot mine is not currently operational.

Geology

Turk and Angelus mines (Zimbabwe)

The mines are located in the Archaean greenstone belts. The deposits are made up of volcanic and sedimentary successions and mineralisation originated from hydrothermal intrusions along zones of structural weakness, namely steeply dipping shear zones and associated splays off these zones.

The Turk deposit has been estimated to strike for 800m, reaches a depth of greater than 800m and varies in thickness between 2.5m and 15m. Six separate mineralised shears have been identified.

Initially it was thought that the Turk and Angelus deposits were separate, but it has since been proved that the Angelus deposit is a faulted extension of the Turk structure.

The location of Turk/Angelus, as well as the company's other holdings (Peter Pan, Glen Hume, San Antone), are illustrated in the diagram below:

Figure 50. Geological setting of the Turk mine and exploration projects

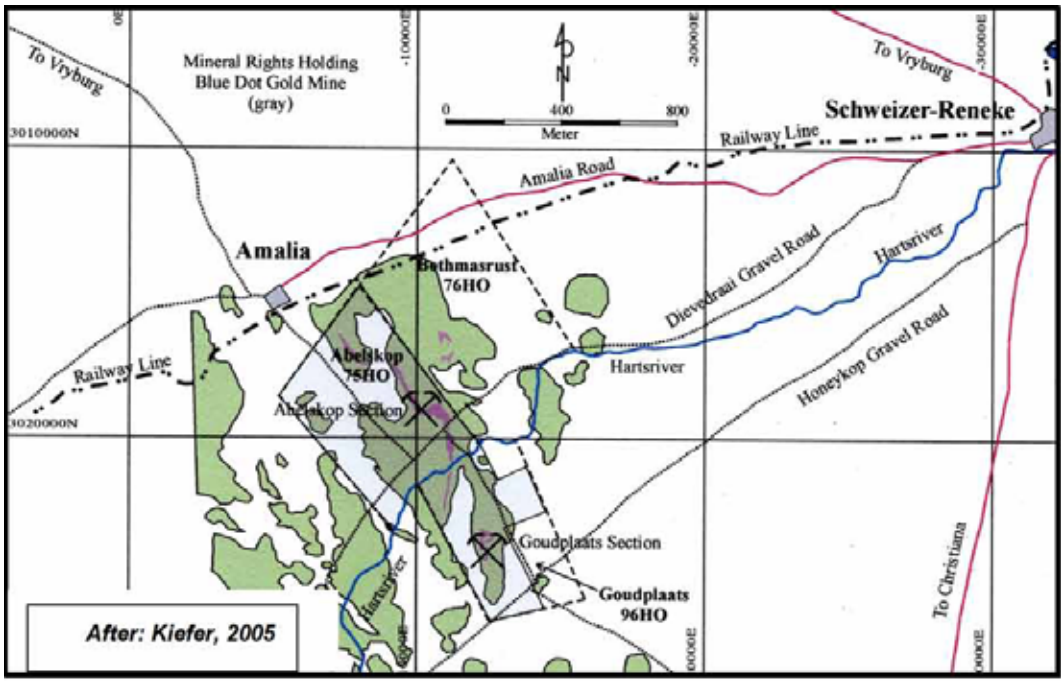
Source: SRK technical report (2007)

Blue Dot mine (South Africa)

Gold is located in the Amalia greenstone belt. Mineralisation is considered to be structurally controlled. The deposit is estimated to extend up to 120m below surface and is approximately 180m long.

Blue Dot holds the properties shaded in grey.

Figure 51. Location of the Blue Dot property



Source: Medusa technical report on Blue Dot mine (Dec 2008)

Mineral resources total 1.165moz from the three mines and reserves total 0.166moz

Resources

All resources are quoted as exclusive of reserves.

Turk and Angelus mines (Zimbabwe)

The Turk and Angelus resources and reserves were estimated using a gold price of USD625/oz.

Table 35. Turk mineral resources (2008)

Mineral resource category	Tonnes (t)	Grade (g/t)	Gold (oz)
Measured	478 000	4.21	65 500
Indicated	4 217 000	5.07	691 100
Inferred	1 998 000	5.16	331 700
Total	**6 693 000**	**5.23**	**1 088 300**

Source: New Dawn AIF 2008

Table 36. Angelus mineral resources (30 June 2008)

Mineral Resource Category	Tonnes (t)	Grade (g/t)	Gold (oz)
Measured	-	-	-
Indicated	220 000	6.10	43 200
Inferred	84 000	5.91	15 900
Total	**304 000**	**6.25**	**59 100**

Source: New Dawn AIF 2008

South African assets (Blue Dot)

Table 37. Blue Dot mineral resources (2008)

Mineral resource category	Tonnes (t)	Grade (g/t)	Gold (oz)
Measured	14 390	3.84	1 776
Indicated	76 650	3.20	7 870
Inferred	65 900	3.90	8 273
Total	**156 940**	**3.67**	**17 919**

Source: New Dawn AIF 2008

Reserves

Turk mine (Zimbabwe)

Table 38. Turk mineral reserves (2008)

Mineral reserve category	Tonnes (t)	Grade (g/t)	Gold (oz)
Proved	478 000	4.21	65 500
Probable	774 000	3.80	94 600
Total	**1 252 000**	**3.96**	**160 100**

Source: New Dawn AIF 2008

Blue Dot mine (South Africa)

Table 39. Blue Dot mineral reserves (2008)

Mineral reserve category	Tonnes (t)	Grade (g/t)	Gold (oz)
Proved	14 390	3.84	1 776
Probable	41 420	3.43	4 568
Total	**55 810**	**3.54**	**6 344**

Source: New Dawn AIF 2008

Mining

Underhand stoping is the dominant mining method.

Underhand stoping is the dominant mining method at the Turk operation. Ore is transported to surface via one of two vertical shafts (Main vertical shaft and Armenian shaft). A decline has also been used in the past, but is currently not operational.

The maximum mining rate from each shaft is 140 00tpm or 168 000tpa. At a grade of 4.5g/t, this equates to 24 000oz/annum. Current production is, however, only approximately 14 000oz/a. Life of mine at current rates is 11 years.

Figure 52. New Dawn management u/g[3]

Source: Nedgroup Securities

Figure 53. Old workings at Turk mine

Source: Nedgroup Securities

The Blue Dot mine is not currently operational.

Beneficiation

Ore is transported to surface for crushing, milling and leaching. Gold is eluted offsite at the Dawn mine.

Recoveries achieved were 88.8% in 2007 and 89.2% in 2008. The gold at Turk is slightly refractory. This is overcome by a grinding the ore to -45 microns (90%).

[3] The picture shows Ian Saunders (RHS), CEO of New Dawn Mining with Chris Hokonya, CEO of the Chamber of Mines of Zimbabwe.

Caledonia Mining Corporation (TSX (CAL), AIM (CMCL))

Caledonia is an exploration, development and mining company.

Caledonia Mining Corporation (Caledonia) is a Canada-registered exploration, development and mining company focused on southern Africa. Currently the company's main focus is getting the Blanket gold mine near Gwanda (Zimbabwe) back to full production and completing the expansion of Blanket's No 4 shaft. Caledonia also holds the Nama cobalt project in Zambia and two platinum/nickel exploration project in South Africa. In our view neither the Nama nor the platinum projects will advance to production in the near future.

The company was formed in February 1992 by the amalgamation of Golden North Resource Corporation, Thorco Resources Inc and Doelcam Mining Corporation. At the time, the company was focused on gold mining in Spain and Scotland and had two gold mines on care-and-maintenance in South Africa (Barbrook and Eersteling). Over the years Caledonia has been involved in numerous diamond, base and precious metal projects in southern Africa.

Table 40. Caledonia fact sheet (CAL_CN)

Quoted on	TSX: CAL, AIM: CMCL
Ruling price (CAD ps)	0.065
52-week high (CAD ps)	0.130
52-week low (CAD ps)	0.025
Shares outstanding (m)	500.22
Free float (m)	500.16
Market capitalisation (CAD)	32.51m
Operations	Blanket
Resources (attributable)	0.501moz (exclusive of reserves)
Reserves (attributable	0.450moz
Annual production	Ramping up to 24 000oz/a, targeting 40 000oz/a (depending on financing)
Cash costs estimates (USD/oz)	540
Capital costs estimates (USD)	2.4m

Source: Company reports, Bloomberg

Key investment themes

Of all the operations we visited, Blanket mine's surface infrastructure is in the best condition and requires the least refurbishment.

The operation's biggest problem is raising USD2.4 million to complete the shaft infrastructure. Failure to raise this funding means the project would have to be financed from of operating cash flows, delaying the build to targeted production levels of 40 000 ounces per annum. Initial production target is 24 000 ounces per annum by Q3 2009 which would give Blanket mine a 17-year life.

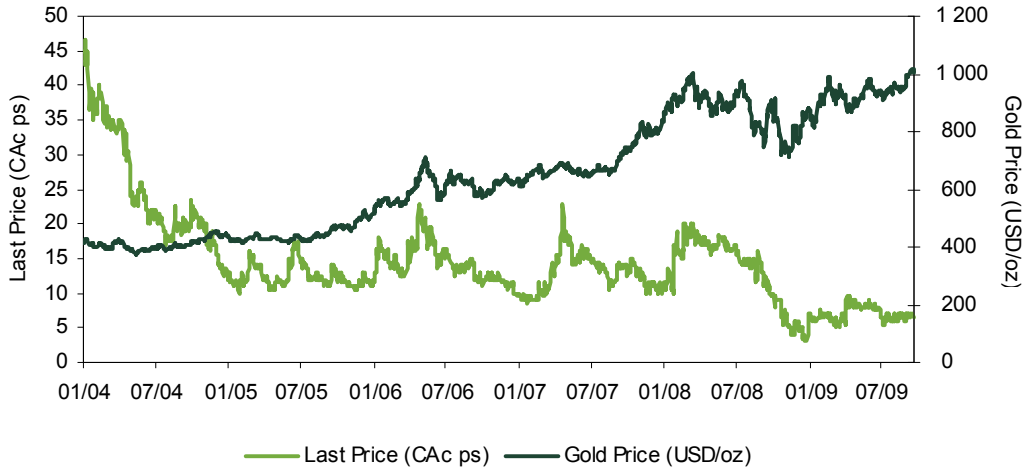
As production levels increase we expect operating costs of around USD540/oz to drop only marginally given the operation's relatively low reserve grade of 4.1g/t.

Good exploration potential exists in areas surrounding the Blanket mine which, with further exploration, could increase the resource/reserve base and extend the life of the operations in the area.

We see limited upside to resources and reserves by applying a market-related gold price. Currently resources and reserves are calculated using a gold price of USD750/oz.

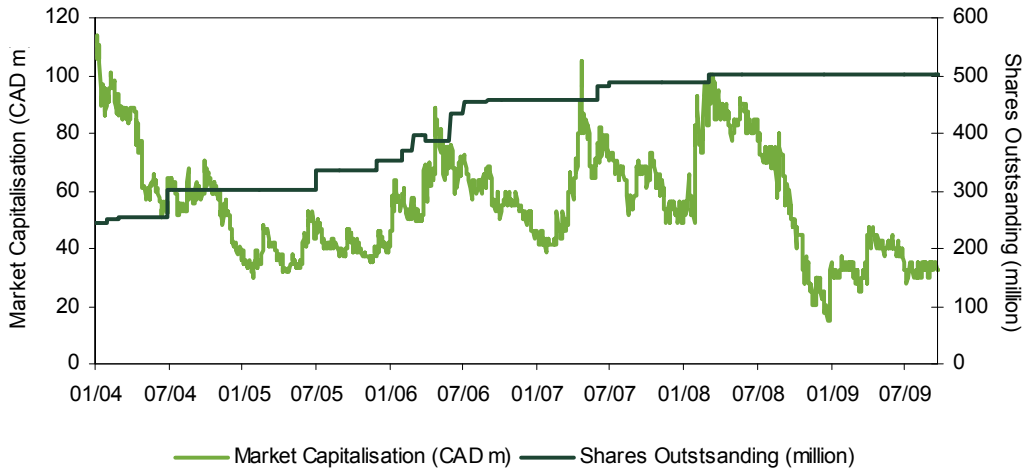
Market data

Figure 54. Caledonia's share price (CAc) versus gold price (USD/oz)



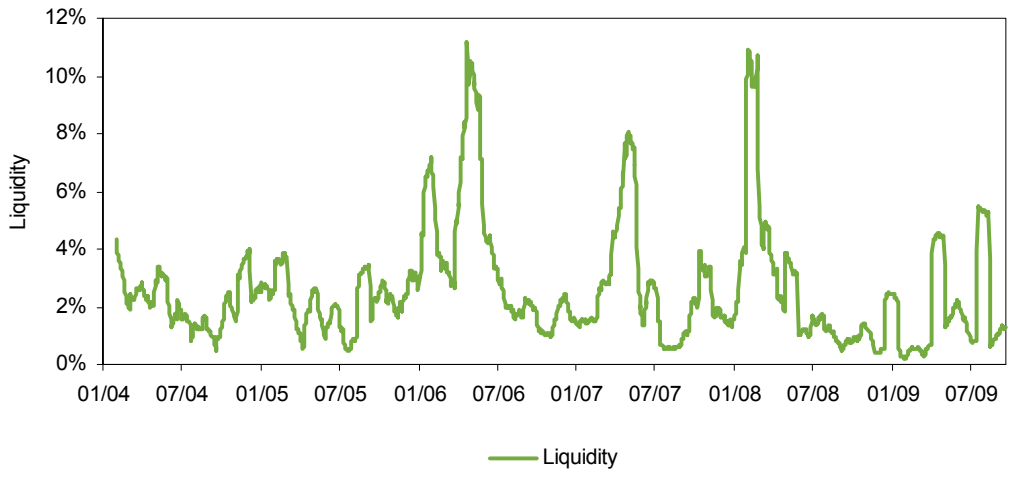
Source: Bloomberg

Figure 55. Caledonia's market capitalisation versus shares in issue



Source: Bloomberg

Figure 56. Caledonia's liquidity (monthly)



Source: Bloomberg

Profiling management

The following table summarises Caledonia's senior management team:

Table 41. Caledonia's management team

Name	Designation	Past Experience
Stefan E Hayden	CEO	Mr Hayden had extensive experience in managing mostly industrial and vehicle companies before turning his attention to the mining industry. He acted as CEO of both the Eersteling and Barbrook gold mining companies (South Africa). He joined Caledonia in 1995.
Steve Curtis	CFO	Mr Curtis has over 24 years' experience as a chartered accountant. Previous work experience includes a number of senior financial positions in the manufacturing industry.
Dr Trevor Pearton	Vice president, exploration	Prior to joining Caledonia in 2001, Dr Pearton worked as a gold analyst for a number of financial institutions. Before this he gained experience in the consulting industry. He was awarded his PhD in geology for research into Archaean gold and antimony deposits.
Mark Learmonth	Vice president, corporate development and IR	Mr Learmonth previously held the position of division director of investment banking at Macquarie First South in South Africa. He has 17 years' experience in corporate finance and investment banking, predominantly in the resources sector. He joined Caledonia in 2008.
Caxton Mangezi	Blanket mine manager	A qualified geologist, surveyor, miner and mine manager, he has worked at Blanket since 1969 in a range of roles including geological technician, overseer miner and underground manager. He has been General Manager for the Blanket since 1993.

Source: Company reports

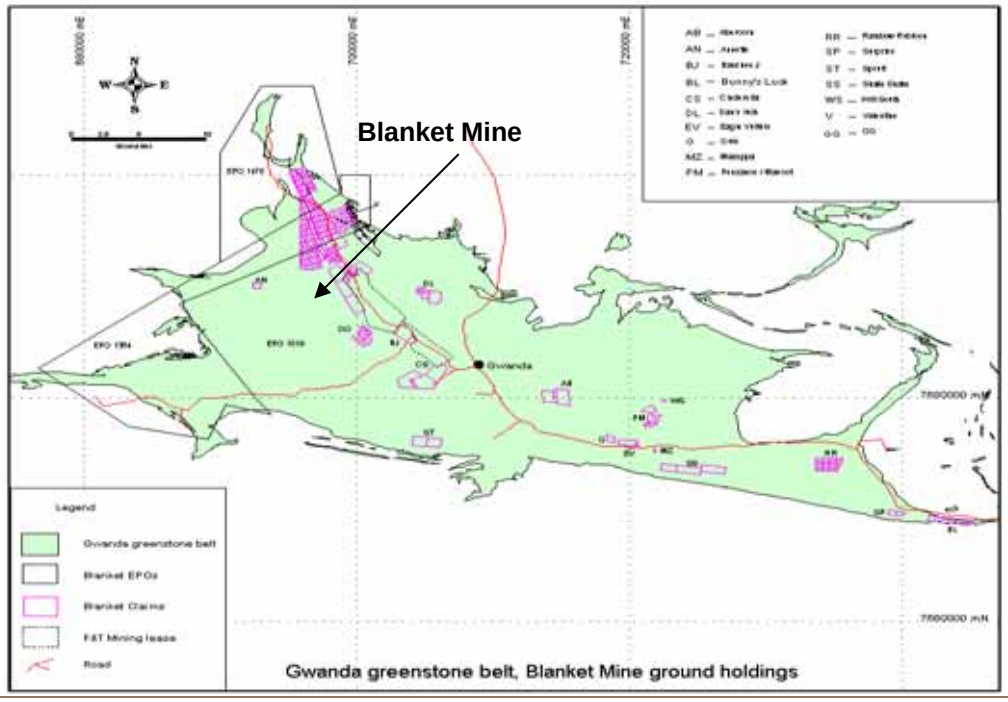
Projects

Blanket gold mine

The mine is located 16km west of Gwanda, 140km south of Bulawayo.

The mine is 16km west of Gwanda and 140km south of Bulawayo. Geologically it is located on the north-western margin of the Gwanda greenstone belt. The company holds numerous mining claims (225 pink blocks below) as well as large EPOs (black blocks).

Figure 57. Location of mine in relation to Gwanda greenstone belt



Source: Applied Geological Services, CPR, 2006

Figure 58. Overview of Blanket Mine

Source: Nedgroup Securities

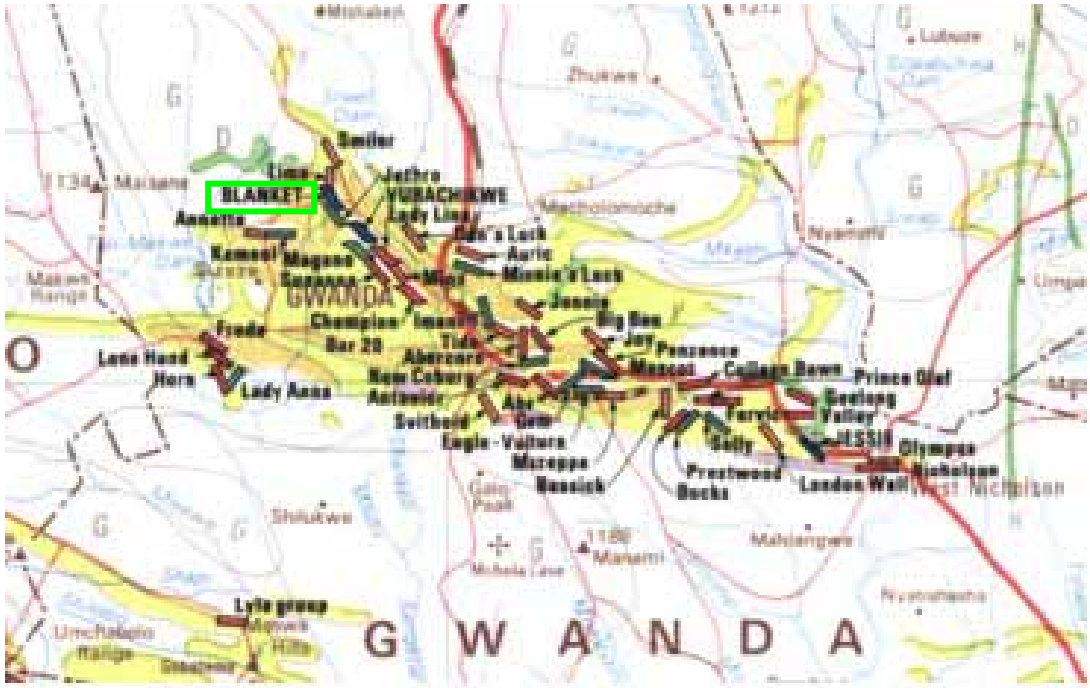
Figure 59. Blanket No 4 shaft

Source: Nedgroup Securities

Two other mines are operating in the area, the Vabachikwe mine owned by Duration Gold and the Jessie Mine, owned by FA Stewart and Son. The area has a number of known gold occurrences, some of which are being explored, to a limited extent, by Caledonia.

This diagram shows gold occurrences that have been documented on the Gwanda greenstone belt.

Figure 60. Location of all gold mines/deposits on the Gwanda greenstone belt



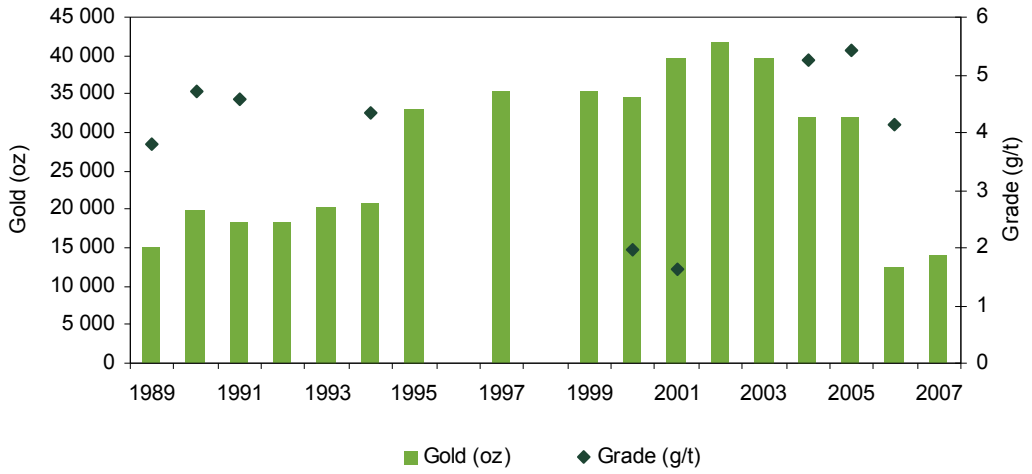
Source: Zimbabwe Geological Survey

Infrastructure at the mine is relatively old, but generally well maintained.

The mine is easily accessible via a mostly tarred road. Power is supplied by ZESA via a dedicated 12mVA 33kV power line.

The mine was initially opened and operated by Falconbridge in 1965. It was sold to Kinross Gold in 1993 and acquired by Caledonia in 2006. It is a shallow underground mine, with the deepest working level at around 750 metres below surface, and has produced more than 1 million ounces over its life. The figure below illustrates gold production from Blanket over the last 20 years.

Figure 61. Blanket historical production



Source: Metals Economics Group

One of the issues highlighted by management on the site visit was the export licence, which was only granted for one year and was about to expire. Any mining companies which produce over 10kgs of gold per month can apply for a Gold Dealership Licence, which is currently renewable annually, in order to sell gold outside of Zimbabwe.

The Ministry of Finance has very recently engaged with all gold producers on this issue and expects to re-issue new licences by the end of October. It is also considering providing a longer licence. Renewal of the new licences will, apparently only be determined on whether the applicant achieves the production threshold – currently 10kg per month.

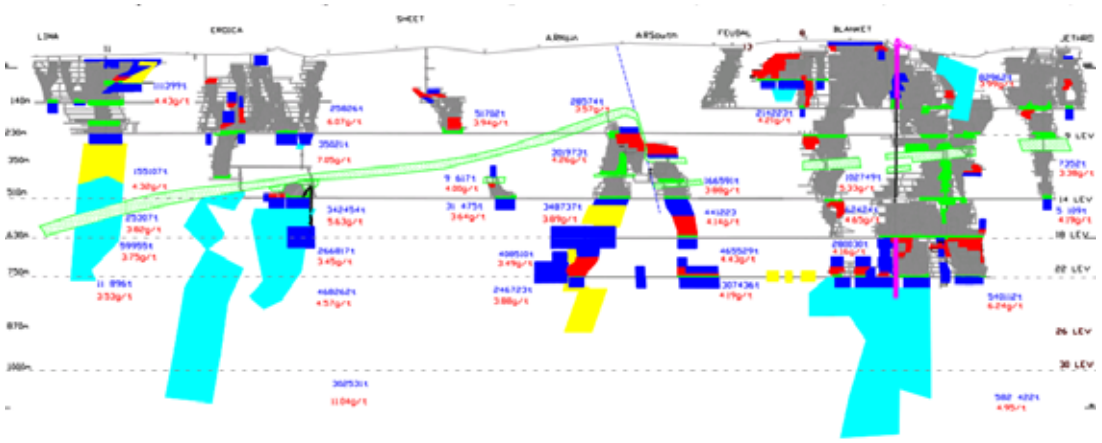
Geology

The Blanket mine is located on the north-western limb of the Gwanda greenstone belt. Mining takes place over a strike of approximately 3km and includes the Jethro, Blanket, Feudal, AR South and Main, Sheet Eroica and Lima deposits (north to south).

On a regional scale, the mine is underlain by felsic schists followed by mafic/ultramafic rocks containing layers of banded iron formation, overlain by a further mafic unit. The Blanket deposit is located in this uppermost mafic unit. The area has been subject to at least four phases of deformation, the second of which is thought to have been responsible for the introduction of gold.

On a local scale, a 50m low-angle shear zone that cuts through the mafic zone is host to the gold. Mineralisation is found either as disseminated sulphide replacement bodies or quartz veins, with the disseminated ore bodies making up the bulk of mining at Blanket. The quartz veins, although higher grade, are far less continuous. Two quartz shears are mined at Blanket, namely the Blanket Quartz Reef and the Eroica Reef.

Figure 62. Location of deposits, mined out areas, resources and reserves



Key: Grey: mine out, Red/Blue/Green: reserves, Light Blue/Yellow: resources
Source: Applied Geology Services cc

Resources

Resources were last estimated as at 31 December 2006 using a gold price of USD500/oz. Resources have been independently estimated by Mr David Grant (PrSciNat). Resources are quoted as exclusive of reserves.

Table 42. Blanket mine mineral resources

Mineral resource category	Tonnes (t)	Grade (g/t)	Gold (oz)
Measured	-	-	-
Indicated	377 220	4.12	49 967
Inferred	2 375 100	5.91	451 294
Total	**2 752 320**	**5.66**	**501 261**

Source: Company reports

Reserves

Reserves were estimated by the same independent competent person, Mr David Grant, as at 31 December 2006. A gold price of USD500/oz was also used for mineral reserve estimates.

Table 43. Blanket mine mineral reserves

Mineral reserve category	Tonnes (t)	Grade (g/t)	Gold (oz)
Proved	1 084 600	4.09	142 800
Probable	2 326 000	4.10	306 700
Total	**3 410 600**	**4.10**	**449 500**

Source: Company reports

Mining

The deepest mining level is at 700m below surface.

Mining is carried out using either underhand stoping in the narrow ore bodies, shrinkage stoping in areas with blocky sidewalls and long-hole stoping in the wider ore bodies. Underhand stoping is however the dominant mining method.

Electricity has been a major constraint on mining, resulting in far less throughput through the plant than it can accommodate. The company is currently considering diesel generators, but these have extremely high running costs, and this matter will have to be further considered.

Beneficiation

Plant recoveries of 85-90% are achieved.

Beneficiation at Blanket is via a typical CIL plant. Ore is received, crushed and milled and then passed through a Knelson concentrator before being treated on a Gemini table to produce a cleaner concentrate. This concentrate is then calcined and smelting takes place on site. Plant recoveries of between 85% and 90% are achieved.

Tails from the Knelson concentrator are remilled, cycloned and added to the set of six ROM CIL tanks. Loaded carbon is washed, eluted and electro-won before being sent for smelting.

The plant has a capacity of 3 800t per day. Currently only around 600t/d are being processed. Gold dore is poured on site and transported to Fidelity, before being sold to Rand Refinery in Johannesburg, South Africa.

Figure 63. Blanket gold plant

Source: Nedgroup Securities

Figure 64. Safety comes first at Blanket

Source: Nedgroup Securities

RioZim (ZSE: TIOTZ)

RioZim Limited (RioZim) is listed on the Zimbabwe Stock Exchange (ZSE).

The company was originally established in 1956 as Rio Tinto Rhodesia, which was a subsidiary of Rio Tinto plc, and then restructured in 2004 when Rio Tinto plc exited. RioZim operates the Renco gold mine in SE Zimbabwe, the Empress Nickel Refinery near Kadoma and the Sengwa Colliery in Gokwe North. It also holds a 22% interest in Murowa Diamonds Limited. The company holds numerous gold, diamond, nickel, chrome, copper, coal and PGM exploration licences in Zimbabwe.

Table 44. RioZim fact sheet (RIOTZ_ZH)

Quoted on	ZSE: RIOTZ
Ruling price (USD ps)	2.64
28-week high (USD ps)	0.70
28-week low (USD ps)	4.20
Shares outstanding (m)	44.92
Free float (m)	N/A
Market capitalisation (USD)	118.59m
Mining operations	Renco, Sengwa, Murowa (22%), Empress Refinery
Resources (attributable)	Renco: 0.368moz, Sengwa: >1.2bt, Murowa:0.11mcts
Reserves (attributable	Renco:0.082moz, Sengwa: 1.2bt, Murowa:3.23mcts
Annual production (2008, attributable)	Au: 14 500oz, Coal: 113 694t, Diamonds: 58 000cts Ni: 4 066t, Cu: 3 497t
Cash costs estimates (USD/oz)	Renco: USD700/oz
Capital estimates (USD)	Approx 50m

Source: Company reports, Bloomberg

Key investment themes

Renco is Zimbabwe's only gold mine that managed to keep production going throughout 2008, when the government failed to pay gold miners for gold deliveries. The resulting drain on working capital and wear and tear of surface infrastructure was apparent on our visit.

The target is to increase production levels to around 35 000 ounces per annum. Operating costs are currently USD700-800/oz but these are expected to drop to USD500-600/oz if power outages cease and planned production volumes are achieved.

Grades at Renco mine will continue to decline to around 3.0g/t from current levels of 3.6-3.8g/t. To achieve planned production targets, the company needs to develop the Spot deposit. The average grade of the inferred resource at Spot is above 8.0g/t which could potentially lift the average recovered for Renco and Spot to 4.0-5.0g/t.

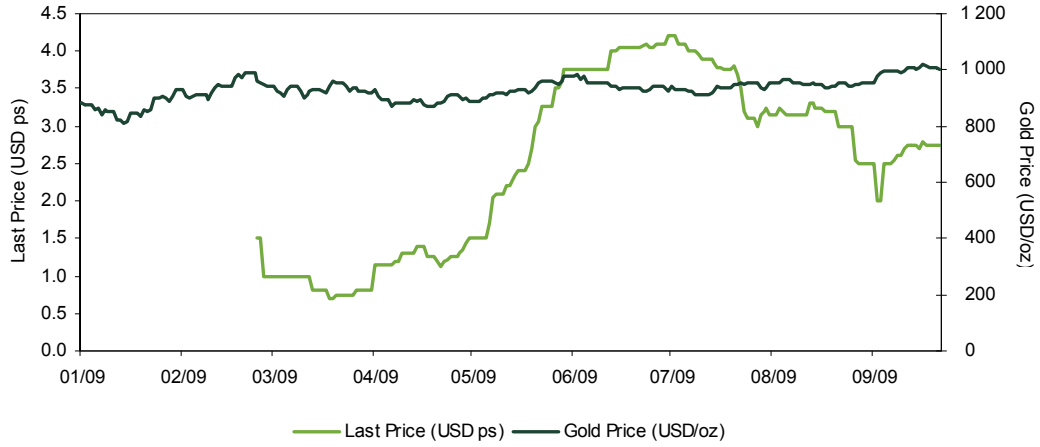
Infill drilling is under way to improve understanding of the Spot ore body. Management estimates it requires USD10 million to develop a decline. The ore would then be trucked to the Renco plant which would have to be upgraded. No capital estimates are available for the plant upgrade.

In our view, RioZim is too diversified and needs to restructure its asset base. Limited resources could then be directed at core, cash-producing assets like Renco and Empress. The risk of increasing government interference with coal and diamond assets will make it very challenging to operate the mines.

RioZim is a Zimbabwe-listed entity and financial and operational reporting is not up to international standards. This makes a detailed assessment of the company virtually impossible.

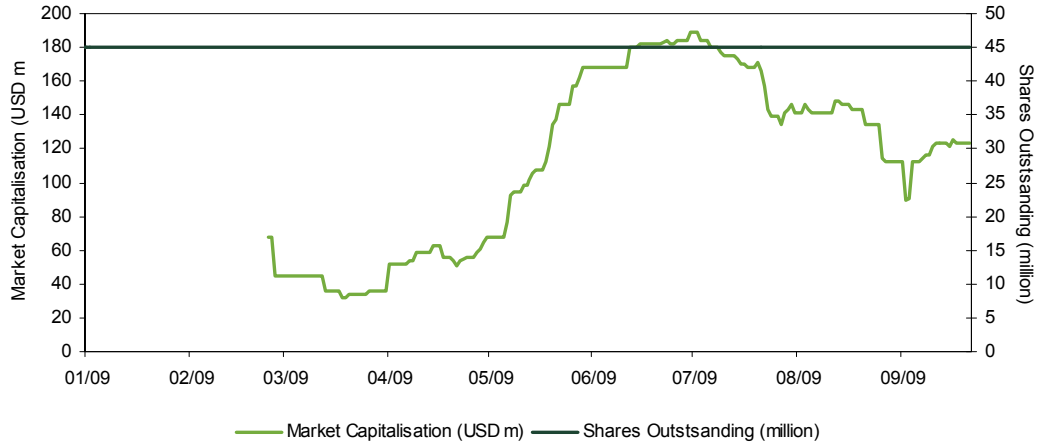
Market data

Figure 65. RioZim's share price (USD ps) versus gold price (USD/oz) as at 19 Feb 2009



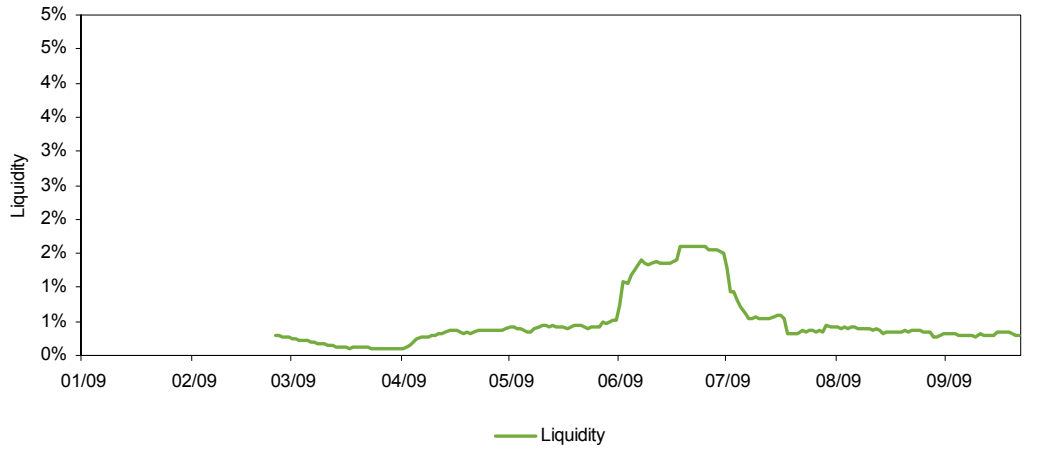
Source: Bloomberg

Figure 66. RioZim's market capitalisation versus number of shares outstanding as at 19 Feb 2009



Source: Bloomberg

Figure 67. RioZim's liquidity (monthly)



Source: Bloomberg

Profiling management

The following table summarises RioZim's senior management team (only limited information was available):

Table 45. RioZim's management team

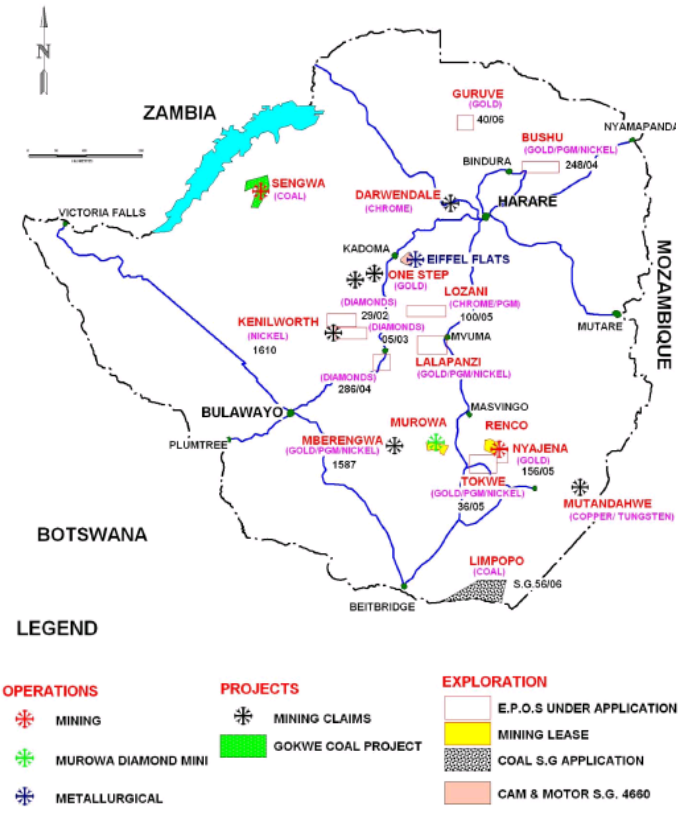
Name	Designation	Past Experience
JHK Sachikonye	Managing director	Mr Sachikonye has an accounting background
P Markham	Operations director	Mr Markhaml has an engineering background.
E Mungwariri	Finance director	Mr Mungwariri has an MBA in finance from the United Kingdom. He previously was employed at BCN.
CT Ngwerume	Technical director	Mr Ngwerume holds a bachelor of science degree.

Source: Company reports

Projects

The locations of RioZim's projects are illustrated in the diagram below:

Figure 68. Location of RioZim's operations and projects



Source: Company Reports

Renco was the only gold producer in Zimbabwe not to have closed during 2008/2009.

Renco Mine (100% held by RioZim)

The Renco area was extensively explored from 1936 to 1972, predominantly by small-scale miners and later by Gold Fields. Rio Tinto obtained a mining option for the area in 1972. Exploration, followed by development, continued until the mine began operating in 1982. Between 1982 and 2000 the mine averaged production levels of 52 000 ounces per annum. Production has however since declined due to the economic situation in Zimbabwe and dropped to only 20 800 ounces in 2008. Renco was nevertheless the only gold producer in Zimbabwe not to close during 2008/2009. The mine has a capacity of 50 000 ounces per annum. Gold production for 1982-2008 totalled 1.2 million ounces. The mine has a complement of approximately 1 143 employees and supports a mine village of approximately 10 000 people.

Figure 69. Surface infrastructure at Renco mine

Source: Nedgroup Securities

Figure 70. Surface infrastructure at Renco mine

Source: Nedgroup Securities

Empress Refinery

The Empress Refinery was built to process ore from the Empress mine.

The Empress Refinery was built to process ore from the Empress mine, which closed in 1982. Since then, it has been toll treating nickel and copper matte from BCL Limited and Tati mines in Botswana. The contract is set at 17 500t per annum and the refinery has the capacity to produce 700t of nickel and 700t of copper per month. Over and above this it also produces cobalt and PGM concentrates. The refinery is currently operating at around 80% capacity, producing 550t nickel and 550t copper per annum.

Sengwa Colliery (50% held by RioZim)

JORC-compliant reserves at the colliery are stated at 1.2 billion tonnes of thermal coal. It has a low stripping ratio.

The Sengwa colliery was explored as far back as 1975, but the project was never progressed due to the protectionist policies of the then Rhodesian government in favour of the Wankie monopoly. A feasibility study was conducted on the Gokwe North Power station in 1997, but in 1999 it was suspended, due again to priority being given to Wankie. JORC-compliant reserves at the colliery are stated at 1.2 billion tonnes of thermal coal. It has a low stripping ratio.

The option of building the power station is again being investigated. The colliery is not currently in production as it requires a mine-mouth power station to be viable (as per the 1997 feasibility study). The company is in talks with the relevant authorities and potential partners about building a 2000MW plant on site. However, according to management, the process is progressing very slowly.

Figure 71. Aerial view of trial mining at Sengwa Colliery

Source: Company reports

Murowa Diamonds (22% held by RioZim)

Murowa was originally explored via a joint venture between Rio Tinto plc and Rio Tinto Zimbabwe. Mining started in Q3 2004.

Other projects

RioZim has a few prospects in the Renco licence area that have undergone very little exploration to date.

The company currently has a drill rig on site at the Spot deposit and is awaiting further assay results. Initial results were promising, however, and the life of Renco depends on this project being brought to book. The company stated it would like to increase production capacity at Renco to over 150 000 ounces per annum. This will require a substantial capital injection.

The company is also relooking the Cam & Motor gold mine, which it owns. The mine was once Zimbabwe's biggest gold producer. It was closed in 1968 and at the time had a cut-off grade of 8g/t (more than double the grade being achieved at any of the mines visited on this field trip). Management is considering opening an opencast mine at Cam & Motor.

Further upside potential also exists among the coal assets. The company is actively pursuing the development of a commercially viable independent power producer (IPP) at Sengwa colliery. This would go a long way to alleviate the dire electricity situation in Zimbabwe. However, it would seem that all issues surrounding power are much politicised and whether or not the company will succeed with its plans at Sengwa will have to be seen.

The company would also like to get the refinery back up to full production (17 000t/a). This will depend on the availability of electricity in the country.

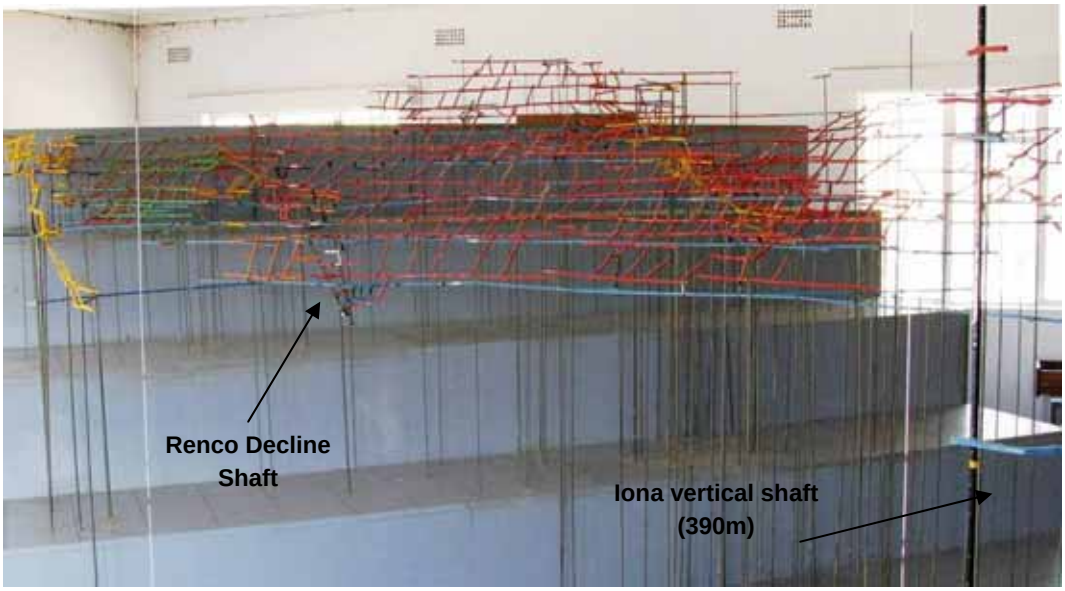
Geology

Renco

The Renco mine is located in the Limpopo mobile belt.

The Renco mine is the only gold mine not located on a greenstone belt in Zimbabwe – it is located in the Limpopo mobile belt. Gold is thought to have been remobilised from one of the adjacent greenstone belts during this deformation period and deposited in zones of structural weakness at Renco. Four types of reefs have historically been exploited, namely the steep, named after its near-vertical orientation (yellow in diagram below), the orange, green and red reefs, which were arbitrarily given these names to distinguish them. The red, green and orange reefs have a far shallower dip and the red reef has been exploited to the greatest extent. The model depicted below has been created to illustrate the location of shafts, reefs and underground workings.

Figure 72. 3-D model of Renco mine



Source: Nedgroup Securities

Mineralisation is associated with shearing

Milonitic zones formed due to the shearing and gold and bismuth filled the brittle deformation areas.

The Spot deposit is located to the east of Iona (which lies east of Renco). This deposit is currently being explored and is critical to the life of the operation.

Resources

Renco/Spot

The resources quoted below are exclusive of reserves. The cut-off grade used for both resources and reserves at Renco is 3.4g/t.

Table 46. Renco and Spot mineral resources

Mineral resource category	Tonnes (t)	Grade (g/t)	Gold (oz)
Measured	167 120	5.40	29 014
Indicated	0	0	0
Inferred	1 444 578	7.30	339 043
Total	**1 611 698**	**7.10**	**368 056**

Source: Company presentation

Sengwa

The resources below are included in the mine plan and exclude mining losses and dilution. A summary of the resources not included in the mine plan could not be located, but it can therefore be assumed that the resource base is much larger than detailed below.

A more comprehensive resource statement could not be located.

Table 47. Sengwa Colliery mineral resources included in mine plan

Mineral resource category	Block	Tonnes (mt)	Thickness (m)	Ash (%)	Sulphur (%)	Energy (MJ/kg)
Indicated	3	1.8	14.8	20.2	0.29	24.82
Measured	4	4.4	12.4	26.4	0.26	22.18
Measured	5	11.5	17.2	23.2	0.41	22.31
Measured	6	337.5	22.2	33.9	0.37	19.72
Total		**355.2**	**21.4**	**33.4**	**0.37**	**19.86**

Source: Company reports

Murowa (22% RioZim)

The following resources are quoted exclusive of reserves:

Table 48. Murowa mineral resources (total)

Mineral resource category	Tonnes (mt)	Grade (ct/t)	Contained carats (m)
Measured	-	-	-
Indicated	-	-	-
Inferred	1.4	0.40	0.560
Total	**1.4**	**0.40**	**0.560**

Source: Rio Tinto plc annual report (2008)

Reserves

Renco

No probable reserves have been quoted for Renco. Proved reserves are as follows:

Table 49. Renco mine mineral reserves (31 Dec 2008)

Mineral reserve category	Section	Tonnes (t)	Grade (g/t)	Gold (oz)
Proved	Renco	425 170	5.99	81 920
Proved	Spot	3 520	7.39	835
Total		**428 690**	**6.00**	**82 755**

Source: Company reports

Sengwa

Table 50. Sengwa Colliery mineral reserves

Mineral reserve category	Tonnes (mt)
Proved	355
Probable	845
Total	**1 200**

Source: Company reports

Murowa (22% RioZim)

Table 51. Murowa mineral reserves (total)

Mineral reserve category	Tonnes (mt)	Grade (ct/t)	Contained carats (m)
Proved	-	-	-
Probable	21	0.70	14.700
Total	**21**	**0.70**	**14.700**

Source: Rio Tinto plc annual report (2008)

Mining

Mining at Renco is carried out using the long-wall stoping mining method.

Mining at Renco is carried out using the long-wall stoping mining method. At its peak the mine was moving 300 000t/a. Current production levels are only 120 000t/a, indicating that the mine has far greater capacity than is being used.

The mine is currently producing grades of 3.6g/t on average. At its peak, however, grades varied between 10g/t and 12g/t. Two boreholes have been drilled to depths below current working levels and both intersected reef at approximately 7g/t, indicating that higher-grade ore exists below current infrastructure. The grades at the Spot deposit are in the region of 8g/t. The LOM at current production rates is only five years. This could be substantially increased if the Spot deposit is brought on line and current infrastructure is deepened.

Beneficiation

The Renco plant needs to be refurbished.

The plant at Renco is old and in need of refurbishment. Although it was only constructed in 1982, it was second-hand at the time. It is a typical CIL processing plant. Ore is crushed, milled and passed through a thickener and a pre-conditioner and is then passed through six leaching tanks. After that, it passes through flotation tanks, roughers and scavengers to produce a concentrate. Gold is smelted on site and transported to Harare once a week. The plant currently achieves a recovery factor of around 86%.

Costs

Renco is currently operating in the USD700-800/oz region, although it is targeting USD500/oz as the mine builds up production.

Mwana Africa plc (AIM: MWA)

We visited the Freda Rebecca gold mine.

Mwana Africa plc (Mwana) is an Africa-focused gold, nickel, base metal and diamond exploration and mining company. Its operations are located in Zimbabwe (Freda Rebecca gold mine, Bindura Nickel Corporation including the Trojan and Shangani nickel mines, Hunters Road nickel project and the Maligreen and Makaha gold projects), the DRC (Zani-Kodo gold project, Katanga copper concessions and the MIBA diamond project), South Africa (Klipspringer diamond mine), Ghana (Ahanta gold project), Angola (Camafuca diamond project) and Botswana (BK16 diamond project).

Table 52. Mwana fact sheet

Quoted on	AIM: MWA
Ruling price (GBp ps)	12.25
52-week high (GBp ps)	18.50
52-week low (GBp ps)	2.50
Shares outstanding (m)	397.8
Free float (m)	397.8
Market capitalisation (GBP)	48.73m
Principal operations	Freda Rebecca, Zani-Kodo, BNC, Klipspringer
Resources (attributable)	Au: 1 048 000oz; 361 500oz, Ni: 115kt, Diamonds: 1.962mcts
Reserves (attributable)	Au: 347 000oz (non-compliant)
Annual production	30 000oz/a (Freda Rebecca, Phase 1, Dec 2009) 50 000oz/a (Freda Rebecca, Phase 2, Dec 2010)
Cash costs (USD/oz)	Freda Rebecca: USD700/oz Renco: na
Capital expenditure (USD)	12m (Freda Rebecca), 50m (BNC – Hunters Road)

Source: Company reports, Bloomberg

Key investment themes

In our view, Mwana Africa is too diversified and could benefit from restructuring its asset base. This has already partially happened with the closure of the diamond projects Camafuca (Angola) and BK16 (Botswana). The Ahanta project in Ghana is for sale. Ideally Mwana should complete the resource delineation at Zani-Koda (DRC) which may be acquired by another Randgold Resources/AngloGold Ashanti joint venture.

At 2.6g/t, Freda Rebecca has the lowest reserve grade among the gold mines we visited in Zimbabwe. This makes it very sensitive to the gold price and grade control is crucial in controlling costs.

Furthermore, the published resource is not JORC-compliant due to a lack of historical information. This situation is currently being rectified.

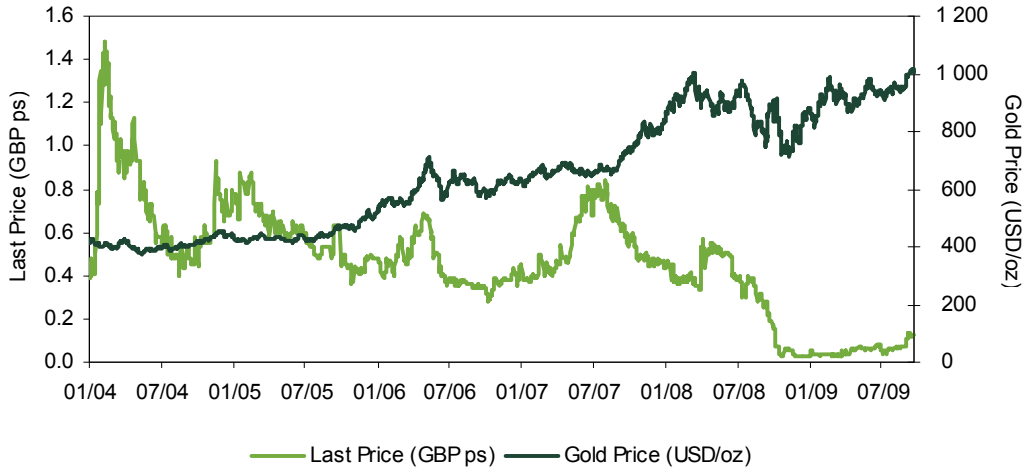
Freda Rebecca is being refurbished in a two-phase programme. In phase one (plant commissioning, dewatering of mine, rehabilitation and acquisition of mine fleet) production capacity will be increased to 50 000t per month by October 2009. By September 2010 capacity will be increased to 80 000t per month on phase two (additional mine development, enlargement of mine fleet, refurbishment of second mill).

The Bindura Nickel Corporation (BNC) was placed on care-and-maintenance in November 2008. Conditions now appear to support a restart of operations as nickel prices have recovered and the foreign exchange regime has liberalised. Current planning is to reopen the mines and produce nickel concentrates for processing by third parties. The future of BNC lies in the Hunters Road project, which is still at development phase. The project has an estimated capital cost of USD67million to bring it into production. Mwana has already spent USD15m on the project

The company is well positioned to take advantage of the improving Zimbabwean situation, as well as the increase in the gold and nickel prices.

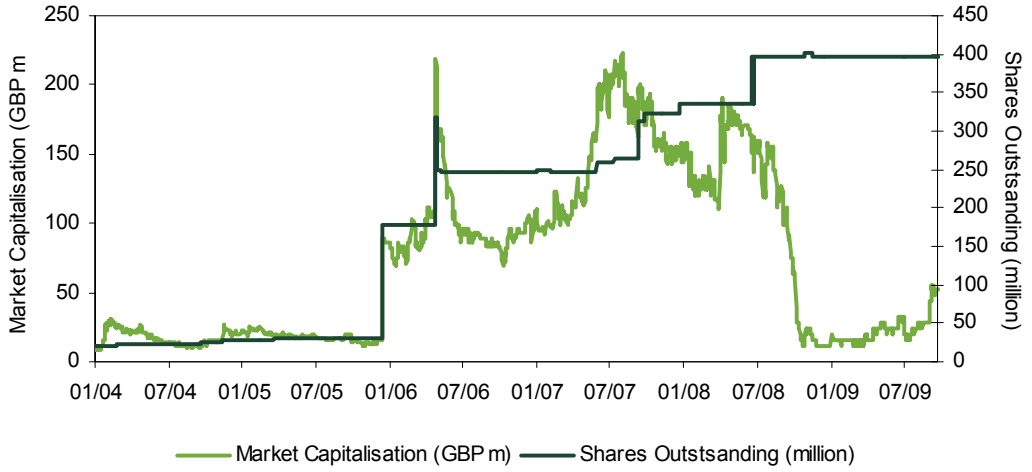
Market data

Figure 73. Mwana's share price (GBP ps) versus gold price (USD/oz)



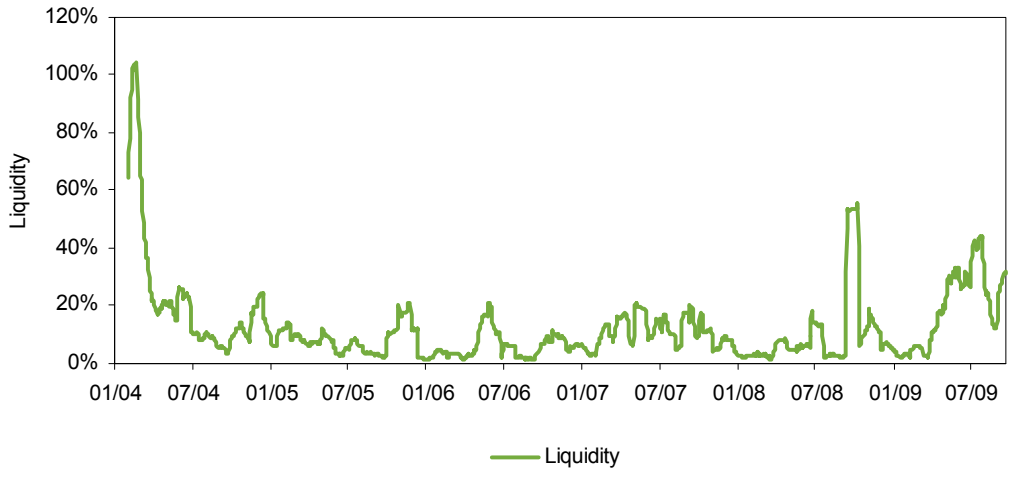
Source: Bloomberg

Figure 74. Mwana's market capitalisation versus number of shares outstanding



Source: Bloomberg

Figure 75. Mwana's liquidity (monthly)



Source: Bloomberg

Profiling management

The following table summarises Mwana's senior management team:

Table 53. Mwana's management team

Name	Designation	Past Experience
Oliver Baring	Executive chairman	Five years Anglo American and De Beers; Partner at Rowe & Pitman stockbrokers; Managing director at UBS (Corporate Finance).
Kalaa Mpinga	CEO	Long history in mining with Bechtel Corporation and Anglo American (Director 1997 – 2001); Founded Mwana Africa Holdings (Pty) Ltd in 2003.
Donald McAlister	Finance director	19 years in African mining industry Previously FD at Ridge Mining and Reunion Mining.

Source: Company reports

Projects

Although the company has numerous projects throughout Africa, it is currently focused on its Zimbabwean assets and its gold exploration assets in the DRC.

The table below summarises the ownership and status of the company's projects.

Table 54. Summary of Mwana's mines/projects

Country	Project	Commodity	Project stage	Ownership (%)
Zimbabwe	**Freda Rebecca**	Gold	Mine being refurbished	100
	Bindura Nickel	Nickel	Trojan and Shangani mines on care-and-maintenance	53
	Hunter's Road	Nickel	Project	44
	Maligreen	Gold	Project	50
	Makaha	Gold	Project	100
DRC	**Zani-Kodo Project**	Gold	Resource delineation	80
	Katanga Concessions	Copper	Project	100
	MIBA	Diamonds	Project – closed	20
South Africa	Klipspringer Diamond Mine	Diamonds	Operating	62
Ghana	Ahanta	Gold	Project being sold	80
	Konongo	Gold	Project being sold	70
Angola	Camafuca Project	Diamonds	Project – cosed	18
Botswana	BK16	Diamonds	Project – closed	12.5

Source: Company reports, Nedgroup Securities

Freda Rebecca Gold Mine (100%)

Mwana purchased the Freda Rebecca gold mine from AngloGold Ashanti.

The Freda Rebecca gold mine was purchased from AngloGold Ashanti in April 2005. It is located approximately 100km north of Harare, near the town of Bindura. Freda Rebecca is a low grade (<3g/t), shallow underground mine, which has produced over 1.2moz (production between 1989 and 2006).

The mine has a long history as the ore body was first mined between 1912 and 1917. It was reopened in 1986 by Cluff Resources and taken over by Ashanti in 1995. The mine achieved production of approximately 100 000 ounces gold per annum in 2002. However, production began to reduce in tandem with the declining political situation in Zimbabwe. After the merger of AngloGold and Ashanti, the mine was sold to Mwana in 2005. At this stage the mine was producing 30 000 ounces per annum from mostly underground operations.

In 2005 Mwana began investing to upgrade the mine. However, ongoing political difficulties in Zimbabwe and the crash in the financial markets led to the mine being closed in March 2007.

Figure 76. Entry to underground workings

Source: Nedgroup Securities

Figure 77. Remote operated LHD underground

Source: Nedgroup Securities

Following the introduction of revised procedures of gold exports from Zimbabwe, the mine is now being refurbished, the first phase of which is expected to be completed in October 2009. The second phase of refurbishment will push production from 30 000 ounces to 50 000 ounces per annum. This may be financed from operating cash flows from Phase 1, although the company continues to advance discussions with potential lenders to the project.

Bindura Nickel Corporation (52.3%)

Toll treatment of third party ore is also carried out at Bindura and made up 43% of total nickel production during 2008.

The Bindura Nickel Corporation (BNC) comprises two nickel mines, Trojan and Shangani, a smelter and a refinery. Toll treatment of third-party ore is also carried out at Bindura and made up 43% of total nickel production in 2008. Mwana purchased a 52.9% holding in the company in April 2003, with the government of Zimbabwe holding 22% and the rest traded on the ZSE.

The Trojan mine and smelter complex is located outside the town of Bindura (a few kilometres from the Freda Rebecca mine), approximately 100km northeast of Harare.

The Shangani mine and concentrator are located in the Midlands Province, 100km northeast of Bulawayo. When the mine was operational, concentrates were transported from Shangani initially by rail and later by road to the Bindura smelter and refinery for processing.

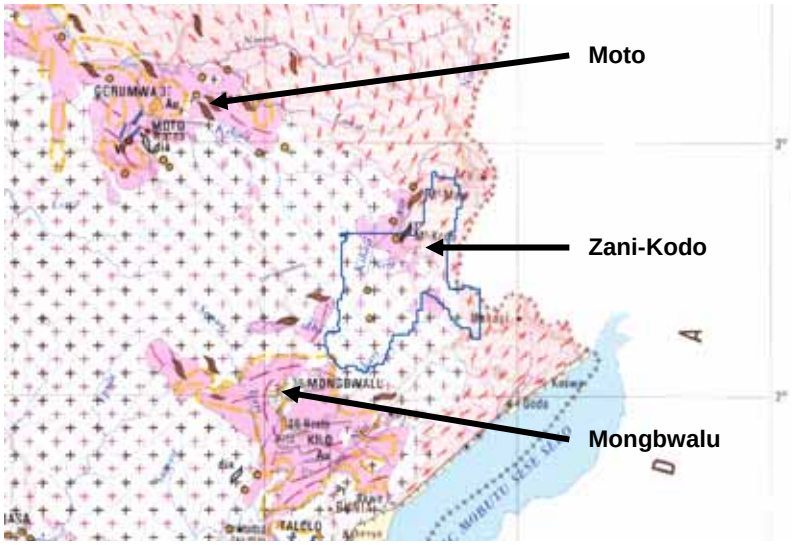
The smelter and refinery complex has capacity to produce up to 15kt nickel per year, and has previously treated material from BNC's own mines and third parties in the region.

The mines were placed on care-and-maintenance in November 2008 due to, among other things, erratic power supply at Shangani mine, procurement difficulties and skills shortages. Mwana is currently working with BNC to develop options for a new business model that would bring down the cost of supply from Trojan and Shangani mines, while maintaining BNC's smelting and refining capacity.

Zani-Kodo gold project (80%)

The project is located in the Kilo-Moto greenstone belt in the north-east of the DRC. It lies between Moto Gold's 22moz Moto project and AngloGold Ashanti's 3moz Mongbwalu project. The licence area covers 1 605km^2.

Figure 78. Location of the Zani-Kodo gold project



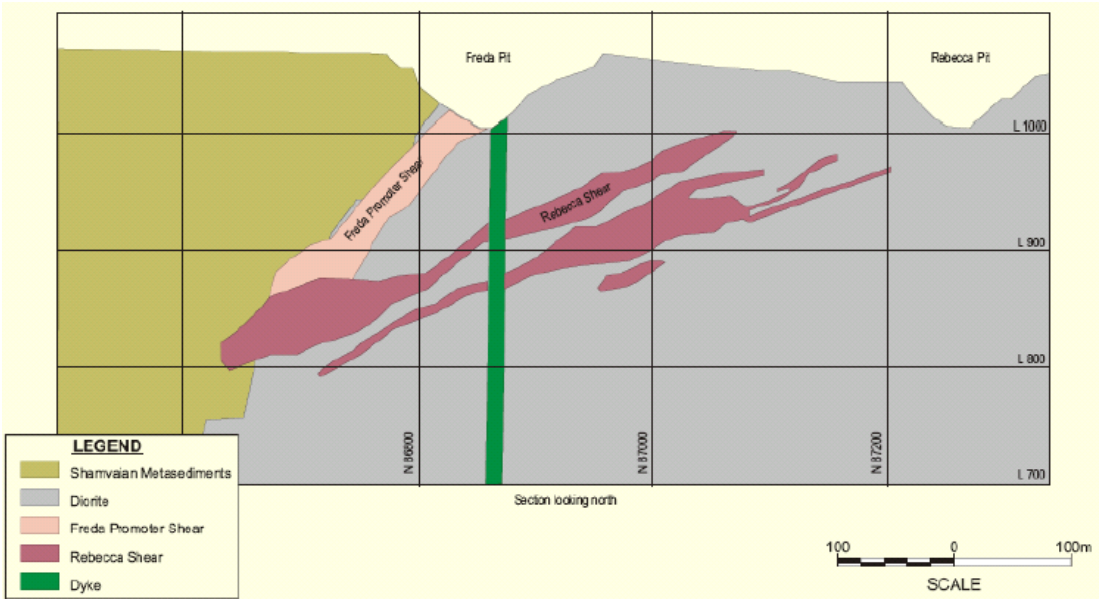
Source: Company reports

Geology

Freda Rebecca Mine

The mine is located on the Mazowe-Bindura greenstone belt. The two ore bodies (Freda and Rebecca) are hosted in diorite and granodiorite, with mineralisation hosted by the two shear envelopes.

Figure 79. General geology of the Freda Rebecca mine



Source: SRK Consulting

The Freda shear strikes from NE-EW and is relatively steeply dipping.

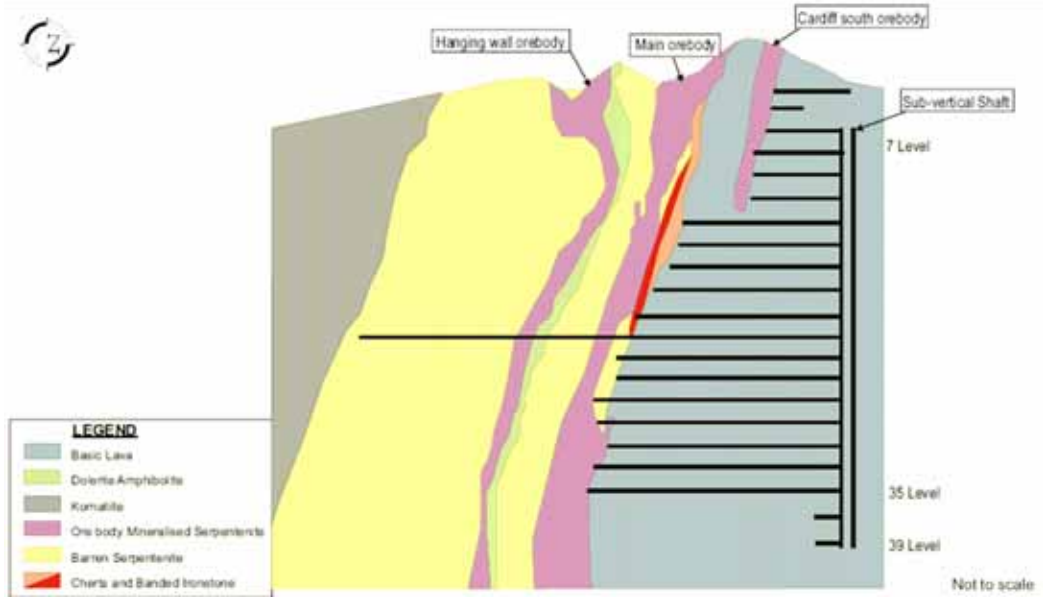
The Rebecca shear strikes NW and dips at around 35°. Both shears have a variable thickness. Rebecca varies from 60m to 125m and Freda from 40m to 150m. The two systems are postulated to intersect at depth.

The ore bodies are practically impossible to distinguish to the untrained eye, and a strict regimen of mapping and sampling will have to be employed to keep mining on-reef. This function has been outsourced to a South African geological consulting company, which is currently overseeing all technical aspects at the mine.

Trojan and Shangani mines

Trojan comprises a nickel sulphide deposit, located in ultramafic lavas of the Mazowe greenstone belt. Nickel mineralisation is found in steeply dipping (75°-85°) serpentinites. The largest of these is called the Main orebody and is 250m long and 30m wide (see figure below).

Figure 80. Section through the Trojan deposit

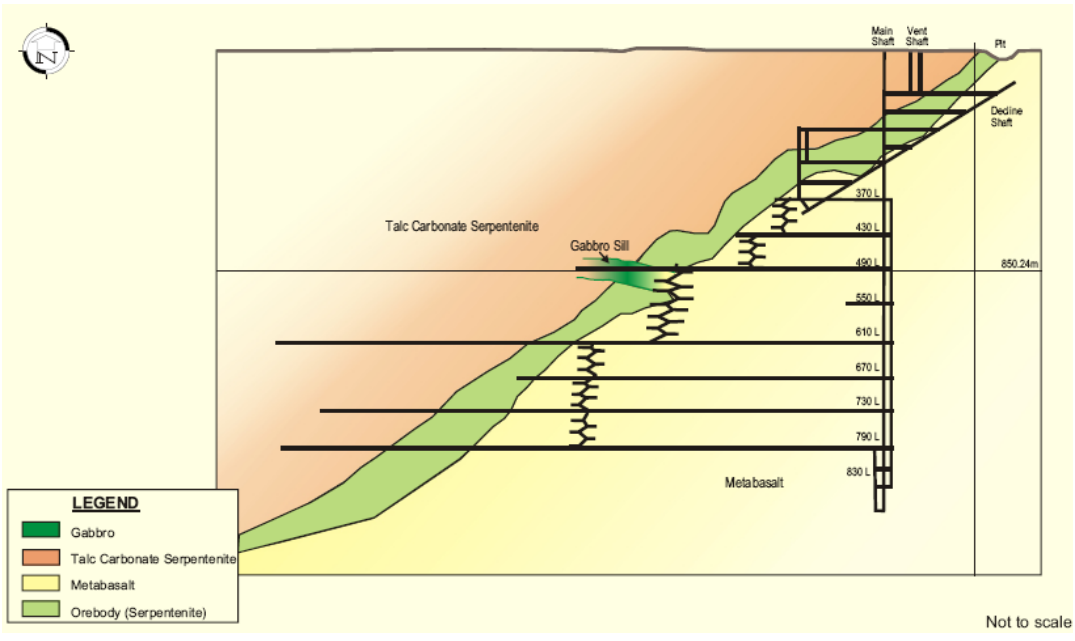


Source: SRK Consulting

The Shangani mine is located on the Shangani ultramafic complex on the Shangani/Nsiza greenstone belt.

Nickel mineralisation occurs in serpentinites within a thick succession of tuffs and agglomerates. The deposit is 1.5km long and dips at 48°. It has been intersected up to 1 065m below surface. Sulphide concentration is thought to be as a result of gravity settling through the ultramafic magma. Massive sulphides occur at the base of the deposits, becoming progressively more disseminated upwards. Disseminated sulphides form the bulk of the ore mined at Shangani.

Figure 81. Section through the Shangani deposit



Source: SRK Consulting

Zani-Kodo project

Exploration has been focused around the historical Kodo mine, as well as numerous targets identified via airborne geophysical surveys. A 9km long shear zone has been recognised and drilling has focused on a portion of this area. Gold mineralisation is associated with quartz veins and the presence of pyrrhotite and arsenopyrite.

Resources

The following resources have been estimated for the Freda Rebecca gold mine and BNC in Zimbabwe, the Klipspringer diamond mine in South Africa and the Zani-Kodi gold project in the DRC. A 1.5g/t cut-off grade was used to estimate the Freda Rebecca reserves.

Table 55. Freda Rebecca Resources (31 March 2009)

Classification of resources	Section	Tonnage (000t)	Grade (g/t)	Gold (000oz)
Measured	Underground	10 408	2.51	841
	Surface	826	1.40	37
	Total	11 234	2.43	878
Indicated	Underground	2 106	2.52	170
	Surface	–	–	–
	Total	2 106	2.52	170
	Total measured and indicated	**13 340**	**2.44**	**1 048**

Source: Company reports

Table 56. BNC Resources (31 March 2009)

Classification of resources	Project	Tonnage (000t)	Grade (%)	Nickel (t)
Measured	Trojan	2 560	0.93	23 710
	Shangani	870	0.42	3 690
	Hunter's Road	–	–	–
	Total	**3 430**	**0.80**	**27 400**
Indicated	Trojan	3 640	1.93	70 230
	Shangani	6 030	0.47	28 130
	Hunter's Road	**45 060**	**0.54**	**243 230**
	Total	54 730	0.62	341 590
Measured & indicated	Trojan	6 200	1.52	93 940
	Shangani	6 900	0.46	31 820
	Hunter's Road	45 060	0.54	243 230
	Total	**58 160**	**0.63**	**368 990**
Inferred resources	Trojan	7 940	0.72	57 410
	Shangani	4 850	0.53	25 540
	Hunter's Road	–	–	–
	Total	**12 790**	**0.65**	**82 950**

Source: Company reports

Table 57. Klipspringer Resources (31 December 2008)

Classification of resources	Section	Tonnage (t)	Grade (cpht)	Carats
Indicated	Ingwe (East)	428 000	58.30	249 500
	Ndau (West)	276 000	58.30	161 000
	Total	**704 000**	**58.30**	**410 500**
Inferred	Ingwe (East)	1 307 000	58.30	762 000
	Ndau (West)	2 058 000	58.30	1 200 000
	Total	**3 365 000**	**58.30**	**1 962 000**

Source: Company Reports

Table 58. Total Zani-Kodo Resources (2 September 2009)

Classification of resources	Tonnage (t)	Grade (g/t)	Gold (oz)
Indicated	2 045 307	2.90	190 684
Inferred	3 159 511	2.57	261 192
Total	**5 204 818**	**2.79**	**451 876**

Source: Company reports

Reserves

Reserves have been estimated by Mwana, but are not SAMREC or JORC compliant.

The company is currently working towards compiling a compliant reserve for the mine, through a process of mapping and sampling the ore body.

Table 59. Freda Rebecca reserves (31 March 2009)

Classification of reserves	Section	Tonnage (000t)	Grade (g/t)	Gold (000oz)
Proven	Underground	2 138	2.58	177
	Surface	270	3.47	30
	Total	2 408	2.68	207
Probable	Underground			
	Surface	1 744	2.50	140
	Total	1 744	2.50	140
	Total proven and probable	**4 153**	**2.60**	**347**

The company will not state any reserves for BNC until the projects are once again operational. This is in line with international standards.

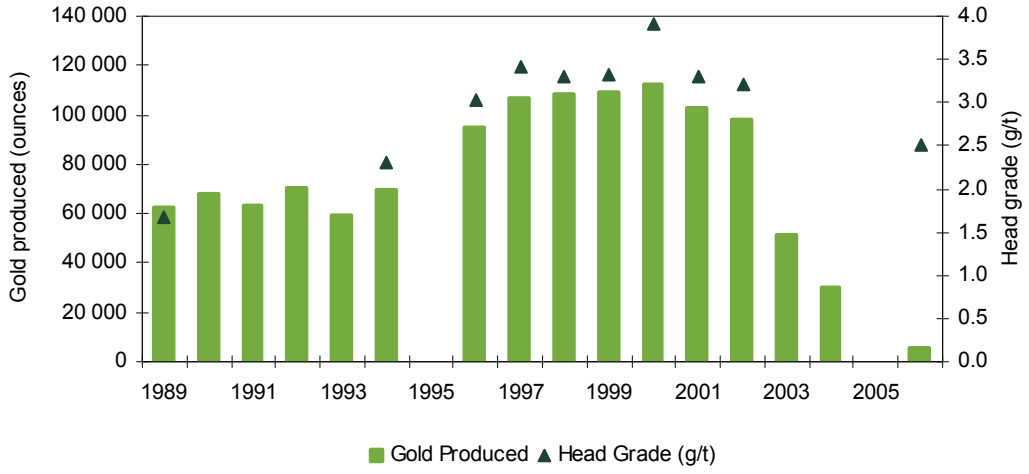
Mining

Freda Rebecca

The mine is not yet fully operational.

The mine is not yet fully operational, although production is expected to ramp up to 30 000oz/a by the end of 2009. Following our site visit we believe this is an achievable target, especially considering the mine once produced more than 100 000oz per annum.

Figure 82. Gold produced from Freda Rebecca (1989-2006)



Source: Metal Economics Group, Nedgroup Securities

The deposit was initially mined open-pit. A ramp system was developed in 1998 from a portal in the pit wall and the mine converted to an underground operation (see photograph below). Mining will be carried out using a fully-mechanised trackless mining fleet and the ore will be accessed via a sub-level stoping mining method.

Ore will be trucked to surface using a fleet of four dump trucks, three of which are still to be delivered to the mine. The underground section of the mine is currently 200m below the depth of the portal.

While the mine was on care-and-maintenance, the lower levels flooded.

While the mine was on care-and-maintenance, the lower levels flooded. Dewatering is almost complete. Vamping and old gold initiatives are currently under way and ore is being stockpiled. This clean-up operation is expected to take place for the next six months until the technical department has completed remapping and sampling all underground excavations to facilitate future planning.

Mining at a rate of 50 000oz/a gives the mine a seven-year life, based on current reserves.

Bindura Nickel Corporation

Mining at Trojan was carried out using sub-level caving. Two ore bodies were exploited, namely the Main ore body and the Hanging Wall ore body, both of which are steeply dipping (75-85°) and separated by a 60m waste zone. The lowest working level in the mine is 1 130m below surface and ore bodies are accessed via a sub-vertical shaft system, which has a capacity of 130ktpm.

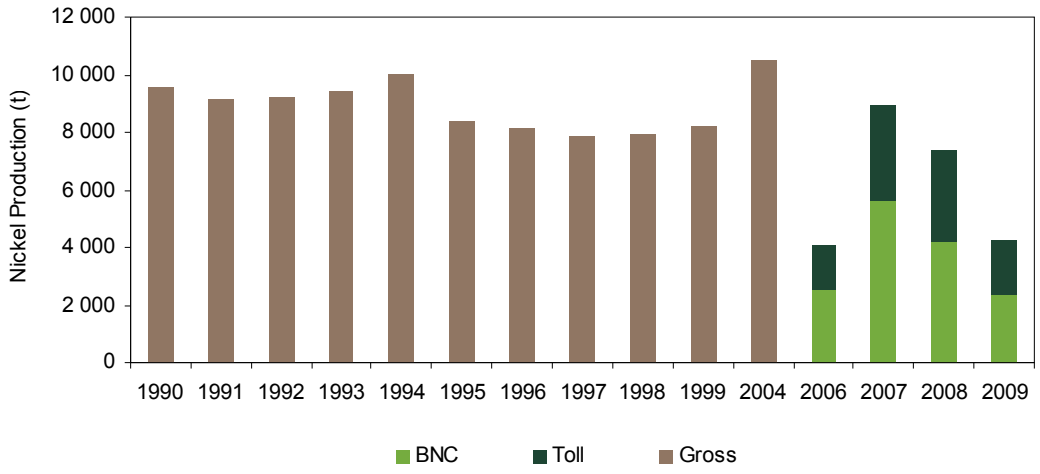
High-grade areas, referred to as massives, are mined separately and transported to surface in material cars for direct feeding to the smelter. At the time of closure, a deepening project was under way. The life of the operation was estimated to be five years in 2007.

The Shangani mine exploited three ore bodies – Main, West and Far West, using much the same method as employed at Trojan.

As at 2007, the mine had a four-year life. At the time, mining was taking place between 700m and 900m below surface. A deepening project was also being planned to extend the life of the operation.

Data for BNC's production was sourced from the Metal Economics Group (1990-2004) and the company's annual reports (2006-2009).

Figure 83. BNC historical production profile



Source: Metal Economics Group, company annual reports

The ore bodies are open at depth, and LOM could be extended, providing the shafts were deepened to reach the lower sections. BNC's longer-term plan is to bring the Hunters Road project into production, thereby maintaining sufficient ore feed to the smelter.

Beneficiation

Freda Rebecca

Recoveries at Freda Rebecca are expected to be between 70% and 80%.

Ore will be treated using a conventional carbon in leach (CIL) circuit. The plant is currently being refurbished and an external consulting company used to oversee the start up of the plant, which is expected to be operational by the end of October 2009. Recoveries at Freda Rebecca are expected to be between 70% and 80%.

Figure 84. CIL tanks and ore stockpile

Source: Nedgroup Securities

In phase one, the plant will only be refurbished to 50% capacity. During phase two, capacity will be increased to 100%.

Bindura Nickel Corporation

Ore is concentrated on site before being sent to the Bindura smelter and refinery.

Ore is initially sent through a three-phase crushing system, after which it is milled, passed through two classifying cyclones and fed to a primary flotation plant. Both concentrators have the capacity to treat 1 080ktpa. The concentrate from Shangani is transported by road to Bindura.

The Trojan concentrator was opened in 1964 and the Shangani concentrator in 1975. SRK reported in the competent persons report that the Shangani concentrator was in generally good condition and the Trojan concentrator was in acceptable condition and both concentrators would, with the correct maintenance, meet LOM requirements (2007).

Useful contact information

The following table provides useful contact details for the mining industry in Zimbabwe:

Table 60. Useful contact information

Organisation	Address	Telephone numbers
Chamber of Mines	Harare	+263 4 702 841/5
Geological Survey of Zimbabwe	Maufe Building, Cnr 5th Street and Selou Ave, Harare	+263 4 707 829/788
Ministry of Mines and Mining Development	Causeway, Harare	+263 4 777 022/9
Zimbabwe Chamber of Mines	Harare	+263 4 702 841
Zimbabwe Mining Development Corporation (ZMDC)	90 Mutare Rd, Harare	+263 4 487 014/20

Source: Ministry of mines and mining development

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Terminology

Ruling price: Closing price of the stock on the last trading day before publication of the report.
Fair value: Based on one or more fundamental valuation methodologies, the analyst's best estimate of the intrinsic value of the stock on the date of publication of the report.
Target price: Based on one or more fundamental valuation methodologies, the analyst's best estimate of price of the stock at some future date as specified, the default being 12-months forward.
Expected price: Based on one or more fundamental valuation methodologies, the strategy team's best estimate of price of the stock at some future date as specified, the default being 12-months forward. This will be the result of a rebalancing process between top-down ALSI return projections and aggregated bottom-up return projections.
Target/expected total return: The estimated total return of capital gain, dividends and distributions received for any particular stock over a period as specified, the default being 12-months forward.

Basis for Recommendation

The investment rating on a stock is a function of the target total return over the next 12-months and an explicit long-term risk (price volatility) indicator. The target total return is an absolute value calculated on the basis of an appropriate range of fundamental factors given specific input assumptions by the analyst. The long-term risk indicator is calculated on a total price basis that includes stock price, dividends and distributions, and is reflective of the historical business risk, currency risk, financial risk and liquidity of the underlying stock. No risk rating is provided when the listing record of a stock is < 24 months. Alternative investment recommendations (Not rated/Suspended rating) may occasionally be issued, in which case additional disclosures will be included.

Buy: The 12-month target total return of the stock is >20%
Hold: The 12-month target total return of the stock is between 10% and 20%
Sell: The 12-month target total return of the stock is <10%

Low: The 36-month historical total price volatility is < 30%
Medium: The 36-month historical total price volatility is between 30% and 50%
High: The 36-month historical total price volatility is > 50%

Figure 85. Share Price and Analyst's Track Record of Recommendations and 12-Month Forward Target Price (ZA c)

Figure 86. Rating Classification of Nedgroup Securities' Universe **Risk Classification of Nedgroup Securities' Universe**