Q1 2011 average gold mine cash costs rise $11/oz compared with Q4 10, to $620/oz

Q1 11 median gold mine cash costs rise $21/oz Q-o-Q, while the inter-quartile range widens by $40/oz, to $325/oz
The Gold Mine Cost Report is produced as part of a joint venture between ABN AMRO Bank N.V. and VM Group/Halliburton Mineral Services. It surveys the gold production cash costs of 111 gold mining companies.

**Analysts:**

- Carl Firman  
  E-mail: carl@vmgroup.co.uk
- Ted Reeve  
  E-mail: tedreeve@sympatico.ca
**Contents**

Methodology.................................................................................................................2  
Q1 2011 cost roundup .................................................................................................3  
Regional cost analysis...............................................................................................6  
About the authors .......................................................................................................8  
VM Group disclaimer and copyright.................................................................9  
ABN AMRO disclaimer and copyright.............................................................10
Methodology

Gold mine cash costs per ounce of production in this report are based on cost reporting from 111 gold mining companies worldwide, with a total of 274 mines existing in the most recent quarter. Although there is some variation in how companies report cash costs per ounce, most utilise the “Gold Institute Gold Cost Standard”. These costs include: direct mining and processing expenses; other onsite charges; third party smelting and refining charges; and royalties and production taxes net of by-product credits. Where reporting does vary from the Gold Institute Standard, recalculations have been made and in some cases estimates have been calculated and included where reliable data is not available. In our analysis we have excluded mines where gold produced is not the principal source of revenue.

The reader is cautioned that cash costs are only one component of total mine costs which, in addition to cash costs, would include depreciation, depletion, amortisation and reclamation and closure costs. Additionally at the corporate level there would be general and administrative expenses, as well as exploration expenses, etc.
Q1 2011 cost roundup

Average gold mine cash costs rise 1.8% to $620/oz\(^1\) in Q1 2011

The gold mining industry’s average cash cost of production in Q1 11 was $620/oz, up by $11/oz or 1.8% from the previous quarter. This follows a 4.0% quarterly rise in costs in Q4 10. On a year-on-year basis, the average cash cost advanced by 13%, continuing the double-digit year-on-year growth seen in every quarter since Q3 2009, when costs fell by 0.4%. Median costs of production rose by almost 4%, to $583/oz in Q1 11, the largest quarterly increase since Q1 10 and a reversal of the slight decline seen in Q4 10. 9\(^{th}\) decile high cost producers saw costs rise almost 11% on the quarter in Q1 11, to $959/oz. On a year ago comparison 9\(^{th}\) decile costs are up 17% and, notably, 49% from two years ago.

Lower quartile production costs fell for the first time since Q1 09, to $435/oz, down 5.4% from the previous quarter, while upper quartile costs advanced to $764/oz. This saw the interquartile range widen to a record $325/oz, up 14% quarter-on-quarter.

The net result saw the cost curve steepen as more mines moved into upper quartile and 9\(^{th}\) decile ranges. One obvious factor in this rise in production costs over the past few years has been the weak US dollar – in which gold is priced. This is evident in the regional cost breakdown, where US production costs have significantly lagged increases elsewhere. Another important factor has been rising input costs. Energy and raw material costs have all increased, in part due to the vast amount of excess liquidity generated by various government stimuli measures following the financial collapse in Q4 2008. In South Africa, power supply bottlenecks have also weighed on gold miners’ profits, while wage disputes and geological issues have also contributed.

<table>
<thead>
<tr>
<th>Gold cash costs by year and quarter, $/oz unless stated</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average cost</strong></td>
<td>394</td>
<td>470</td>
<td>485</td>
</tr>
<tr>
<td>Ave gold price (pm fix)</td>
<td>695</td>
<td>872</td>
<td>972</td>
</tr>
<tr>
<td><strong>Difference</strong></td>
<td>302</td>
<td>402</td>
<td>488</td>
</tr>
<tr>
<td>Cost at various positions on curve</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25%</td>
<td>307</td>
<td>390</td>
<td>394</td>
</tr>
<tr>
<td>Median -50%</td>
<td>385</td>
<td>460</td>
<td>476</td>
</tr>
<tr>
<td>75%</td>
<td>458</td>
<td>560</td>
<td>574</td>
</tr>
<tr>
<td>90%</td>
<td>556</td>
<td>667</td>
<td>685</td>
</tr>
<tr>
<td>Costed production (Moz)</td>
<td>42.3</td>
<td>42.9</td>
<td>44.6</td>
</tr>
<tr>
<td>Costed production (tonnes)</td>
<td>1,315</td>
<td>1,335</td>
<td>1,388</td>
</tr>
</tbody>
</table>

\(^1\) All costs are in US dollars per troy ounce unless otherwise indicated.

\(^2\) The average cash cost of mine was calculated as follows: each mine’s cash cost is multiplied by its production. This is determined for all 274 mines, and then divided by the total production of 11.7 Moz. For Q1 11 this gives a higher figure for average cash costs, $620/oz compared with the median, $583/oz.
Despite rising costs, gold miners have never had it so good. Producer margins have widened significantly since the trough in Q4 2008. Globally, the difference between the average production cash cost and average gold price in Q1 2011 was a record $767/oz – up from $758/oz in Q4 10. This is also some $422/oz more than that seen by gold miners in Q4 2008. Hence for an average gold miner producing 100,000oz of gold each year, profits after production cash costs have been taken into account, are now $42m higher than in Q4 2008. For Barrick Gold, which produced 7.8 Moz of gold in 2010, using the Q1 2011 production costs to price differential and assuming the company had produced a similar amount of gold in Q4 2008, margins are up almost $3.3bn.

In South Africa, the difference between average South African gold mine production costs and the average gold price over Q1 11 fell to $518/oz, from a record $541/oz in the previous quarter. For the rest of Africa, however, the difference between the average cost of production of $647/oz (down 5% q-o-q) and the average gold price grew to a record $740/oz. Latin America remains the most competitive region with the production cost/price differential at a record $891/oz in Q1 2011, up 1% on the quarter, but – what with the weak US dollar – the North American region is fast catching up. The North American cost/price differential advanced to a record $841/oz in Q1 11, up almost 4% on the quarter. Since Q1 09 the cost/price differential has risen by 95%, compared with that of Latin America at 65%. The cost/price differential in ‘other Africa’ has grown by 93% and that of Oceania is up 51%, while South African margins are up by just 14%.
The cost curve

On a distributional basis the cost curve for Q1 11 shows each mine in our database ranked in order of production cash costs, from low to high. The width of the bars represents the production of gold (in ‘000 ounces) by each mine in Q1 11 and the height represents the cash cost per ounce. The median mine on the cost curve in the quarter under review was Newmont’s majority-owned Yanacocha operation in Peru, which produced 288,000 oz of gold in Q1 11 at a cash cost of $583/oz, compared with 336,000 oz the previous quarter at a cash cost of $559/oz. The broader lines show the largest operations by output. These are dominated by the larger mines, such as Newmont’s Nevada complex in first position followed by Barrick Gold’s Cortez mine in the US. Newmont’s Yanacocha mine in Peru follows in third place before Barrick Gold’s Goldstrike operation in the US. On a cash cost basis, Medusa Mining’s Co-O mine in the Philippines remains the lowest cost producer, at $191/oz, while Barrick’s Gold Ruby Hill mine in the US moves to second place for the first time, with costs at $211/oz for production in the quarter at 36,000oz.

Source: VM Group/Haliburton Mineral Services

3 The median cost ounce is the one that falls halfway along the horizontal axis, which - as total production from these mines was 11.7 Moz during the quarter – is calculated from the mine that produced the 5.85 millionth lowest cost ounce.
Regional cost analysis

The US dollar weakened further against most major gold producing currencies in Q1 2011, putting upward pressure on production costs for miners. However, in South Africa the rand weakened for the first quarter since Q1 10 and by the most since Q4 2008. This did little though to prevent South African production cash costs from rising, with average costs up 5%, to $869/oz and median costs up 7%, to $922/oz. Of most note was the rise of 9th decile costs above the $1,200/oz level, indicating that should gold prices ease from current levels as much as 0.18 Moz per quarter of gold production would be placed in jeopardy. In the ‘other Africa’ region, the average cash cost of production was $647/oz in Q1 11, down 5% from the previous quarter but up 7.5% on the year. The interquartile range grew 15% as lower quartile costs fell 10% but upper quartile by just 2% during the period. Marginal costs rose 1%. The highest cost operation in the region was Lihir/Newcrest’s Bonikro mine in the Ivory Coast, at $2,134/oz, as political unrest in the country forced the operation to close in March. Similarly, Cluff Gold, which only reports semi-annually, reported very high cash costs ($1,168/oz) at its Angovia mine in the Ivory Coast as it put the mine on care and maintenance also in March.

The average gold mine cash costs in Oceania rose by 9%, to a record $778/oz. In this region there were 32 mines producing 0.98 Moz of gold in the quarter under review whose production cash costs equalled or exceeded the global upper quartile limit of $760/oz, while there were just three mines producing 0.14 Moz at costs at or below the lower quartile range of $435/oz. The most significant lowest cost producer in the region was Newmont’s Junee mine in Australia, which produced 100,000 oz in the quarter at $420/oz. This was only bettered by Ramelius Resources’ Wattle Dam operation and Exco Resources’ White Dam mine, which are also both in Australia. In Latin America there were 15 mines at or above the upper quartile range producing 0.18 Moz of gold in Q1 11, while there were an equal number of mines below the lower quartile range producing more than 1 Moz. The lowest cost producer in this region was Barrick Gold’s Lugamas Norte mine in Peru, which produced 192,000 oz of gold in the quarter, while the
highest cost producer was Aura Minerals’ Sao Vicente mine in Brazil, which was impacted by heavy rainfall during the period. In North America there were 17 mines above the upper quartile range producing 0.3 Moz of gold, while there were six mines below the lower quartile range outputting almost 0.7 Moz, while the pick of the bunch in Asia and CIS/Europe was Medusa Mining’s Co-O mine in the Philippines at just $191/oz for 25,911 oz of gold in Q1 11. In total some 0.7 Moz of gold production fell at or below the lower quartile range in these two regions, while just 0.1 Moz were at or above the upper quartile range.

Cost curves by region, year-on-year (Q1 11: grey line, Q1 10: green line)

Source: VM Group/Haliburton Mineral Services
About the authors

VM Group

VM Group is a commodities research consultancy that covers not just precious metals, but also base metals, energy, renewable energy, carbon, and agricommodities. The VM Group comprises a uniquely skilled team that is highly experienced in the analysis of the fundamentals of commodities and their geopolitical impact and contexts.

VM Group work excels in macro-economic analysis, the generation of supply and demand scenarios, cost analyses, derivative research and price forecasting. Confidentiality, experience and independence are key elements in this advisory capacity. We deliver excellence to those in need of external expertise, as well as those who wish to supplement their own in-house resources. Our extensive international contacts mean we are able to span the globe.

To see further how we can meet your research and consulting requirements, please email: info@vmgroup.co.uk

VM Group
100 Ashmill Street
London NW1 6RA
Tel: +44 20 7569 5930
Fax: +44 20 7569 5931

Haliburton Mineral Services

Haliburton Mineral Services
46 Hemford Crescent
Toronto, Ontario
Canada M3B 2S5
Tel: +1 416 447 7524
Fax: +1 416 447 7750

Founded in 2002, Haliburton Mineral Services is a private mining research and advisory business based in Toronto, Canada. The company’s President, Ted Reeve, has a background as a mining analyst and has published quarterly gold producer hedge surveys since 1990.
VM Group disclaimer and copyright

This report was prepared by VM Group and Haliburton Mineral Services (hereafter ‘VM Group/Haliburton’). VM Group/Haliburton has made all reasonable efforts to ensure that all information provided in this report is accurate and reliable at the time of inclusion however, there may be inadvertent and occasional errors and lack of accuracy or correctness, for which VM Group/Haliburton cannot be held responsible. VM Group/Haliburton and its employees have no obligation to inform the reader when opinions and information contained in this report change.

VM Group/Haliburton make no representation or warranty, express or implicit, as to the accuracy or completeness of contents of this report. This report is not and cannot be construed as an offer to sell, buy or trade any securities, equities, commodities or related derivative products and the report in no way offers investment advice. Therefore VM Group/Haliburton employees accept no liability for any direct, special, indirect, or consequential losses or damages, or any other losses or damages of whatsoever kind, resulting from whatever cause through the use of any information obtained either directly or indirectly from this report.

The contents of this report, all the information, opinions and conclusions contained are protected by copyright. This complete report may not be reproduced without the express consent of VM Group. Short extracts may be reproduced but only with the full and appropriate citing of the original source.
ABN AMRO disclaimer and copyright

The contents of this document are confidential and proprietary to ABN AMRO Bank N.V. and its affiliates (“ABN AMRO”) and may not be disclosed to a third party without ABN AMRO’s prior written consent. This document is provided for information purposes only and as an accommodation to you. The information contained herein (the “Information”) is current as at the date of issue and ABN AMRO shall be under no obligation to notify you of any changes to the Information or otherwise to update the Information after this date. Any material contained herein is for information purposes only and should not be regarded as an offer, recommendation or solicitation to buy or sell securities or derivative products. It does not contain a complete description of any particular product or transaction and any investment decision should be based upon the final documentation prepared in relation to any particular product or transaction. Information may have been obtained from, and/or based upon information obtained from sources that ABN AMRO believes to be reliable, however the accuracy and completeness thereof and the computations based thereon cannot be assumed. No representation or warranty, express or implied, is or will be made, and no responsibility or liability is or will be accepted by ABN AMRO or any of its officers, servants, agents, employees or advisors in relation to the accuracy or completeness of this document or the Information. The Information must be considered in conjunction with all other publicly available information. This document may include various forms of performance analysis, characteristics and pricing estimates. Such information and any opinion, estimate or projection contained in this document is illustrative only and is not intended to predict actual results which may be expected to differ substantially from those described in this document. Past performance is not necessarily indicative of future results.

ABN AMRO is not providing you with investment advice or a personal recommendation nor will it be deemed to have done so. The Information is being provided to you because we believe, based upon statements and other indications you have provided, that (i) you have sufficient knowledge, experience and professional advice to understand and make your own independent evaluation of the merits, risks and suitability of making an investment in the type of products or transactions described herein; (ii) you are not relying on ABN AMRO for information, advice or recommendations of any sort, except factual information, about the terms of any product or transaction; and (iii) you have sufficient financial means to accept the risk connected with any product or transaction described herein. ABN AMRO acts as principal in transacting with you and does not owe any fiduciary duties to you. You must determine the suitability of any products or transactions described herein. The products and transactions described herein may not be suitable for all investors. ABN AMRO is not providing you with financial, legal, tax, regulatory or accounting advice. It is your responsibility to seek your own advice in these respects and to satisfy yourself that you are aware of any such risks associated with the products or structures described in the Information. ABN AMRO expressly disclaims any responsibility for any uses to which you put this information.

This document does not purport to identify or suggest all of the risks, direct or indirect, which may be associated with any products or transactions described herein. ABN AMRO may have positions in trades and securities similar to the products and transactions described herein. There may be no market for products described herein, therefore investors should be prepared to hold any product until maturity. If you unwind a transaction early you may receive less than the stated redemption amount. Any transaction is subject to
approvals, procedures and policies determined by ABN AMRO and prevailing market conditions. The Information does not constitute research and as such may differ from published views. ABN AMRO Bank N.V. is authorised by De Nederlandsche Bank N.V. in the Netherlands and regulated by the Financial Services Authority for the conduct of investment business in the United Kingdom. Registered Office: Gustav Mahlerlaan 10, Amsterdam, Amsterdam, 1082 PP, Netherlands. ABN AMRO Markets (UK) Ltd. is regulated by the Financial Services Authority for the conduct of investment business in the United Kingdom. Registered Office: 5 Aldermanbury Square, London, EC2V 7HR, United Kingdom (Company number 02706278).