



# OPERATIONAL PROFILE 2017



**KIBALI**

**DEMOCRATIC REPUBLIC OF CONGO**

Kibali, one of the largest mines of its kind in Africa, is situated adjacent to the town of Doko and 210km from Arua on the Ugandan border. Kibali is co-owned by AngloGold Ashanti (45%), Randgold Resources Limited (45%) and Société Minière de Kilo-Moto (SOKIMO) (10%), a state-owned gold mining company. Randgold Resources manages the mine. Underground mining began in November 2017.

# HIGHLIGHTS

## PRODUCTION IMPROVES

## COST AND EFFICIENCY

improvements continue

## SECOND HYDROPOWER

station completed

## UNDERGROUND

mining begins

As at 31 December 2017:

- **MINERAL RESOURCE** of 7.44Moz (inclusive)
- **ORE RESERVE** of 3.91Moz



## Operational performance

### Production

At Kibali, tonnage throughput increased by 4% in 2017 to record levels. Gold production at 268,000oz in 2017 reflected the significantly improved performance in the second half of the year. This was boosted by an increase in both open-pit and underground ore tonnes mined following the successful commissioning of the underground materials handling system and optimal use of the shaft, facilitating the increase in higher grade ore from underground.

Improved plant availability and recovery rates also contributed to increased throughput and were boosted by additional ultra-fine grind and Pumpcell capacity. Using the Pumpcell among other things, helped facilitate the treatment of 100% sulphide ore at the processing plant where it was processed solely for extended periods, achieving design recovery and above-design throughput. This resulted in higher volumes of ore being treated and 2% increase in production.

In the underground mine, operational challenges compounded by underutilisation of the ore pass system continued during the year and resulted in the treatment of lower grade ore at the expense of the high-grade underground ore.

### Costs

All-in sustaining costs for Kibali increased year-on-year, a result of increased sustaining capital expenditure on waste stripping in the Pakaka and Kombokolo pits, increased underground capital expenditure, and higher plant engineering and process operating costs, in particular power costs. Open-pit mining costs were higher mainly due to lower equipment availability.

During the year, the Continental Africa region continued to drive continuous improvement through the Operational Excellence programme, a system that is now well entrenched across all sites and disciplines. The focus remains on delivering systemic and sustainable operational improvements, aimed at each operation rapidly progressing towards targeted lower all-in sustaining costs that reflect the inherent opportunity that exists within each operation.

### Growth and improvement

At Kibali, capital expenditure of \$110m for the year (attributable) was spent mostly on underground development, the vertical shaft and the second hydropower plant. Underground paving at the central haulage level was completed, allowing haulage from the ore passes into the underground crushers. The materials handling system was also commissioned during the last quarter of the year, and 118kt of ore hoisted from the shaft, with total underground ore tonnes of

1,110kt mined for the year. Underground ore production from the declines totalled 505,000t in the last quarter of the year. Once the ramp up has been completed, a significant increase in production is expected.

Ambarau, the second hydropower station was completed and commissioned during the first half of the year, taking Kibali's total hydro generation capacity to 32MW. At the plant, the ultra-fine grind and Pumpcell capacity was increased at the start of the year, enabling the processing of substantially increased flotation concentrate volumes, improving grind and recovery as well as providing flexibility in ore treatment. Furthermore, waste stripping at both Kombokolo and Pakaka satellite pits was undertaken during the course of the year. The only major capital project remaining is the third hydropower station at Azambi, which is being constructed and is expected to be commissioned in the second half of 2018.

### Capital expenditure

Capital expenditure increased to \$110m (2016: \$92m), in line with company plans as we invested in growth projects at Kibali.

### Sustainability performance

For further information on sustainable development activities related to Kibali, including safety and health, employee relations, the environment, communities, and security and human rights, refer to:

- *Regional reviews – Continental Africa in the <IR>*, available at [www.aga-reports.com](http://www.aga-reports.com)
- *<SDR>*, also available at [www.aga-reports.com](http://www.aga-reports.com)

# KIBALI – KEY STATISTICS

	Units	2017	2016	2015
<b>Operational performance</b>				
Cut-off grade <sup>(2)</sup>	oz/t	0.045	0.044	0.044
	g/t	1.53	1.52	1.52
Recovered grade	oz/t	0.159	0.161	0.085
	g/t	2.69	2.10	2.93
Tonnes treated/milled (attributable)	Mt	3.4	3.3	3.1
Gold production (attributable)	000oz	268	264	289
Total cash costs	\$/oz	784	740	609
All-in sustaining costs	\$/oz	1,090	893	642
Capital expenditure (attributable)	\$m	110	92	124
Productivity	oz/TEC	56.49	63.86	72.34
<b>People</b>				
Total average no. of employees <sup>(3)</sup>		2,428	2,180	2,061
– Permanent		402	349	338
– Contractors		2,026	1,831	1,723
<b>Environment</b>				
Total rehabilitation liabilities	\$m	11	10	7

<sup>(1)</sup> Environmental and safety information for Kibali is reported by the joint venture partner and manager of the operation, Randgold Resources Limited.

<sup>(2)</sup> Based on the Ore Reserve.

<sup>(3)</sup> The 2014 number for Kibali includes 3,249 employees who were working on projects.