Meeting demand for today and tomorrow

Chemaf corporate brochure
### Table of contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>About us</td>
<td>3</td>
</tr>
<tr>
<td>Our business</td>
<td>4</td>
</tr>
<tr>
<td>Our approach</td>
<td>6</td>
</tr>
<tr>
<td>Mining and processing</td>
<td>8</td>
</tr>
<tr>
<td>Exploration and the future</td>
<td>14</td>
</tr>
<tr>
<td>Corporate responsibility</td>
<td>16</td>
</tr>
<tr>
<td>Our leadership</td>
<td>18</td>
</tr>
</tbody>
</table>

### Converting copper and cobalt into a source of national pride and development.

The worldwide battery revolution is being fuelled by cobalt. What once was a little known mineral is now in greater demand than ever. Chemaf is perfectly positioned to meet that demand – safely and responsibly. Established in 2001, and with a considerable asset base in the Democratic Republic of the Congo (DRC), we are specialists in mineral exploration, mining and processing.

We produce London Metal Exchange (LME) grade cobalt and copper cathode.

With one of the largest and most promising exploration portfolios in the region, Chemaf is investing in its people and its operating capacity to meet the needs of the future.
Chemaf is a subsidiary of Shalina Resources Ltd., a privately owned company that is wholly owned by the Shalina Group, registered in Dubai (www.shalina.com).

We are a Congolese registered company with the proven capability and expertise to supply LME grade cobalt and copper to international markets.

Our state-of-the-art assets lower the cost of production, accelerate processing and provide a platform for long-term growth.

As global demand for copper and cobalt rises we are bringing new supply on-stream, safely and responsibly.

Our business

“We are one of the largest and most ambitious cobalt producers in the DRC.”

Shiraz Virji
Chairman of Chemaf

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As global demand for copper and cobalt rises we are bringing new supply on-stream, safely and responsibly.
Our commitment to safeguarding our employees, contractors and those impacted by our operations is critical to maintaining our licence to operate and ensuring that our business can continue to thrive.

Not only is this the right approach – it is also the most sustainable approach.

With heightened global demand for cobalt has come an amplified level of stakeholder interest and scrutiny in production methods. And for good reason – people must always come first.

Our operations are fully mechanised – enabling our partners to purchase material confident of both provenance, but also of high-quality working standards and conditions. Our investments in state of the art in-house mineral processing are in line with the Government’s long-term ambitions for the growth of the country’s mining industry.

The DRC is the primary world’s source of cobalt

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>DRC</td>
<td>60%</td>
</tr>
<tr>
<td>Other</td>
<td>14%</td>
</tr>
<tr>
<td>Australia</td>
<td>4%</td>
</tr>
<tr>
<td>Russia</td>
<td>3%</td>
</tr>
<tr>
<td>Zambia</td>
<td>3%</td>
</tr>
<tr>
<td>New Caledonia</td>
<td>3%</td>
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<tr>
<td>Cuba</td>
<td>3%</td>
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<tr>
<td>Philippines</td>
<td>4%</td>
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<tr>
<td>Canada</td>
<td>4%</td>
</tr>
<tr>
<td>Other</td>
<td>14%</td>
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Source: Macquarie Research Report, October 2017

Our approach

“We are converting copper and cobalt into a source of national pride and development.”

Ghislain Yumba
Chemaf General Manager, Mining

In collaboration with our downstream partners, we are bringing responsibly sourced cobalt and copper to international markets.

We have structured our approach to ensure that the value that we derive from mining and processing is ploughed back into the local economy. We are offering opportunities to some of the DRC’s brightest minds, and we are also giving back through a considerable philanthropic programme – to schools, hospitals and infrastructure projects.

The DRC holds an estimated 10 percent of the world’s copper and 60 percent of its cobalt. We are committed to Chemaf playing a transformative role in converting the country’s precious natural assets into a source of national pride and development.

The DRC is the No.1 Largest cobalt producer with approximately 48% of global reserves

No.6 Largest copper producer
A source of quality
With demand for electric vehicles set to rise exponentially in the coming years, Chemaf has an important role to play in providing the market with high-quality, responsibly sourced material.

The copper grade at our mines, typically of 1.88 percent, compares favourably to the global average of 0.70 percent. The resource wealth we mine has enabled us to accelerate copper cathode and cobalt hydroxide production in line with customer demand.

Scarce metal
As electric car production takes off, cobalt supplies are projected to fall well short of demand.

We are ramping up production to keep pace with volume demand from our global partners.

Investing in innovation to build world-class facilities
Our newly built Etoile processing plant is located at the Etoile mine, and is the first of its kind in the DRC. The $728 million dollar facility is designed to receive and process 365,000 tonnes per year of concentrate.

Modern production
Since Chemaf’s establishment, we have held a steady track record of investing in quality infrastructure and upgraded technologies to increase production efficiencies.

- 2001: Acquisition of the Usoke plot in Lubumbashi’s industrial zone.
- 2006: Operations at Etoile Mine are fully mechanised.
- 2008: Etoile Heavy Media Separation (HMS) plant construction.
- 2010: Etoile HMS 2 plant construction, Etoile sulphuric acid plant construction.
- 2011: Addition of a Pre-leach Concentration System at Usoke’s Leach Solvent Extraction and Electrowinning Plant (SXEW).
- 2012: Addition of 2 Counter Current Decantation (CCD) thickener circuits at Usoke leach SXEW plant.
- 2013: Copper SXEW circuit and cobalt magnesium oxide (MgO) upgrade at Usoke leach SXEW plant.
- 2016: Etoile leach SXEW plant construction (Commissioning for copper in October 2016 and for cobalt in February, 2017).
“We have a strong track record of investing, developing and optimising our asset base of highly productive mines and processing units.”

Sebastien Ansel
Executive Director and Chief Financial Officer
First explored in 1907 by Tanganyika Concessions Ltd., the Etoile ore body, then known as the Kalukuluku mine, was discovered in 1911.
In 2003 Chemaf was granted the mining rights to Etoile and exploration rights to its surrounding areas.

The Etoile pit, which produces copper and cobalt oxides and sulphides, is open cast at 2.55 percent copper and 0.35 percent cobalt.

Offering extensive exploration potential and just 1.5km to the north-east of the Etoile mine, the Etoile Extension is a shallow orebody of approximately 300 metres in length and 150 metres wide.
While the deposit has relatively low-grade copper mineralisation, the cobalt mineralisation is estimated to be consistent with the Etoile mine, with a defined mineral resource of 3.17 million tonnes at 0.31 percent copper and 0.66 percent cobalt.

Our new US$128 million Etoile Processing Plant is based on proven technology developed ‘in house’ by Chemaf at its Usoke process plant.
The plant is designed to produce 20,000 tonnes per annum of LME ‘A grade’ copper cathodes and 3,800 tonnes of cobalt as cobalt in hydroxide salt per annum.
The first copper cathodes were produced at the plant in October 2016 and the first cobalt hydroxide cake was produced in February 2017.

The Mufunta concession is located 9km to the south-east of the Etoile mine site. As a mechanised open pit operation the mine produces oxide.
In July 2012, AMC undertook an audit of the drilling work at Mufunta to ensure compliance with JORC standards. In line with their audit, a JORC-compliant resource statement was generated. While there are no significant cobalt deposits at Mufunta, it enjoys 1.22 million tonnes of mineral resource at 1.51 percent copper.

Luisha incorporates Kanshishi mine and Kansongwe. First exploited by Union Miniere du Haut Katanga in 1913, and located 75 kilometres northwest of Lubumbashi, Kanshishi benefits from 0.3 million tonnes of mineral resource at 1.95 percent copper. Kansongwe represents a far larger tenement of 7.0 million tonnes at 1.43 percent copper.

Mutoshi incorporates various deposits of copper and cobalt on the Kolwezi Klippe. First developed in 1903 as gold mine, and with around 300,000 tonnes of cobalt resource, the property represents an exciting opportunity for Chemaf.
Chemaf is developing a processing plant at the site with capacity for 20,000 tonnes of copper and 16,000 tonnes of cobalt per annum.
Chemaf has a well-developed and defined exploration programme that provides a solid foundation for long-term growth. We have a range of exploration projects focused on cobalt and copper at varying stages of development. Through targeted drilling programmes, we aim to significantly increase our resource base and mining capacity. Each year, preliminary geological and reconnaissance surveys are executed in order to define future priorities. Geochemical analyses are performed step-by-step to detect mineralisation irregularities and to identify potential targets. In accordance with the requirements of the Joint Ore Reserves Committee (JORC) Code, strict quality assurance and quality control standards are met for data collection and validation, as well as documentation of deposit characterisation.
Corporate responsibility

We are committed to developing a robust and responsible business.

Confidence in our supply chain

Beyond the promotion of our own rigorous approach to managing safety, health, environmental impacts and community matters, we are also committed to collaborating with our downstream partners in bringing responsibly sourced products to international markets.

We actively contribute to the due diligence measures taken by our downstream partners. Most recently these assessments, of which we have had many, have incorporated the review of our health and safety, human rights and labour performance, environmental management programmes as well as community engagement strategy.

We have committed to working alongside our partners, authoritative external bodies and NGOs to ensure that our supply chain meets their exacting requirements.

Safety and the environment

We are mindful of the hazardous nature of our activities and of the environmental footprint of our operations.

We comply with all local and regional legislation and are increasingly seeking to apply international standards, such as the IFC performance standards, to our business.

We know that we have more to do to improve, but we are committed to a substantial and ongoing body of work in support of improving our social and environmental performance and of mitigating any negative impacts for the long term.

Supporting our surrounding community

Chemaf believes in contributing to the prosperity of the DRC by providing job opportunities for Congolese nationals and by investing in local community projects.

Our priority is first to manage our own impacts in the community. Secondly, we have sought to support social projects that empower local communities to improve their way of life.

We have invested significantly in the provision of infrastructure, including through the construction of roads, as well as through health and education projects around our operations.

One of our most important social contributions has been our investment in the Shalina Ophthalmological Center - a non-profit organisation that offers free eye care, including performing cataract operations for those in need.
Our leadership

Committed to sustained performance

Shiraz Virji
Chairman of Chemaf
After having learnt the trade from his father, Mr. Virji began a successful career as an exporter of spices and timber from Mombasa, Kenya.

In 1971 he moved to London and opened a wholesale warehouse in Willesden, UK. In 1981 Shiraz travelled back to India where he started a pharmaceutical business and began exporting generic medicines to Zaire, now the DRC. He conceived the Shalina brand incorporating over one hundred pharmaceutical products that are now marketed in multiple sub-Saharan African countries under Shalina Healthcare Ltd. In 2001 Mr. Virji acquired several mining concessions in the DRC and built Chemaf’s first processing facilities. He is based in the DRC, and spearheads Chemaf’s growth strategy.

Sebastien Ansel
Executive Director and Chief Financial Officer
Sebastien Ansel graduated from Dijon University, France in 1996 with an MA in Finance. He started his career at Ernst and Young in Luxembourg where he was employed as an auditor.

In 1997 Mr. Ansel moved to the Whitehall Hedge Fund in Paris working as Portfolio Manager specialising in French Private Real Estate. From 2000 to 2008 he held a position as Multi Fund Manager at the Russell Investment Group concentrating on European Equities. In 2008, Mr. Ansel was appointed as Chief Financial Officer for Chemaf.

Ghislain Yumba
Chemaf General Manager, Mining
Ghislain Yumba, Chemaf’s Business Development Manager, graduated from Lubumbashi University with a degree in mining engineering.

He is a qualified mining engineer with considerable experience working in the DRC Copper Belt. He has held a number of technical and supervisory positions at mines in the DRC for Gecamines. Mr. Yumba joined Chemaf in 2003 as Head of Mining Operations. In 2008 he was appointed to the position of Etoile mine General Manager before being appointed to the position of General Manager for all of Chemaf’s mining activities in the DRC.

Shiraz Virji
Chemaf Chairman and Shalina Resources Group Chairman

“Our companies will always serve Africa whilst at the same time remain profitable and sustain their growth, enabling them to contribute more to the lives of those people who have far less.”