

COBALT NEWS

Issue 7, July 2019

SPECIAL EDITION

THE COBALT CONFERENCE 2019

HONG KONG, 15-16 MAY

SPECIAL ISSUE: THE COBALT CONFERENCE 2019

Back from The Cobalt Conference which this year was held in the bustling city of Honk Kong, and once again provided an excellent forum for networking, looking at the latest developments and sharing experiences and knowledge of the cobalt market.

Two key takeaways: cobalt is still riding on the crest of the wave and it is an essential material for the energy transition. It plays a major role in the improvement of safety and stability of EVs rechargeable batteries, as well as an irreplaceable resource in other key 21st century high-technology applications such as renewable energy storage, computer electronics, 3D printing, superalloys, catalysts and artificial intelligence. These are all drivers for technological innovation and the future low carbon economy. We also saw and heard throughout the conference sessions how important it was to consider new ways of sustainable sourcing, production and recycling of cobalt to fit within the circular economic model.

The 2019 conference was largely focused on sustainability with a special session dedicated to this topic. But participants had also the opportunity to receive first-hand information about the global cobalt market, deep sea mining, the African vision for cobalt, the rise of Li-ion megafactories, the cobalt market in China and the DRC cobalt supply among other interesting issues which are summarized in the following pages.

We take this opportunity to remind you that The Cobalt Conference 2020 will take place in Madrid (Spain) from 13 to 14 May. We are looking forward to your attendance at this key industry event! More information will follow soon on www.cobaltinstitute.org.

Would you like to present a paper at The Cobalt Conference 2020 in Madrid? Please contact us at CI@cobaltinstitute.org.

If you would like to propose an article to be published in this magazine, please contact the editor at CI@cobaltinstitute.org.

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**THE COBALT CONFERENCE
HONG KONG 2019
15-16 MAY**

COBALT INSTITUTE

Promoting the sustainable and responsible use of cobalt in all forms

The Cobalt Institute Annual Conference 2019 took place in Hong Kong (China) from 15 to 16 May. The focus of this edition was on cobalt as a key metal which is essential for the energy transition to a low or even zero carbon future economy, as stressed by the President of the Cobalt Institute (CI), David Weight, in his opening speech.

The programme of the conference for this year covered a wide range of topics including cobalt production costs, compliance landscape, market analysis, innovative cobalt sourcing, the cobalt industry responsible assessment framework (CIRAF), and more.

SESSION 1 (MAY 15)

During the opening remarks the President of the Cobalt institute, David Weight, stressed the hard work conducted by the CI to protect market access for cobalt at many levels, from regulatory implementation through sustainability and responsible sourcing to cutting-edge science. In this respect, he also said that the institution aims to positioning itself as the 'go-to' association for all matters relating to cobalt.

STABILISING COBALT. HOW NEW SUPPLY LIQUIDITY COULD BRING AN ERA OF PRICE STABILITY

George Heppel, Senior Analyst - Cobalt, Lithium & Battery Markets at CRU, made the first presentation which looked into the 2017-2018 cobalt price boom and the three supply chain bottlenecks that caused this. He also highlighted the world's dependence on the DRC cobalt stressing that by 2020 around three quarters of the cobalt will be mined in this same country.



The premise of this year's presentation

- The “triple whammy” that hit the cobalt market between 2016 and 2018
- How three distinct supply chain bottlenecks caused this...
- ...and why they are unlikely to reappear in the mid-term....
- ...but significant risks continue to exist.

“The world needs a new cobalt metal refinery!”

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DRC SUPPLY CHAIN

Paul Mabolia, representing the DRC Ministry of Mines, discussed the production of cobalt in the DRC focusing on three main areas: the legal framework, cobalt production, projections and perspectives and the challenges that faces the cobalt production sector in the African country. He also talked about investments opportunities in the DRC cobalt sector.

COBALT OPPORTUNITIES FROM DEEP-SEA RESOURCES

Deep sea mining has becoming a hot topic of interest. Tom Albanese from CIC, a consortium focused on deep-sea nodule extraction, delivered a presentation outlining the enormous potential that the deep-sea manganese nodules represent for the supply of cobalt and other

metals fundamental for EV development. He also highlighted the possible production of marine sourced cobalt within the next decade.

NORNICKEL – SUSTAINABLE COBALT SUPPLIER

Alex Khodov, principal nickel and cobalt Analyst at Norilsk Nickel focused on the sustainability issues of cobalt supply. He talked about Nornickel's cobalt products and production process and its environmental improvements.



COBALT: PERSPECTIVES ON FUTURE RESOURCE SUPPLY

Dr Richard Herrington from The Natural History Museum London provided a comprehensive view of the research project CoG3 (Cobalt: Geology, Geomicrobiology, Geometallurgy), focused on understanding the natural behaviour and biogeochemistry of cobalt as well as developing and applying new bioprocessing strategies for cobalt extraction, recovery and synthesis of targeted products. He also introduced the new Crocodile EU project focused on studying the recovery and production of cobalt from European resources.



Cobalt: Geology, Geomicrobiology, Geometallurgy

Cobalt: perspectives on future resource supply

Richard Herrington,
The CoG³ Research Team
<http://www.nhm.ac.uk/our-science/our-work/sustainability/cog3-cobalt-project.html>

Cobalt Conference, Hong Kong 15th May 2019

COBALT PRODUCTION COSTS AND THE FACTORS DRIVING THE VIABILITY OF NEW SUPPLY

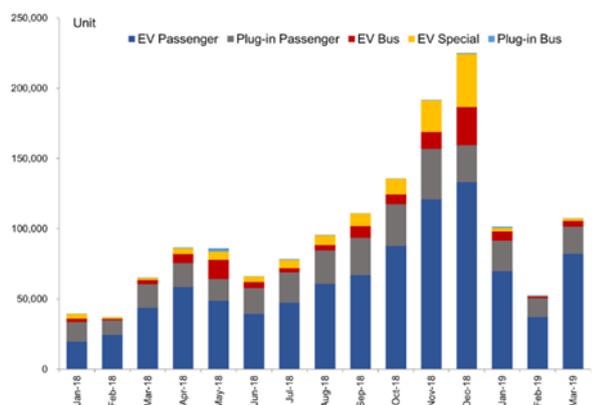
Cobalt will continue to play a key role in lithium-ion batteries technology. Oliver Heathman, manager for mining research and cost modelling at Roskill, delivered a presentation where he noted that the outlook for cobalt demand remains very positive. He stressed that cobalt feedstock need to grow significantly as the market will need substantial new sources of supply eventually, and also new refined capacity will be required in the 2020s to meet future demand.

SHARING AND WIN-WIN WITH THE WORLD. DEVELOPMENT STATUS AND PROSPECTS OF THE COBALT MARKET IN CHINA

安泰科
Antaiko

EV-very important cobalt consumption sector

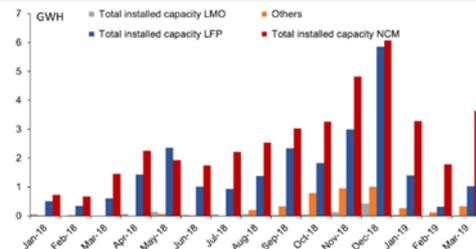
China EV production situation



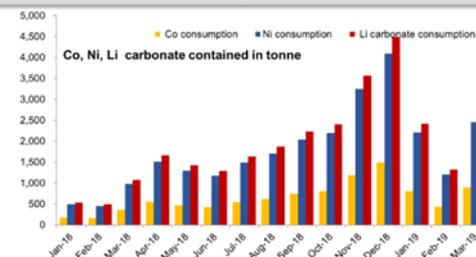
In 2018, there was 56.37GWH of lithium battery installed into NEV in China, up by 67.7% YOY and in which there was 33.54GWH of ternary batteries (NCM and NCA), accounting for 59.5%.

Source: Antaiko

China EV installed lithium battery by cathode material



Ni Co & Li Consumption in China EV



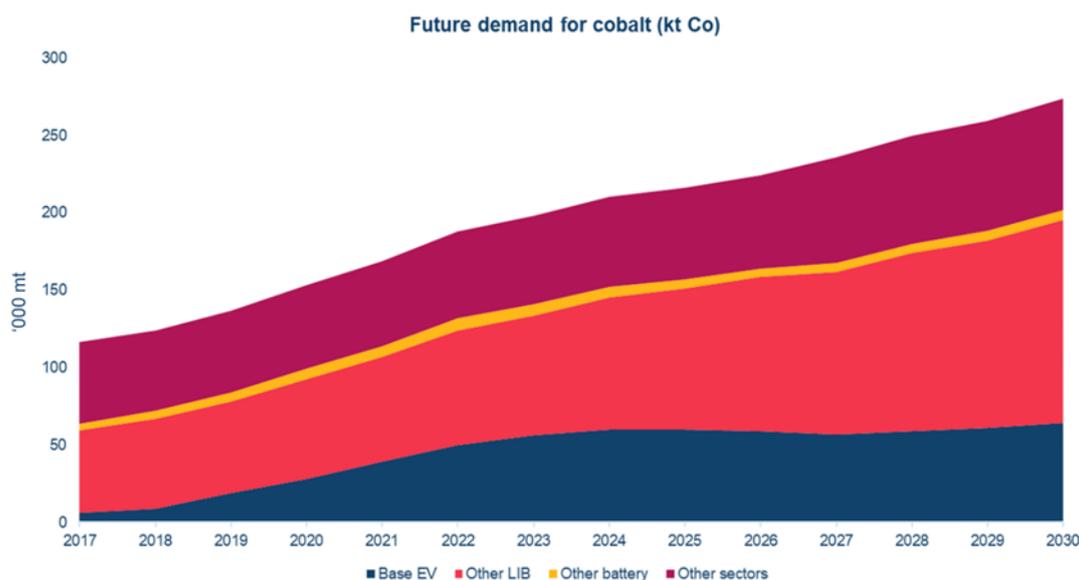
Joy Kong, analyst at Beijing Antaike Information Development, offered an outlook of the cobalt market in China. She highlighted that lithium-ion batteries are the larger demand growth field. The presentation also looked at the global supply of cobalt raw materials and the price differentials that are seen in the Chinese market compared to the rest of the world.

THE LME COBALT CONTRACT

Hugo Brodie, from the office of the London Metal Exchange CEO, started with an introduction on the role of cobalt in the booming EV industry; he provided valuable insights into the two cobalt contracts available on the LME and its responsible sourcing initiative, approach and plan of action. He offered the audience the opportunity to participate and engage in this project.

Cobalt market continues to grow rapidly

Electric vehicles (EV) boom forecast to double present demand by 2030



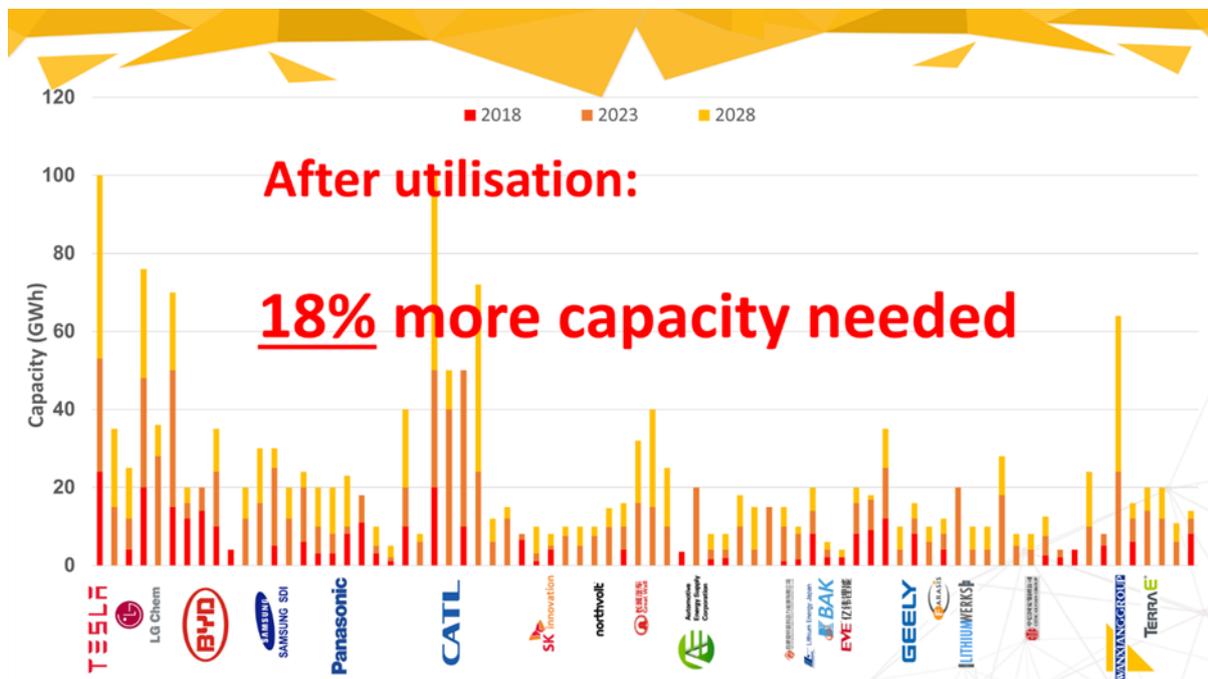
Source: Roskill International

LME
An HKEX Company

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COBALT AND THE RISE OF THE LITHIUM ION BATTERY MEGAFACORIES

Caspar Rawles, analyst at Benchmark Mineral Intelligence, discussed the development of lithium-ion battery megafactories; he noted that the expansion announcements will impact on the volumes of critical raw materials required. He also talked about cobalt's demand and supply and the role of cobalt in the increasing electrification of society.



SESSION 2 (MAY 16)

ESTABLISHING THE COBALT INDUSTRY RESPONSIBLE ASSESSMENT FRAMEWORK (CIRAF)

Alice Valvodova, Head of Advisory, Knowledge and Training at RCS Global Group, open the second day of The Cobalt Conference with a presentation which provided a broad overview of the CIRAF initiative, the Cobalt Industry Responsible Assessment Framework launched



The Framework is designed to be applied at a global level

It provides a management framework:

1. For identifying risks linked to both production and sourcing from high-risk countries as well as not operating in or sourcing from high-risk countries.
2. To respond to and manage 4 risk categories and 9 risk areas.

Risk Categories	Risk Areas
1. Environment	<ul style="list-style-type: none"> • Air/ water / soil environmental impacts • Biodiversity impacts
2. Occupational Health and Safety (OHS)	OHS and working conditions
3. Human Rights (as defined in Annex II of the OECD DDG)	<ul style="list-style-type: none"> • Conflict and corruption • Human rights impacts • Child labour
4. Community	<ul style="list-style-type: none"> • ASM • Livelihoods • Resettlement

in January 2019 which aims to enable member companies, and the cobalt industry more generally, to conduct enhanced risk management in line with industry good practice and global standards focused on the responsible sourcing of minerals. She explained its objectives and requirements and outlined the progress achieved to date in terms of adoption and implementation.

SUSTAINABLE MINING

The Tenke Fungurume mine, owned and operated by China Molybdenum and located in the copper belt region of southeastern Democratic Republic of Congo, has a commitment to sustainable mining. Mark Hardin, Director of Environment and Sustainable Development at China Molybdenum Company, explained the risk-based analysis conducted by the company in order to identify material issues including safety, community relations, land acquisition, environmental stewardship, human rights and labor practices. He also talked about the set of industry good-practice frameworks being used to help manage these risks. In this regard, he highlighted that CMOC has incorporated the CIRAF framework into its external disclosures on product stewardship as part of its 2018 Environment, Social and Governance (ESG) report.

Adding CIRAF to Existing Good Practices

Assuring sustainable production	Assuring alignment with GIIP frameworks
<div style="text-align: right; font-weight: bold; font-size: small;">CORPORATEintegrity RESPONSIBLE BUSINESS PERFORMANCE</div> <p style="font-size: x-small; margin-top: 0;">Assurance Statement - Product control and custody at TFM</p> <p style="font-size: x-small; margin-top: 5px;">The management of Tenke Fungurume Mining S.A. (TFM), asked Corporate Integrity Ltd. to review product control and custody procedures at the TFM concession in the Democratic Republic of Congo (DRC) and to provide assurance over the following statement:</p> <p style="font-size: x-small; margin-top: 5px;"><i>'Tenke Fungurume Mining S.A. (TFM), an industrial copper and cobalt mine in southeastern DRC and an affiliate of CMOC, is committed to apply a duty of care in product stewardship commensurate with the concerns of its customers in the international minerals supply chain. TFM implements robust product control and custody procedures to ensure that it mines, processes and sells only those minerals that originate within its mining concession and that are mined by its own operations. These procedures include specific actions to dispose of illegally mined ore confiscated by government authorities within the TFM concession. TFM does not purchase or process ore from any other source. TFM maintains a system to track the copper and cobalt products produced at its operations through the points of transfer, and to the final point of delivery to its customers outside of the DRC. TFM continues to implement the Sustainable Development Principles of the International Council on Mining and Metals. Incorporation of these Principles is a reflection of our continued commitment to maintaining our status as a responsible mining operation and supply chain, further aligning with other international good practice frameworks that seek elimination of child labor, forced labor and violations of human rights. Due to the importance of monitoring and maintaining these procedures in managing TFM's mineral supply chain, in 2018 TFM received independent assurance of the company's product control and custody procedures.'</i></p> <p style="font-size: x-small; margin-top: 5px;">Our approach involved:</p> <ul style="list-style-type: none"> • Interviews with relevant personnel at the site • Review of procedures in place at the operation for control, custody and tracking of product and for implementation of the 10 Sustainable Development Principles • Visit to the confiscated product disposal site • Review of samples of documents used for recording and reporting the control, custody and tracking of product from the mine concession area. <p style="font-size: x-small; margin-top: 5px;">Our Findings: Based on our review, its scope and limitations, nothing has come to our attention that prevents us from concluding that TFM's assertions in the above statement are correct.</p>	<div style="text-align: right; font-weight: bold; font-size: small;">CORPORATEintegrity RESPONSIBLE BUSINESS PERFORMANCE</div> <p style="font-size: x-small; margin-top: 0;">Assurance Statement</p> <p style="font-size: x-small; margin-top: 5px;">The CMOC Environmental Social and Governance (ESG) Report for 2018, has been prepared by the management of China Molybdenum Co., Ltd.(CMOC) who are responsible for the collection and presentation of this information.</p> <p style="font-size: x-small; margin-top: 5px;">Scope Corporate Integrity Ltd., in accordance with CMOC management's instructions, was asked to perform:</p> <ol style="list-style-type: none"> 1. A review of policies and systems in place at the CMOC's international operations in relation to CMOC's commitment to align with ICMM Principles for Sustainable Development in the mining and metals industry and ICMM Position Statements. The operations covered by this review were: <ul style="list-style-type: none"> • Tenke Fungurume Mining operations in the Democratic Republic of Congo; • Northparkes operations in Australia; • Niobras and Copebras operations in Brazil; and • Corporate activities relevant to the above operations. 2. A review of statements in relation to the above operations made in the CMOC ESG Report covering the 2018 reporting year including reporting against GRI Standards. <p style="font-size: x-small; margin-top: 5px;">This involved selective reviews of documents, interviews, site visits to all of the above operations, interviews with the management of the Global Sustainability Team and discussions with the CMOC Board.</p> <p style="font-size: x-small; margin-top: 5px;">Key Findings Based on our review, its scope and limitations, nothing has come to our attention which causes us to believe:</p> <ul style="list-style-type: none"> • That the policies and systems in place at the international operations are not in alignment with the ICMM principles for sustainable development in the mining and metals industry and ICMM Position Statements. • That the information reported relating to the international operations in the CMOC ESG Report for 2018 and the related GRI disclosures have been materially misstated.

Additional value offered by CIRAF

- Collective rather than independent external assurance of sustainable production
- Effective benchmarking of multiple frameworks
- Focus on assuring legal/industrial production (i.e. most ASM is illegal in the DRC)
- Positioning for preferred market access → higher prices

THE COMPLIANCE LANDSCAPE OF THE DOWNSTREAM CONSUMER

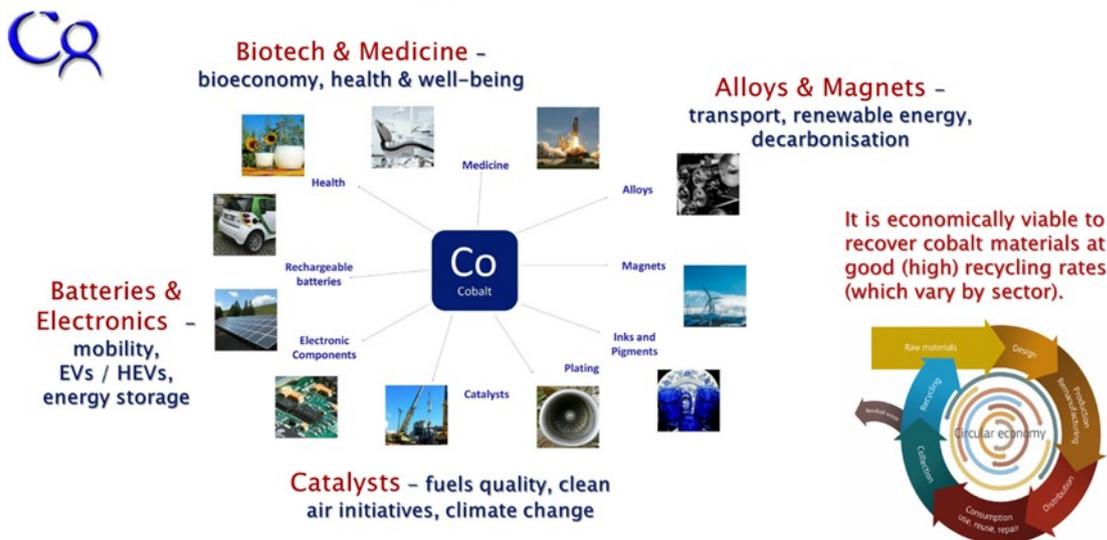
Jared Connors, Senior Subject Matter Expert, Corporate Social Responsibility at Assent Compliance, talked about the importance of sustainably sourced cobalt and its impacts on supply chains. He outlined the compliance requirements and market expectations affecting downstream users of cobalt materials; he also addressed the broad range of compliance and regulatory topics such as responsible sourcing, corporate social responsibility expectations and vendor management regulations, among others.

The second day of The Cobalt Conference also included a full session on the topic of sustainability covered through a wide range of presentations:

VISION FOR SUSTAINABILITY IN THE COBALT INDUSTRY

Guy Ethier from Umicore and Chair of the Cobalt Institute Board, opened the session addressing the core position of sustainability on the work carried out by the CI and the role of the Cobalt Institute with regard to support the industry in developing the tools and practices to demonstrate cobalt's contribution to sustainable development.

Cobalt sustainability profiles & Circular Economy themes



COBALT: POWERING SUSTAINABLE DEVELOPMENT

James Nicholson, Head of Corporate Responsibility, Trafigura Group - Global Battery Alliance (GBA), explained GBA's goal of establishing a sustainable battery value chain to power the decarbonization of the world's energy and transport systems. He concluded its presentation by inviting all participants in the battery value change to work towards the sustainable development of this market sector.

APPLYING THE AFRICA MINING VISION AND KPIS IN THE COBALT INDUSTRY

Cobalt has a leading role in the 4th industrial revolution; it is a fundamental element to achieve a greener economy. Claudine Sigam from the Commodities Branch - United Nations Conference on Trade and Development (UNCTAD), provided a comprehensive overview of the Africa Mining Vision, the continental framework aimed to leverage the mineral resources and to enhance the continent's economic development, transformation and diversification. During her presentation, she also highlighted the huge opportunities in the supply chain for Africa and the cobalt industry.

Applying AMV and KPIs in the Cobalt Industry

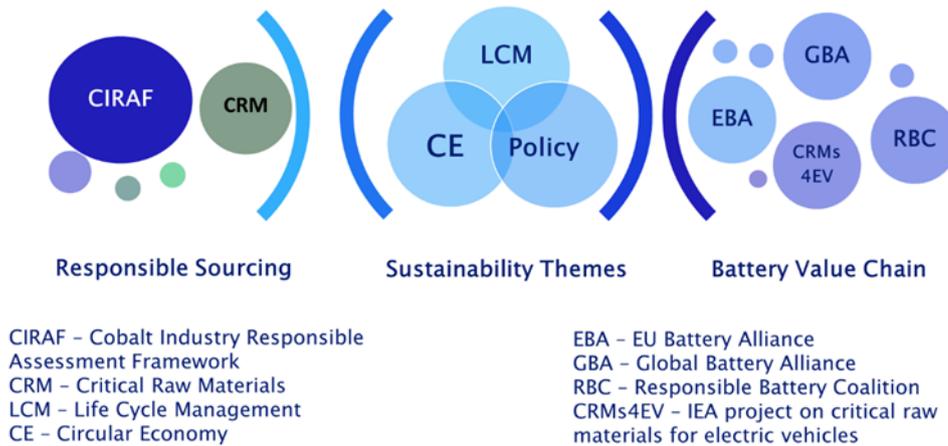
MAIN POINT

As Cobalt is the anchor mineral for
greening the economy, the whole
value chain around the Cobalt **must**
be inclusive

DEVELOPING THE SUSTAINABILITY PROGRAMME FOR COBALT

Carol-lynn Pettit, REACH & Sustainability Manager at the Cobalt Institute and in charge of the conference's session on sustainability, developed a presentation on the CI's sustainability programme for cobalt focused on responsible sourcing, cobalt as a critical raw material, sustainability themes such as climate change, decarbonization, and life cycle management among others projects, and the role of cobalt in the battery value chain.

OVERVIEW - SUSTAINABILITY PROGRAMME FOR COBALT



www.cobaltinstitute.org



The CI would like to thank the speakers for their contribution in making our 26th Cobalt Conference so successful.



CALL FOR PAPERS!

**Would you like
to present a paper at
The Cobalt Conference
2020
In Madrid?**

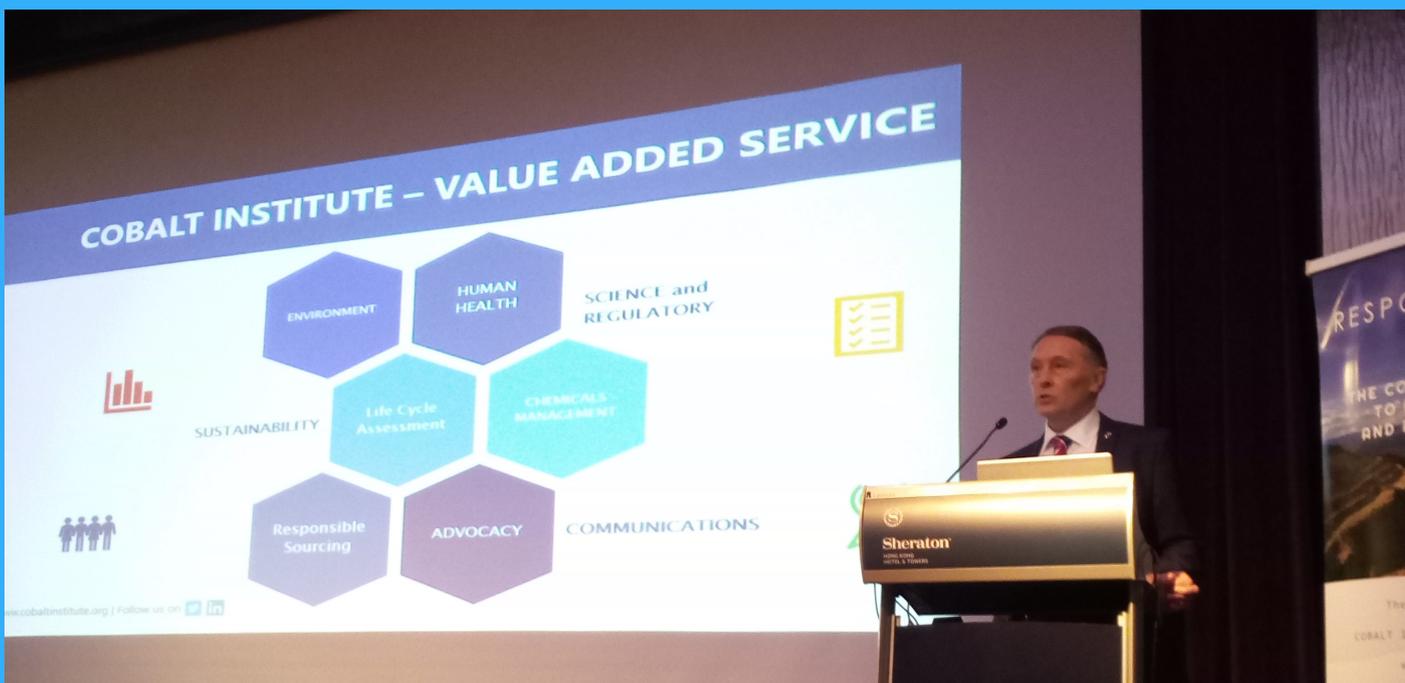
Contact us:

rtroncoso@cobaltinstitute.org

dweight@cobaltinstitute.org

THE CI WORK IN PICTURES

Our President, David Weight, deeply engaged in The Cobalt Conference session



Introducing the second part of the day: Simon Cook, VP of Global Regulation



Carol Pettit, our Sustainability Manager in charge of the Sustainability Session during the second day of the Conference which generated huge interest



THE CI WORK IN PICTURES

Closing The Cobalt Conference 2019 in Hong Kong



Other moments of the forum



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2020
In Madrid?**

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rtroncoso@cobaltinstitute.org

dweight@cobaltinstitute.org

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Membership of the CI is open to those engaged or interested in the industry, subject to and acceptance by the Board.

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