



**International Copper
Association**
Copper Alliance



2019
ANNUAL REPORT

Members | As of 31 December 2019

Anglo American
Antofagasta Minerals S.A.
Aurubis
BHP Billiton Plc
Boliden AB
Buenvista de Cobre, S.A. de C.V.
Chinalco Luoyang
Compañía Minera Doña Inez Collahuasi
Compañía Minera Zaldívar
CODELCO-Chile
Daechang Co., Ltd.
Freeport McMoRan Inc.

Glencore
Golden Dragon Precise Copper Tube
KGHM Polska Miedz S.A.
LS-Nikko Copper Inc.
Metalurgica de Cobre S.A. de C.V.
Minera Antamina S.A.
Minera Centinela
Minera Escondida Limitada
Minera Los Pelambres
Mitsubishi Materials Corporation
Operadoras de Minas de Nacozari, S.A. de C.V.
Outotec Oyj

Pan Pacific Copper
Rio Tinto Kennecott
Sociedad Contractual Minera el Abra
Sociedad Minera Cerro Verde S.A.A.
Southern Perú Copper Corporation
Sumitomo Metal Mining Co., Ltd.
Teck
Tenke Fungurume
Wieland-Werke AG
Yunnan Copper Industry (Group) Ltd.

Vision

The International Copper Association (ICA) is the leading advocate of the copper industry.

Mission Statement

ICA is a nonprofit organization that brings together the copper industry, and its partners, to make a positive contribution to the UN Sustainable Development Goals and to support markets for copper.

Value Proposition

ICA is dedicated to championing the industry on issues critical to copper, now and in the future.

ICA provides a common platform for what is a nonintegrated industry. In this capacity, ICA, with its partners, connects the upstream (mining and smelting/refining) and downstream (fabricating) parts of the copper value chain.

Being commercially neutral, ICA is a credible advocate of the copper industry to defend its interest with policymakers, regulators and other key stakeholders (e.g., United Nations, NGOs, etc.).

By pooling resources through ICA, the copper industry can accomplish much more than any single company could on its own.



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Canada and United States

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Message to Membership

In 2019 the International Copper Association (ICA) concluded the development of a new strategic plan: ICA 2020. This effort, by the membership and management, represents a fundamental reorganization of ICA in terms of strategy, structure, governance and programmatic/geographic focus. The overarching themes of the plan are focus, simplicity and impact. Our new Mission Statement will guide every aspect of the organization:

"ICA is a nonprofit organization that brings together the copper industry, and its partners, to make a positive contribution to the UN Sustainable Development Goals and to support markets for copper."

The plan is focused around three Strategic Objectives:

- Enhance the **Reputation** of the copper industry, with a new baseline perception survey completed at the end of 2019.
- Guard against adverse **Regulations** that would significantly impact the industry's license to operate and fair market access for copper products.
- Provide members with a strong **Return on Investment** in the form of increased copper demand in key geographies and end-use markets

The plan has a simplified structure built around six Strategic Programs, which represent the most important priorities for ICA's members and offer the highest potential for impact:

- Industry Reputation Building
- Material Stewardship
- Global Partnerships
- Clean Energy Transition
- Green and Healthy Buildings
- Substitution Defense

The first two Strategic Programs will drive achievement of the first two Strategic Objectives (noted above), while the balance of the programs focus on the third Strategic Objective—high-impact end-use markets for copper. Importantly, all must support ICA's Mission by making tangible, positive impacts on the UN Sustainable Development Goals (SDGs). The plan continues to recognize the importance of strategic partnerships, and ICA continues to partner with hundreds of like-minded organizations worldwide to make advances on the global sustainable development agenda. Many of our partnerships focus on accelerating the clean energy transition and associated climate change mitigation efforts.

To ensure ICA takes into account the perspectives of the downstream copper industry, strengthened partnerships were established with the International Wrought Copper Council (IWCC) and the Copper Development Association (U.S.), both of which have long, effective histories of supporting copper fabricators worldwide. We offer thanks to the management of IWCC and CDA for their partnerships.

In the end, the organization that emerged from the ICA 2020 exercise is in a strong position to deliver enhanced value to ICA's members and the broader copper industry. We invite members and prospective members to reach out to the ICA management team to learn more about ICA 2020 and the ICA Value Proposition.

While full implementation of the ICA 2020 strategic plan will be completed in 2020, much of the plan began in earnest in 2019, and this ICA Annual Report presents a snapshot of some of the key achievements of the last 12 months.



IVÁN ARRIAGADA
Chairman



TONY LEA
President



The organization that emerged from the ICA 2020 exercise is in a strong position to deliver enhanced value to ICA's members and the broader copper industry.

One of the significant achievements in 2019 was the advancement of the Copper Mark, an ICA-developed initiative. This effort began only two years ago, and great progress has been made. Consultation with a myriad of stakeholders (NGOs, OEMs, metals exchanges, etc.) ensures the Copper Mark and associated certifications (initially by upstream mining and smelting/refining facilities) will effectively address the need to demonstrate that copper is produced responsibly. It is planned that Copper Mark will begin to accept applications for its assurance framework in 2020. Pages 6 – 8 of this report provide more information.

Other achievements highlighted in the following pages focus on cross-cutting initiatives to enhance copper industry reputation, while making positive impact on copper end-use markets and the UN SDGs. We invite you to visit copperalliance.org and sustainablecopper.org to learn more about the work of ICA.

The new strategic plan would not have been possible without the hard work and dedication of ICA's members. Dozens of individuals took the time to work with management and third-party consultants to ensure ICA 2020 meets the diverse needs of ICA's membership base. We offer thanks to all who supported this effort.

Importantly, ICA 2020 will deliver its objectives with stronger-than-ever economics and associated ROI, and there has never been a better time to join ICA. To that end, we invite leaders of those copper industry organizations that are not yet ICA members to consider joining. ICA 2020 is designed to serve the copper industry as a whole, and greater participation from industry will only strengthen our effectiveness.

The Copper Mark

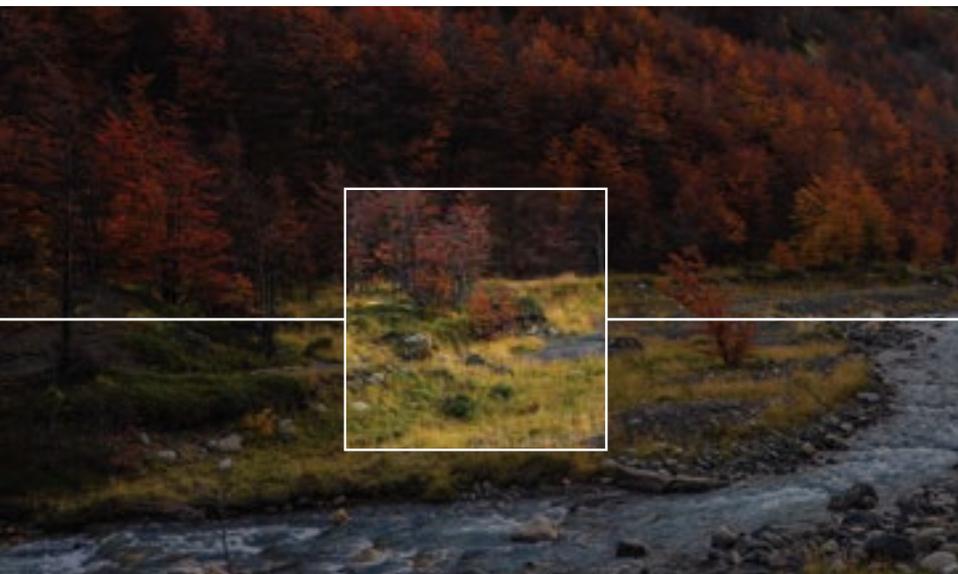
Copper is a vital contributor to humankind and has improved our quality of life for centuries. Copper is closely connected to the global sustainable development agenda, in particular the clean energy transition and climate change mitigation efforts. Numerous studies show a likely increase in the demand for copper (and other metals) in the coming years as renewable and efficient energy sources replace fossil fuels. Simultaneously, a broad range of stakeholders increasingly demand that the products they purchase are produced as sustainably as possible.

This is why we are launching the Copper Mark, a credible assurance framework developed to demonstrate the copper industry's responsible production practices and contribution to the United Nations SDGs.

The Copper Mark goes beyond compliance, and focuses on continuous improvement of responsible production, as well as the industry's contribution to advancing other United Nations SDGs beyond SDG 12.

With the Copper Mark, we can improve the lives of our colleagues and neighbors, strengthen the communities in which we do business, and increase the value we deliver to our members and their consumers.

The Copper Mark offers a way for the copper industry to independently demonstrate the good practices many industry actors are implementing—the starting point of every sustainable supply chain—and to improve practices which do not yet meet the expectations of key stakeholders.



HOW DOES IT WORK?

Through the Copper Mark assurance process, the performance of copper mines, smelters and refiners is assessed against the norms defined in the Risk Readiness Assessment (RRA) created by the Responsible Minerals Initiative (RMI). The RRA identifies 32 criteria covering all major environmental, social and governance issue areas.

These are grouped in five main categories: Community; Labor and Working Conditions; Environment; Governance; and Business and Human Rights.

The Copper Mark also recognizes other existing assessment systems that verify the performance of copper producers and are considered equivalent to the Copper Mark Criteria.

Copper producers participating in the framework must undergo an independent third-party assessment of their site(s) to demonstrate how they meet the requirements of the Copper Mark. A multi-step assurance process shown in **Figure 1** ensures credibility and continuous improvement at the site level.

Once a site's performance has been verified, the site carries the Copper Mark and may start making claims with the Copper Mark logo (**Figure 2**).

RISK AREA	INDUSTRY NORM
Energy Consumption	To implement and quantify energy-efficiency improvements and increased use of renewable energy to reduce total energy consumption and/or energy intensity
Greenhouse Gas (GHG) Emissions	To quantify, establish reduction targets for and disclose CO ₂ equivalent emissions in line with established international reporting protocols (e.g., IPCC or GHG Protocol)
Freshwater Management and Conservation	To conduct a comprehensive assessment of water-use impacts and risks in collaboration with relevant stakeholders and to implement measures to ensure that water consumption does not restrict availability/access for other water users or reduce the range and populations of fauna and flora in the catchment area of the site/facility
Due Diligence in Mineral Supply Chains	To implement the OECD Due Diligence Guidance on Conflict-Affected and High-Risk Areas
Business Integrity	To implement a management system that prohibits and effectively prevents bribery (including facilitation payments), corruption and anticompetitive behavior

5 CATEGORIES

Business and Human Rights | Community | Governance
Labor and Working Conditions | Environment

32 CRITERIA

FIGURE 1

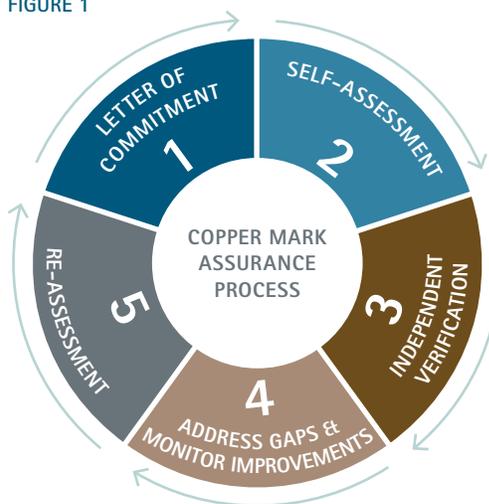


FIGURE 2



1

Participants apply online and are asked to sign a Letter of Commitment.

2

Participants complete a self-assessment against the Copper Mark criteria via an online platform and upload supporting evidence within nine months of signing the Letter of Commitment.

3

Independent verification of participants' self-assessments based on equivalence, documentary evidence and, if applicable, a site-level assessment, within 12 months of signing the Letter of Commitment.

4

Participants address "gaps" in practices identified by Independent Verification and fully meet all Copper Mark criteria within 24 months of signing the Letter of Commitment.

5

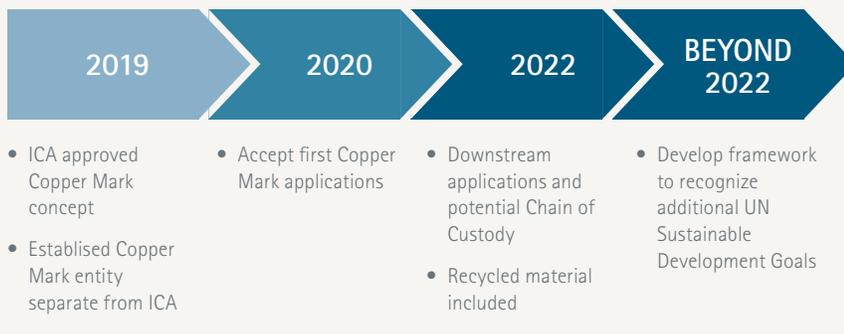
Mandatory re-assessment every three years and/or when:

- Significant change at site (e.g., to assessment scope; operations; ownership)
- Major (external) event/incident
- Expiry of equivalent certification

The Copper Mark *continued*

LONG-TERM VISION

In the next phase of its development, the Copper Mark will expand its scope to allow for participation of downstream actors in the copper value chain, all the way through to copper end-users in a chain of custody system. The Copper Mark will add recycled material to its scope and develop a framework to recognize additional UN Sustainable Development Goals.



MICHÈLE BRÜLHART
Executive Director
The Copper Mark

Credibility and transparency are critical pillars of the Copper Mark. To that end, the process has begun to transition the Mark to an entity separate from the ICA. Late in 2019 Michèle Brühlhart joined as Executive Director of the Copper Mark. A board of directors and multi-stakeholder advisory council form the basis of the Copper Mark's governance and will ensure ongoing guidance from the industry and external stakeholder groups.

The Copper Mark was developed collaboratively with external stakeholder organizations that are active in the area of responsible production.

80+
ORGANIZATIONS

Consultations held with those representing manufacturers, civil society, investors, metals exchanges, regulators, and others.



The LME have indicated the Copper Mark will satisfy its requirements for copper listed on the Exchange.

The copper industry has both an ethical and commercial imperative to embrace responsible production. The Copper Mark is the way copper producers can all do this, together.

TO LEARN MORE: [COPPERMARK.ORG](https://coppermark.org)

European Energy-Efficiency Standards

The EU copper market for magnet wire for industrial motors and power transformers was 180,000 tonnes in 2019. This market is seeing rapid changes due to the energy transition but is also at risk of substitution. Such substitution can result in lower efficiency and reduced equipment lifetime for these critical components in the electricity system.

This is why Copper Alliance intervened and worked closely with EU regulators to ensure high minimum efficiency performance standards (MEPS), so that copper becomes the material of choice for motors and power transformers. Regulations for both motors and transformers have been reviewed and extended in the course of 2019 and were published in the official journal of the EU in October.

The use of copper in these applications is highly sustainable: copper helps to ensure high reliability and a long lifetime. The carbon emissions to produce the extra copper to improve energy efficiency is earned back in a few weeks or months, then continues to produce net savings for decades. Moreover, at the end-of-life, copper in motors and transformers is fully recyclable.

MOTORS

The European market for industrial electric motors is about 15 million units per year. Electric motor systems represent over 50 percent of electricity consumption and around 70 percent of industrial electricity use. Energy efficiency is, therefore, of critical importance.

The new regulation published in October 2019 (Regulation 2019/1781) expands the scope of application of efficiency standards to lower power levels and introduces, for the first time in the world, an IE4 efficiency requirement for high power ranges. Despite competition from alternative motor technologies, the new regulation is expected to translate into increased copper use beyond the previous, lower efficiency levels.

The motors regulation translates into more copper-intensive solutions. As an example, an industrial motor doubles its copper content when it is upgraded from low-efficiency (IE1) to high-efficiency level (IE3). A full-scale adoption of the IE4 level would add a further 20,000 tonnes to this copper market annually.

TRANSFORMERS

The annual market for power transformers is about 170,000 units, and it is estimated that there about five million units in use in the EU electricity system. There are constant developments in this market as well as price pressures leading to conductor substitution. In this market climate, the review of the transformer regulation to set a higher standard for efficiency started in 2016 – 2017 and was concluded in October 2019 together with the above-mentioned motor regulation.

Considering that higher efficiency not only means more copper use but equally a higher share of copper use compared to alternative materials, the Copper Alliance intervened and advocated in its position to reduce the number of exemptions (e.g., railways, wind transformers), to have a clear measurement standard of efficiency, to reduce loopholes in the regulation, and to include a standard for small transformers, dry-type transformers and retrofits.

The annual impact of the transformer regulation 2019/1783 on copper demand is estimated to be 34,000 tonnes per year.

MARKET SURVEILLANCE

To ensure that the eco-design regulations for industrial and tertiary products are implemented well in the single market, the Copper Alliance initiated the project on "Industrial and Tertiary Product Testing and Application Standards (INTAS)" that was also successfully completed in 2019. This project raised awareness of energy efficiency among all market stakeholders and made policy recommendations with potential annual savings of 115 TWh in 2030 and 128 TWh in 2050.

Currently, about three million tonnes of copper are used in EU motor and transformer systems. The eco-design regulations on motors and transformers have been in place since 2009 and 2014, respectively. The cumulative impact on copper-in-use stock will be at least one million tonnes over the coming 30 years, if eco-design regulations are maintained and gradually extended throughout the energy transition.



2019 ICA Reputation Survey

Three years ago, ICA conducted its first reputation study to understand stakeholders' perceptions of the copper industry in Beijing, Brussels, Washington, D.C., London, Berlin and Santiago. Since that time ICA has worked diligently with members to grow the industry's positive reputation. As part of the new ICA 2020 – 2022 strategy, a new study was conducted in 2019 to serve as a benchmark for ICA's reputation work. This study, conducted in Beijing, Brussels and Washington, D.C., measured the industry's performance against key drivers such as Advancing Innovation, Safety Practices and Community Relations.

This recent survey showed the industry's proactive reputation management efforts paying off—2019 results reflect improvement in Brussels and D.C., while the reputation index remained relatively the same in Beijing. These reputation efforts have improved the stakeholder environment. ICA staffers have had more one-on-one engagements and more social media interaction with stakeholders, e.g., Sec. General of EHPA, Dep. Director General EC Road Safety/Sustainable Mobility, and the Sen. Director of Econ Opportunity, City of Philadelphia, shared or liked ICA content.

KEY LEARNINGS: MESSAGES THAT WORK

The survey showed content on the industry's actions generates the most positive stakeholder responses. Below are examples of industry themes stakeholders positively responded to and corresponding member examples ICA has shared:

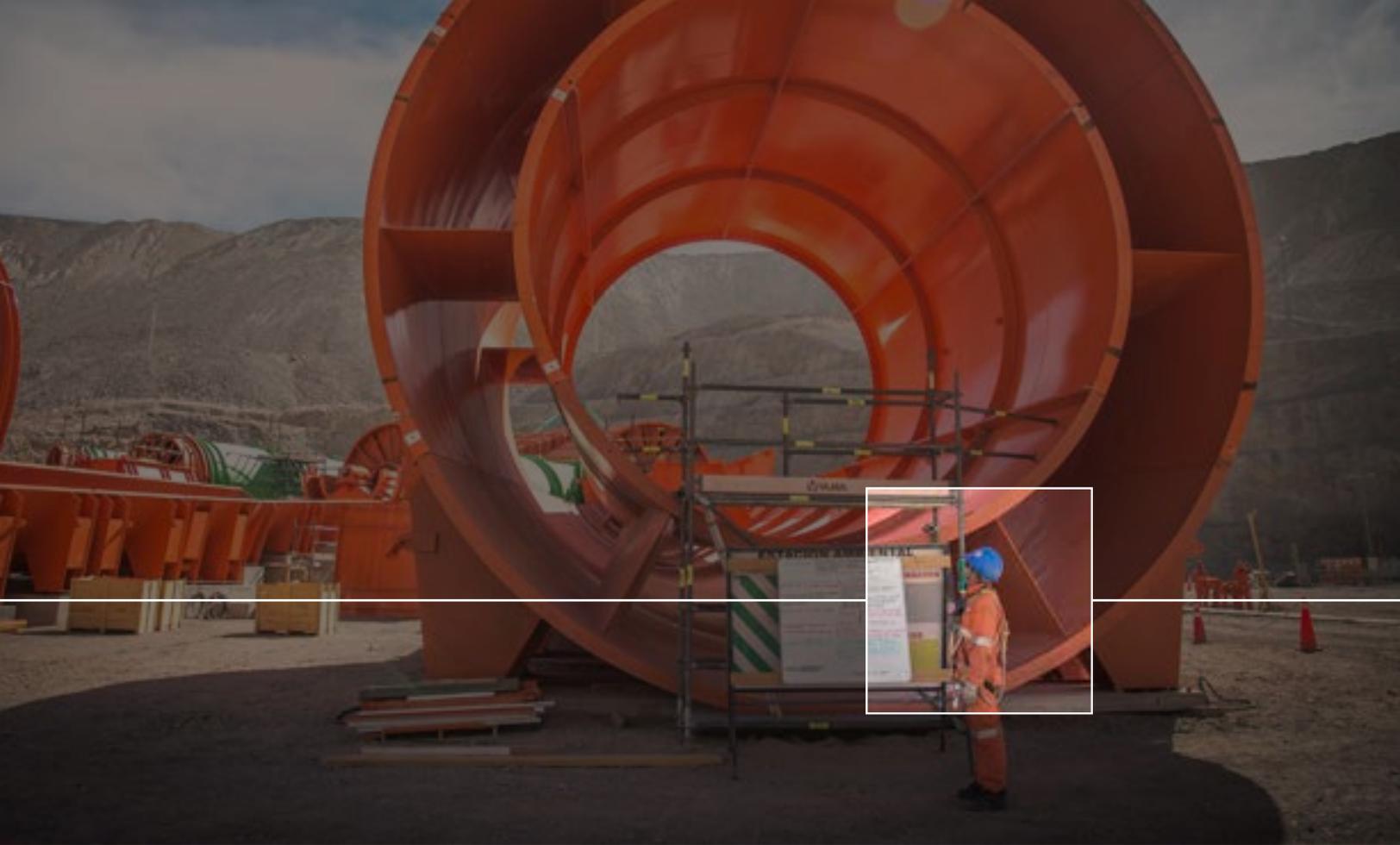
1. Innovation is core to reputation.

Boliden Group's Aitik copper mine, located approximately 100 km north of the Arctic Circle, is one of the planet's lowest cost and most productive mines. Technicians with Boliden undertook a multifaceted review of the asset's operations to devise a strategy to increase output by 25 percent. To meet this goal, Boliden contracted with Metso to configure and install a new system of heavy-duty slurry pumps to discharge tailings more efficiently. The company configured the new solution to handle a major increase in the asset's volume of tailings. The delivery of the new innovative system quickly put Boliden on track for its production goals.

2. Safety practices and fair labor practices are priorities.

Teck launched a six-vehicle, autonomous haul truck pilot project at Highland Valley Copper (HVC). The trucks are made by Caterpillar Inc., which further partnered with a self-driving vehicle startup, Torc Robotics, to develop the machinery. In nearly five years, the autonomous trucks have hauled 400-plus million metric tonnes of material with greater than 99.95 percent system availability. Without injuries to personnel, shift changes, or work breaks, the trucks clock an average of 2.5 hours more operating time per day than manned vehicles. In addition to better safety, automation decreases the need for training of new operators amid worker turnover. Moreover, according to Caterpillar, the machines get "smarter" over time, allowing them to continually improve the execution of tasks. A potential extension project, HVC 2040, will extend mine life to the year 2040 and support jobs and economic activity in the region.

This study, conducted in Beijing, Brussels and Washington, D.C., measured the industry's performance against key drivers such as Advancing Innovation, Safety Practices and Community Relations.



3. Stakeholders across all markets expect the industry to use their profits to improve local communities.

KGHM established its own Foundation to benefit the Polish communities living near some of the Europe's greatest reserves in the nation's Copper Belt. Since its beginning in 2003, the Foundation has used a strategic, multi-faceted approach to funding health, safety, sports and recreation, science and education as well as cultural restoration. In all, it has enabled over 3,000 projects for other businesses and institutions and spent over \$36.6 million. In 2017 and 2018 alone, KGHM financed 432 projects totaling \$3.8 million.

4. The industry's efforts to advance its environmental practices are critical to all markets.

Codelco has dedicated \$40 billion to upgrade its facilities over 10 years. In May 2019 Codelco announced plans to add its first hybrid loader to its El Teniente mine to reduce its carbon footprint. The load-haul-dump (LHD) machine, constructed by Japan's Komatsu, is mainly powered by electricity, using diesel only to generate electrical power. The LHD possesses a Switched Reluctance (SR) Hybrid Drive that stores excess energy and resupplies it as needed. LHD offers acceleration rates nearly double conventional, mechanically propelled LHDs. Officials with Codelco estimate Komatsu's LHD product will lower overall costs by an estimated 30 percent and fuel costs by 20 percent. Once Codelco expands its electric fleet further, experts forecast the changes could bolster overall outputs by 10 – 20 percent and decrease emissions by 25 percent.

As ICA's industry reputation-building work continues, the focus will remain on industry actions, such as responsible production, carbon reduction and water stewardship—a direct reflection of ICA's forward-thinking members.

Future Demand Intelligence

The market intelligence studies conducted and commissioned by ICA help to define programmatic and geographic focus for ICA's market development portfolio. ICA is considered to be the leading organization on copper end-use markets and long-term copper demand, and its studies also enhance reputation-building efforts on behalf of ICA's members.

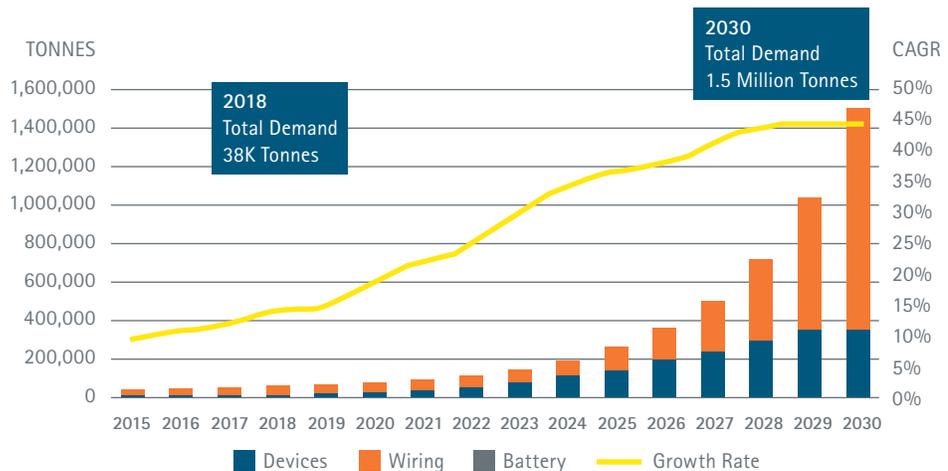
The Market Intelligence function works to track new market and future demand opportunities. This year, through extensive study, future material use in smart homes, automotive wire harnesses, energy storage and renewables was tracked. ICA maintains a watching brief on potential material substitution across all market uses.

External intelligence output, focused on future demand, is managed through planned global markets outreach and an events program, including: market commentator workshops and panels at CESCO Chile CRU World Copper Conference, American Copper Council North America, London Metal Exchange Week and China FastMarkets Asia Copper Week.



SMART HOME APPLICATIONS

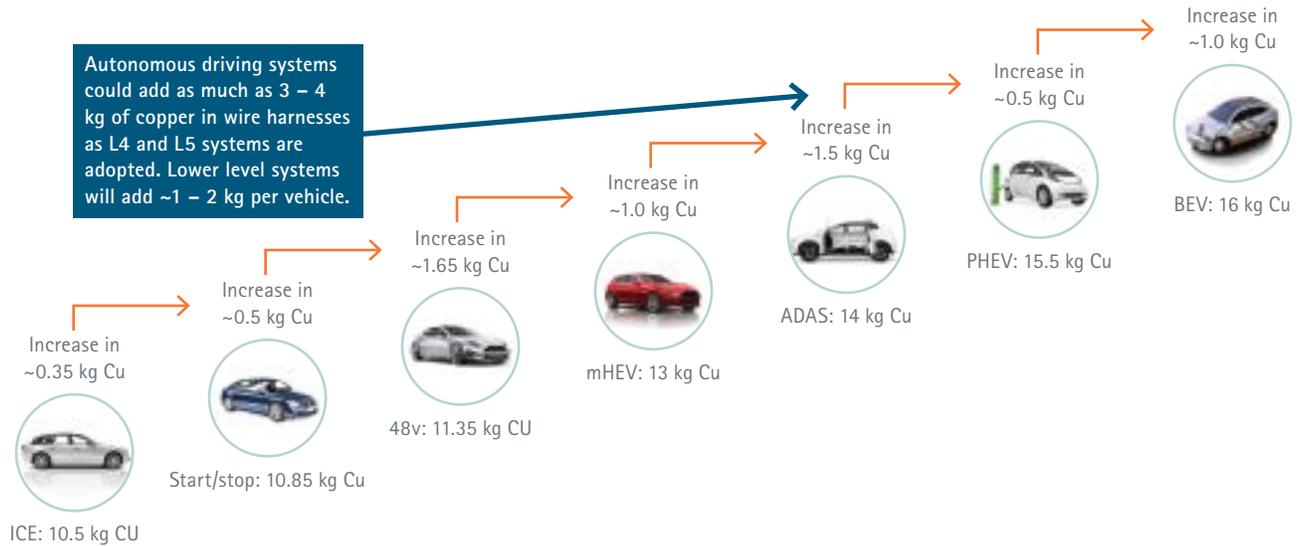
In 2019, new research commissioned by ICA, and conducted by BSRIA Ltd., showed copper use in smart home applications is likely to reach 1.5 million tonnes per annum by 2030. This is thanks to a sustained, worldwide appetite for smart home systems. The sharp increase will occur as the global smart home market continues to grow, with 1.6 billion systems forecast for installation by 2030. Among a range of applications copper is found in include smart home hubs, switches, routers, wiring, and lithium-ion batteries.





AUTOMOTIVE WIRE HARNESES

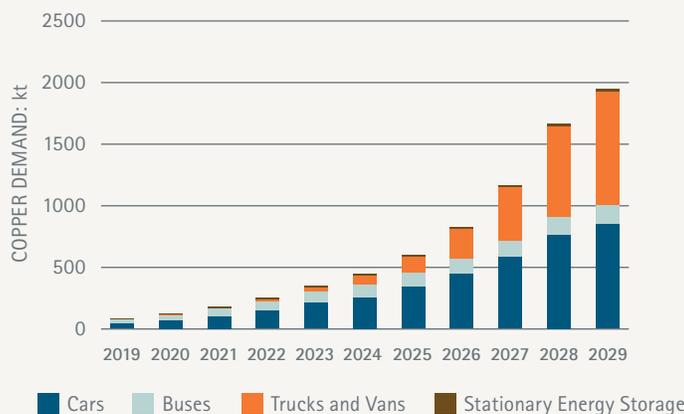
Copper use in automotive wire harnesses continues to grow due to vehicle electrification and driver demand for larger vehicles. Research conducted by the Martech Group for ICA predicts there will be 1.7 million tonnes of copper used in wire harnesses by 2030. Mild Hybrid and Battery Electric Vehicle designs are predicted to add the most copper weight per vehicle over the coming 10 years.



ENERGY STORAGE

Copper plays an important role in the manufacture of Li-ion batteries. By 2029, annual global copper demand in energy storage is set to increase by 2.3 million tonnes, thanks to energy storage in both e-mobility and stationary storage applications, according to research by IDTechEx. Improvements in battery performance are accelerating the uptake of energy storage devices.

ANNUAL COPPER DEMAND IN ENERGY STORAGE FOR MOBILITY AND STATIONARY STORAGE 2019 – 2029



IDTechEx forecasts energy storage in mobility and stationary storage applications will hit 3.2TWh by 2029, raising annual copper demand by 2.3 million tonnes.

The total copper demand in energy storage over the next decade will total just over 9 million tonnes by 2029.



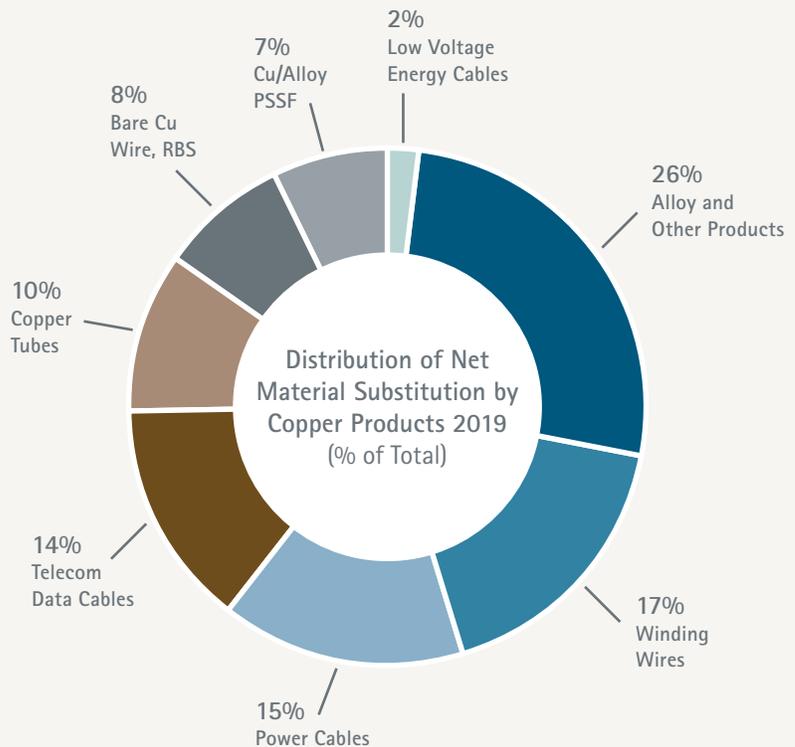
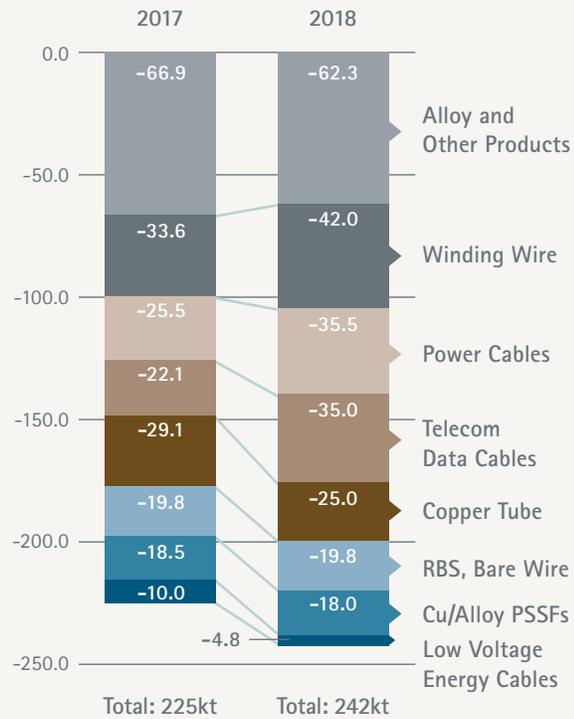
ELECTRICAL APPLICATIONS

Substitution, often driven by relative material cost, is an important risk that is monitored by ICA for membership.

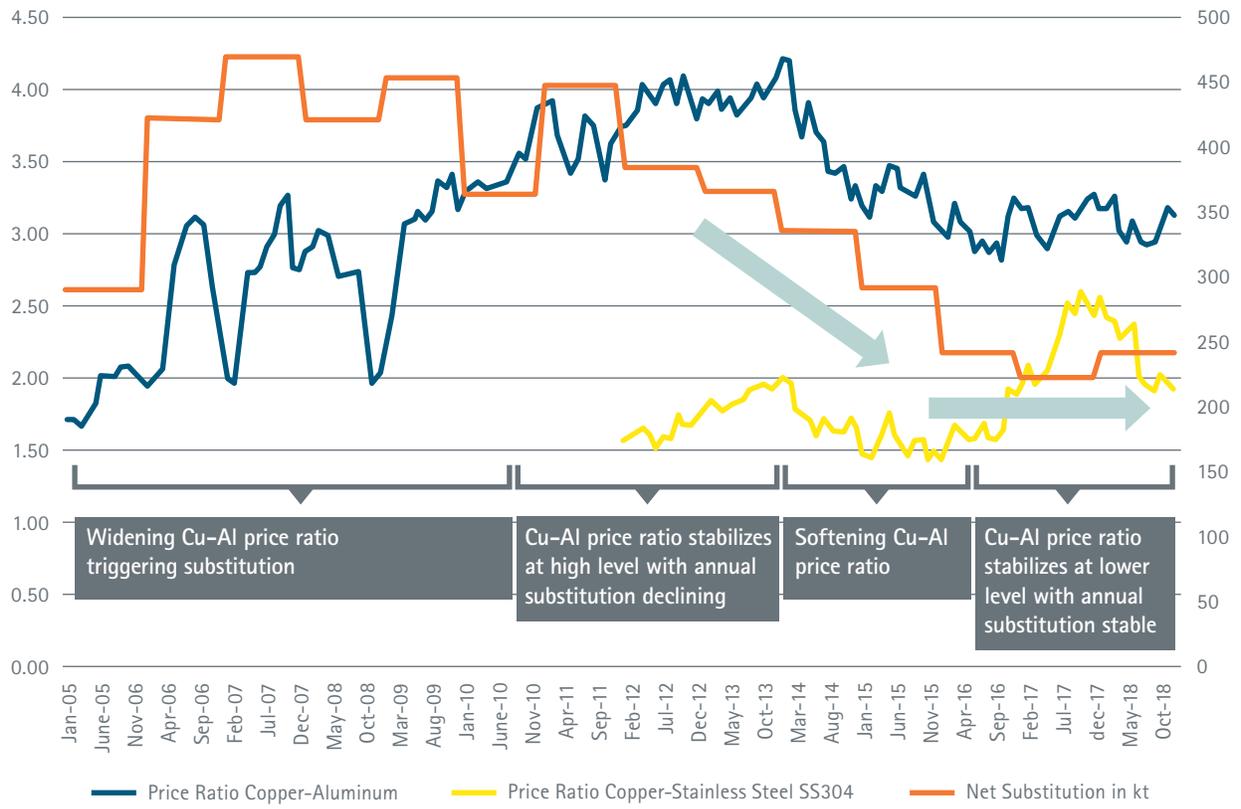
According to ICA commissioned research by DMM Advisory, substitution of copper is trending low, reaching just 0.8 percent of total use in 2018. Copper remains the preferred material for a range of applications. China uses copper as the material of choice in electrical applications; in the region itself, net substitution is relatively low at 0.6 percent of total use. Energy-efficiency standards have a strong positive impact on China's preference for copper. 2019 survey figures will be available in March 2020.

Copper remains the preferred material for a range of applications.

NET MATERIAL SUBSTITUTION BY PRODUCTS
2017 – 2018 IN KT



HISTORIC PRICE RATIOS (Cu-Al, Cu-SS304) AND NET SUBSTITUTION IN KT



Chinese Copper Industry Engagement

China is not only the world's largest end-use market for copper, but it also represents the largest smelting output at 37 percent of the global total. Chinese companies' involvement in ICA activities brings financial support, industry expertise and, most importantly, advocacy power to influence governmental policies. Engagement with local industry is critical as most of the mining and smelting companies in China are state owned. This engagement provides an opportunity to increase partnership with Chinese copper companies and increase funding for ICA's programs in China.

In recent years, collaboration between ICA and Chinese copper companies in specific areas, such as power cable defense, transformer recycling, and cathode life cycle assessment, has progressed well. Over time, this engagement will increase awareness on the benefits of ICA membership and potentially lead to greater direct participation by the Chinese copper industry in global ICA efforts.

In 2019 ICA was successful in publicizing the organization and its activities as well as in engaging with Chinese industry in the formation of task-forces.

2019 INTERNATIONAL COPPER INDUSTRY SUMMIT (ICIS)

ICIS 2019, held in Shanghai in April, was an international conference focused on copper end-use applications. It created a copper industry forum for the upstream and downstream industries. ICIS serves as a platform to enhance the image of ICA and the understanding of the value of its activities to the Chinese copper industry.

ICIS is the first high-level dialogue and cooperation forum for the copper industry in China involving the entire industrial chain, focusing on copper market trends, industry innovation and sustainable development. The summit was supported by 24 institutions and brought together more than 300 attendees from government agencies, industry associations, upstream and downstream copper industry enterprises, academia, and financial institutions. The summit received strong support from China's Ministry of Industry and Information Technology (MIIT) and the Ministry of Ecology and Environment (MEE), which sent senior officials as keynote speakers.

All summit partners and supporters, led by Jiangxi Copper and the China Nonferrous Metals Industry Association, gave positive reviews of summit. Feedback received noted the presentation topics matched current opportunities and challenges of the copper industry, and that the forum provided a platform for interactions and communications among the copper industry value chain. The event generated strong media coverage including 300 news stories, with total media impressions of more than 36,000. As a result of the event's success, Jiangxi Copper would like to expand its collaboration with ICA. The event generated one million RMB (\$140,000) in cash co-funding. ICA plans another summit in 2020.



ICIS 2019 Plenary Session



ICIS 2019 Innovation Award



Storage of End-of-Life Power Equipment in Tongling, Anhui Province



CHINA CATHODE LCI SAMPLING SITES



LIFE CYCLE ASSESSMENT (LCA)

LCA is the most comprehensive and internationally recognized measurement tool of a product's life cycle environmental impact. Copper cathode LCA is vital for the copper industry as it is not only a tool to showcase environmental performance of copper mining and smelting, but also a basis to measure the environmental competitiveness of copper end-use products. Copper cathode LCA will help advocate for the copper industry and end-use products. A taskforce was created by ICA to engage Chinese copper companies to complete a China-based life cycle inventory for copper cathode and to provide an assessment on environmental impact. Four companies (Jiangxi Copper, Tongling Nonferrous, China Copper, China Gold) have provided funds for the effort totaling \$290,000.

TRANSFORMER RECYCLING

Recycling is a key component of the growing global circular economy trend. The recycling of electrical equipment in China creates many environmental issues, primarily due to the limitations of small recycling companies that dominate this sector. This leads to an unfavorable image of copper recycling and the copper industry as a whole. In 2017, a taskforce was created to promote the need for Chinese copper companies to improve the recycling of transformers. Four companies (Jiangxi Copper, Tongling Nonferrous, Daye Nonferrous, and Jinchuan Group) were engaged and contributed co-funding of \$120,000.

After an investigation of the transformer recycling market, the task-force extended its work to cover a broader scope of electrical equipment, including power cables. In 2019, the committee launched a research program to better understand the feasibility of fostering collaboration between copper companies with power companies. Support was provided by the China Investment Association, State Grid Beijing Institute of Economics and Technology, and the Global Energy Internet Development Cooperation Organization. The committee is expected to complete the research program and formulate a plan for next steps by June 2020.

U.S. Copper Caucus

A key pillar of strategy for ICA and the broader Copper Alliance® is a strengthened Public Affairs program. Within this function is proactive advocacy in three capitals (Beijing, Brussels and Washington, D.C.), the three jurisdictions most active in the legislation of copper and the copper industry.

In the U.S., ICA's strategic partner, the Copper Development Association (CDA), led the creation of a Congressional Copper Caucus, which seeks to collaborate on advancing policy positions and legislation related to the copper industry and to improve congressional and public awareness of the benefits copper and copper alloys bring to the daily lives of people across the nation. The copper industry is a major contributor to U.S. economy, with the metal being a key component in many of the products and technologies individuals need to carry out their business. Copper mines, refineries, fabricators, and other members of the industry directly create approximately 40,000 jobs, while supporting local and regional economies through the creation of downstream employment opportunities for plumbers, electricians, automotive workers and electronics manufacturers.

The Copper Caucus is bipartisan, currently with 28 members of the U.S. Congress from both the Democrat and Republican parties representing 14 U.S. states. The Caucus is co-chaired by Representative Brian Higgins (Democrat-New York) and Representative Bob Latta (Republican-Ohio). CDA has regular briefings with the staffs of the Caucus's 28 members. The Caucus provides a vehicle for outreach to additional members of Congress and linkages to their U.S. Senate counterparts. In all, in 2019 more than 100 personal visits were made to members of Congress and their staff.

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2019 represented early-stage activities, but significant achievements were made:

DEPARTMENT OF ENERGY FUNDING INCREASED

As the best nonprecious conductor of heat and electricity, copper is critical to clean energy. CDA advocated for increased spending in the areas of energy efficiency and renewable energy. The Department of Energy's (DoE) budget in these areas increased, from \$2.4B to \$2.8B. In addition, funding for DoE's Advanced Research Projects Agency-Energy (ARPA-E) for energy efficiency and renewable energy were proposed at \$0, and ultimately received a budget of more than \$400M.

IMAGINE ACT

Proposed legislation would have provided an advantage for Infrastructure Bills toward substitute materials to the detriment of copper and its alloys. Through advocacy, the portions of the bills related to drinking water and infrastructure did not move forward.

CLEAN DRINKING WATER

CDA is focused on regulations regarding clean drinking water, which continues to be in the spotlight due to high-profile incidents in the U.S., most notably the Flint, Mich., drinking water crisis. The U.S. Environmental Protection Agency's (EPA) Multi-Sector General Permit for stormwater discharges (associated with industrial activity) and Lead and Copper Rule (LCR) are both important rulemakings where CDA is using scientific data and Congressional support, where appropriate, to ensure a sound and reasonable regulatory environment.

U.S. CONGRESSIONAL REPRESENTATIVES IN THE COPPER CAUCUS

Numbers denote the Congressional District

Co-Chair Brian Higgins; D-New York-26
Co-Chair Bob Latta; R-Ohio-05

Rick Allen; R-Georgia-12
Jim Baird; R-Indiana-04
Jim Banks; R-Indiana-03
Andy Barr; R-Kentucky-06
Mike Bost; R-Illinois-12
Anthony Brindisi; D-New York-22
Mo Brooks; R-Alabama-05

James Comer; R-Kentucky-01
Drew Ferguson; R-Georgia-03
Abby Finkenauer; D-Iowa-01
Paul Gosar; R-Arizona-04
Josh Gottheimer; D-New Jersey-05
Michael Guest; R-Mississippi-03
Brett Guthrie; R-Kentucky-02
David Joyce; R-Ohio-14
Marcy Kaptur; D-Ohio-09
Trent Kelly; R-Mississippi-01

Ben McAdams; D-Utah-04
Dan Meuser; R-Pennsylvania-09
Tom O'Halleran; D-Arizona-01
Bill Pascrell; D-New Jersey-09
Terri Sewell; D-Alabama-07
Chris Stewart; R-Utah-02
Van Taylor; R-Texas-03
Jackie Walorski; R-Indiana-02
John Yarmuth; D-Kentucky-03

U.S. COPPER INDUSTRY REPRESENTATION IN THE COPPER CAUCUS

13 Wire and Cable
Manufacturers

15 Non-wire and
Cable Manufacturers

4 Copper
Producers

Among the myriad of other issues being closely monitored is the **American Mineral Security Act**, which was proposed in 2019 "to facilitate the availability, development, and environmentally responsible production of domestic resources to meet national material or critical mineral needs, and for other purposes." Copper is important in U.S. long-term plans for infrastructure improvements, clean energy, electrified mobility and more, and is a key focus of the proposed bill. CDA is monitoring the progress of the bill and is providing education to the bill's authors and Caucus members and other lawmakers.

CDA will remain active in monitoring the legislative landscape in the U.S. to utilize the Copper Caucus to ensure the positions of the U.S. copper industry are factored into discussions that can have an impact on copper markets.



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