

**COPPER.  
MAKES THE WORLD  
WORK BETTER.**

2015 ANNUAL REPORT

**Cu**

**International Copper  
Association**  
Copper Alliance



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Makes the World Work Better.

## THE VALUE OF MEMBERSHIP

*The International Copper Association (ICA) leads the world's copper industry on the issues critical to securing copper's future growth.*

ICA's members represent a majority of global copper production, and include many of the largest copper and copper-alloy fabricators. ICA's status as a not-for-profit trade association provides its members with a credible, independent advocate to address challenges faced by the collective industry.

The investments by its members ensure ICA is able to maintain an effective leadership position on behalf of the world's copper industry. By pooling resources through ICA, the industry is able to accomplish much more than any single copper industry company could on its own.

The commitment and ongoing investment by its membership base benefits the whole of the copper industry. ICA is committed to partnering with its members to increase the percentage of industry that is funding ICA's efforts to maintain the long-term viability of copper markets.

### MEMBERS (AS OF 31 DECEMBER 2015)

Anglo American • Antofagasta Plc • Aurubis • BHP Billiton Plc • Boliden AB • Chinalco Luoyang • Compañía Minera Doña Inez Collahuasi • Compañía Minera Zaldivar • CODELCO • Daechang Co., Ltd. • Freeport-McMoRan Inc. • Glencore • Golden Dragon Precise Copper Tube Group Inc. • Halcor S.A. • Kennecott Utah Copper Corp. • KGHM Polska Miedź S.A. • KM Europa Metal AG • LS-Nikko Copper Inc. • Luvata • Metalurgica de Cobre, S.A. de C.V. • Minera Antamina S.A. • Minera Centinela • Minera Escondida Limitada • Minera Los Pelambres • Mitsubishi Materials Corporation • Mueller Industries • Nexans • Operadora de Minas e Instalaciones Mineras, SA de C.V. • Outotec Oyj • Pan Pacific Copper • Revere Copper Products, Inc. • Rio Tinto Plc • Sociedad Contractual Minera el Abra • Sociedad Minera Cerro Verde S.A.A. • Southern Copper Corporation • Sumitomo Metal Mining Co., Ltd. • Teck • Tenke Fungurume • Wieland-Werke AG • Yunnan Copper Industry (Group) Co., Ltd.

# COPPER ALLIANCE DIRECTORY



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# ICA VALUE PROPOSITION

## What is the International Copper Association (ICA)?

- A not-for-profit trade association
- A credible, independent advocate on issues critical to future copper demand

## Why the Industry Needs ICA

- Industry is more effective, credible and efficient when it works together. ICA makes this possible.
- Without ICA, members would incur major expenditures individually, losing leverage opportunity:
  - Response to Europe REACH regulation. Cost: \$12M
  - Response to International Maritime Organization transport requirements: \$50-100M saved each year
  - Response to plans in China to switch from copper to aluminum in 1.9 Mt copper power cable market

## How ICA Meets the Needs of the Copper Industry

- Active in more than 60 countries
- Working in partnership with:
  - Local copper fabricators and equipment manufacturers
  - Governments and regulators
  - Trade and other end users
- Three program areas:
  - **Market Access**
    - Maintain copper industry license to operate in complex regulatory environments
    - Ensure market access for copper products

- **Market Defense/Growth**
  - Prevent or slow substitution by alternative materials
  - Increase intensity of copper use in equipment (kg per unit) and in buildings (kg per m<sup>2</sup>)
- **Image/Reputation Building**
  - Communicate messages showing copper makes a positive contribution to sustainable development
  - Position copper industry as a trusted partner of governments and nongovernmental organizations
- Achieved through a mix of health and environmental science, codes and standard setting, direct promotion, technical innovation, market intelligence, and strong communications.

## Defining Value to Members

ICA is an efficient organization focused in markets that delivers measurable value to members.

- **Annually:**
  - Tonnage impact of 250,000 tonnes
- **Long-Term:**
  - Positive image/reputation for copper metal and copper industry
  - Continued industry license to operate
  - Insurance against long-term demand destruction



# MESSAGE TO MEMBERSHIP FROM ICA'S CHAIRMAN AND PRESIDENT

2015 was another challenging year for the copper industry. A volatile market and an environment of intense cost control persisted to stress producers, and ICA adapted to this reality. In the 2014 Annual Report, we highlighted a reinvention of ICA to create a focused, more efficient organization better aligned with the priorities of members. We began to implement our "Clean Sheet Principles" in late 2014 and continued in earnest throughout 2015. The ICA value proposition is now stronger than ever.

The restructuring of the program portfolio sees ICA's primary activities centered on high-impact areas accounting for a vast majority of global copper demand:

- Energy Policies and Efficiency Standards (EPES)
- Wire and Cable (W&C)
- Heat Exchange Systems (HXS)
- Building Construction Nonelectrical (BCNE) Defense
- Technical and Market Support (TMS)

These tonnage-based programs make up around 65 percent of ICA's program portfolio. The remainder of the portfolio supports these initiatives by addressing license to operate and market access issues, communications, market intelligence, and other critical areas of work.

ICA members' dues payments are investments, and the tonnage impact of ICA's programs provides a sound methodology for measuring the return on these investments. As our leaner, more efficient organization focuses on fewer but higher-impact programs, our 2015 estimated tonnage impact remains similar to last year's estimates of 250 kT.



THE ICA VALUE  
PROPOSITION IS NOW  
STRONGER THAN EVER.

In addition, we are pleased to report that, in spite of a leaner organizational structure, ICA's geographic reach remains unchanged. In fact, through new global programs in the energy efficiency area—e.g., United For Efficiency, which is featured later in this report—we are expanding our presence into new countries, primarily in the developing world and emerging economies.

ICA also embarked on a new reputation-building campaign, with the central message, *Copper Makes the World Work Better*. This annual report demonstrates strong examples of how ICA delivers on the three key strategic pillars of our value proposition:

- Market Access
- Market Defense/Growth
- Image/Reputation Building

With lingering pressure on copper end-use markets for substitution by competitive materials, ICA has shifted more toward defensive programs. In 2015, 55 percent of our portfolio was defense and 45 percent growth. While annual net losses from substitution of copper have fallen to 1.1 percent of the market, from an all-time high of 2.2 percent in 2009, pressure on downstream markets remains a paramount concern for ICA members. To combat substitution ICA is developing and promoting lifecycle data on copper products showing copper as the optimum material of choice for the long term. These efforts by ICA are making a positive impact on substitution issues.

Looking ahead, 2016 represents the final year of the five-year ICA Strategic Plan that was introduced in 2012. Work is well underway to develop the next ICA Strategic Plan, which will be a three-year rolling plan providing members



**Jean-Sebastien Jacques**  
Chairman



**Tony Lea**  
President

and management with the flexibility to shift strategy and resources to reflect ever-changing market conditions. Advocacy will be a new area of concentration for ICA going forward. We will launch a new public affairs function in 2016, and we will continue to support our members in maintaining their social licenses to operate.

We thank all our members for your ongoing support, and we will continue to collaborate with you to deliver shared success. We also offer thanks to the employees of ICA and our Copper Alliance® partners around the world. We recognize that recent challenges have been persistent and numerous, in particular the significant change resulting from the restructuring of the organization. The effectiveness of this effort speaks to the strength of the partnership between ICA's members and employees.

A united industry is better equipped to face its challenges than a fragmented one. While a majority of copper production is represented in ICA, our members' investments benefit the complete industry. If you are not yet a member of ICA, we encourage you to reach out to the ICA management team and your peers in the industry to learn more about ICA's value proposition. The economics for membership and the return on investment have never been better.



*Early in 2015, John Holland announced his retirement from ICA. In his three-and-a-half years with ICA, John ably led a complete restructuring of the organization, while ensuring that the value proposition for ICA's members was stronger than ever. We offer our sincerest thanks to John for his hard work and dedication during a challenging period in ICA's history and wish him the best.*

*Tony Lea assumed the role of ICA's President in September, after 17 years of service to ICA, most recently as Senior Vice President, Marketing and Strategic Planning.*

# HVAC INDUSTRY CHOOSES COPPER FOR COST AND EFFICIENCY



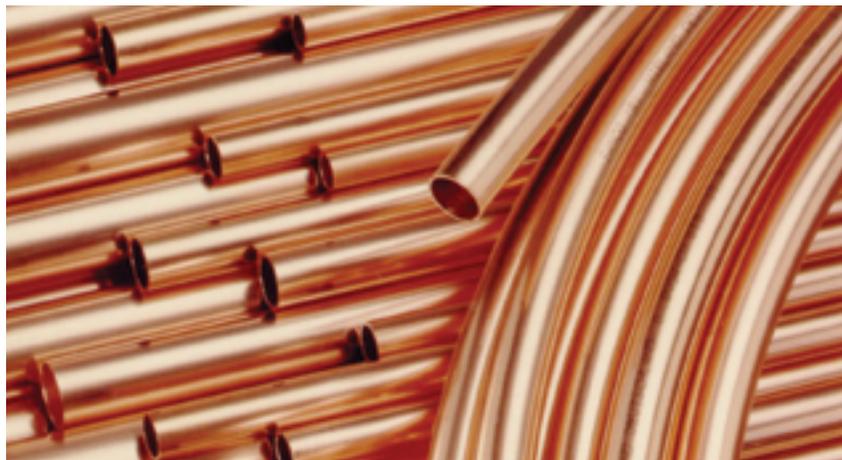
Rising living standards among developing economies and climate change, such as warmer summer temperatures in Europe, are driving increased worldwide demand for domestic air-conditioning equipment. Global growth in the room air-conditioner market is projected to be 25 percent in OECD (Organization for Economic Cooperation and Development) countries and 80 percent in non-OECD countries from 2010 to 2030. This equates to nearly one billion air conditioners in the developing world. At the same time, new energy-efficiency standards and changes in regulations to reduce the global-warming impact of refrigerants are forcing manufacturers to re-design many of their products to meet new consumer and government expectations. While growth in the air-conditioning market opens new opportunities, it also spurs the competitive battle to capture market share in this more than \$100 billion dollar industry currently using more than 1,600kT of copper.

Behind the scenes, researchers and engineers work tirelessly to squeeze out costs and optimize performance of key system components such as heat-exchanger coils, which have a major influence on the cost and efficiency.

Copper tubes in heat-exchanger coils are a major cost driver in air-conditioning systems. Despite lower material costs, there remains competition from aluminum in 7 mm and 9 mm tube used in the core of many air conditioners. However, switching to substitute materials presents major development hurdles to manufacturers due to lower heat-transfer performance, lower corrosion resistance, and potential new manufacturing processes.

After considering all the alternatives and their impact on the manufacturing process, the reliability of the components (which impacts warranty costs), and the lifetime ownership costs, many air conditioner manufacturers have decided to keep using copper because of its high performance and ease of fabrication. However, they have decided to use copper more efficiently by moving to smaller tubes, specifically MicroGroove® technology developed by ICA and supply-chain partners. This change not only uses less copper to reduce cost and sensitivity to copper price changes, but it preserves significant investments in existing manufacturing processes, maintains the performance and reliability that manufacturers have worked to build up over the years, and reduces the volume of expensive refrigerant required in the system. The growing demand for greener and natural refrigerants favors small diameter copper tube to sustain higher pressures and use less of these costly or more flammable refrigerants.

In 2015 Chinese manufacturers produced over 110 million residential air-conditioning systems for both domestic and export markets worth over \$60 billion. Price competition is intense, and major manufacturers have conducted detailed technical and economic analyses to reduce their raw materials and manufacturing costs. As a result, manufacturers have decided against the uncertainty and costs of substitute materials and



have moved to designs based on smaller diameter copper tubes (5 mm or less). More than 30 million of the systems produced in China in 2015 used 5 mm MicroGroove tubes, an 83 percent increase over 2012. Manufacturers of refrigeration equipment are moving in the same direction.

The trend in China has not escaped the notice of other air-conditioning competitors around the world. In India, the new trend is to use small diameter copper tube heat exchangers to avoid corrosion and maintain efficiency. Producers in Mexico, which ships 90 percent of its production to North America, have accelerated their move to small diameter copper tube.

Copper has an ever-improving positive reputation in heat-exchange systems and remains the preferred material globally in eco-efficient refrigeration products and room air conditioners.

The growing demand for greener and natural refrigerants favors small diameter copper tube to sustain higher pressures and use less of these costly or more flammable refrigerants.

GLOBAL GROWTH  
IN THE ROOM AIR  
CONDITIONER MARKET  
IS PROJECTED TO BE

**25%**

in OECD  
(Organization  
for Economic  
Cooperation and  
Development)  
countries

**80%**

in non-OECD  
countries from  
2010 to 2030.

# GUIDING THE DEVELOPMENT OF REGULATORY STRATEGIES

One of ICA's core benefits to members is the ability to pool health and environment expertise in order to address regulatory issues affecting fair market access for products and/or the industry's license to operate.

Given the rapidly growing focus on chemicals management outside of the European Union (EU) and the United States (U.S.), an important 2015 achievement was the development of regulatory issue inventories for the key Asian markets of China, Japan, South Korea and Taiwan. Regional member HESD committees use these inventories to identify the highest priorities for Copper Alliance® human resources and research funds within annual budgets.

In collaboration with ICMM and other metal commodity associations, ICA completed the first round of capacity building for the Asia-Pacific Economic Cooperation (APEC) chemical regulatory committee on the risk assessment of metals and metal compounds. The primary outcome was the commitment of these associations to continue engaging with individual countries as they develop chemicals' management policies, e.g., a seminar for the Korean government as it ramps up its REACH activities.

The full force of the EU REACH regulation is now being felt. The compliance burden on companies, the European Copper Institute (ECI, as the REACH Copper Consortium Manager) and Eurometaux (as the nonferrous metals stakeholder observer) is increasing. Two issues stand out as most critical for the copper sector. First, the harmonized classifications of coated copper flakes and nine copper compounds, all mandatory under the Biocidal Products Regulation. To seek to avoid these issues spilling over to the markets of copper massives (which are

self-classified under REACH), and copper concentrates, two member committees, one strategic and the other technical, are supporting the Copper Alliance's sound-science defense, socio-economic arguments and advocacy toward key stakeholders in the Commission and the Member States.

The second EU issue relates to the imminent classification of lead as a Category 1 reprotoxicant (can damage the health of children). This means the industry must continue to reduce the levels of lead in copper alloys. One key achievement was securing regulatory acceptance for the use of bioelution<sup>1</sup>, plus separate classifications for powders (with a limit value of 0.03 percent) versus massives (with a limit value of 0.3 percent). This protects the copper industry's lead-free alloys, which are recognized as having < 0.1 percent lead. Work is ongoing, both in the U.S. and the EU, to support members with consistent communications, as well as to minimize the risk such classifications could have on recycling end-of-life materials.

ECI continues to lead the copper industry's technical program, with cross-metals advocacy provided by ICMM, to comply with revised guidelines from the International Maritime Organization. At the May meeting of the IMO's Marine Environment Protection Committee, it was agreed that the group should not prepare indicative lists of HME/non-HME substances (Harmful to the Marine Environment). It was also decided that mandatory status should be given to the shipper's declaration (HME or non-HME), and that there is no need to develop further guidance for the application of the UN's Globally Harmonized System (GHS) in assessing cargoes. To respect compliance with the IMO's International Maritime Solid Bulk Cargoes Code (IMSBC), work to address the unexpected high-corrosivity results for many metal concentrates continues.

Work is ongoing, both in the U.S. and the EU, to support members with consistent communications, as well as to minimize the risk such classifications could have on recycling end-of-life materials.

<sup>1</sup> Measures the degree to which a metal ion is released into artificial biological fluids.



THE FULL FORCE OF THE  
EU REACH REGULATION IS  
NOW BEING FELT.

# COPPER: THE SUPERIOR ALTERNATIVE IN POWER CABLE



Copper is seen as the conductor of choice for power cables by professionals around the globe due to its excellent conductivity and reliability. Power cable is the largest end-use market for copper with 3.8 million tonnes used in 2014, according to a study by SNL Metals & Mining. Copper's dominance in this area tends to make competing metals desperate to gain even the smallest amount of market share.

In North America, 8000 Series aluminum-alloy cables tried to establish a position in the building construction market. In response to this challenge, various comparative tests on copper and aluminum cables were conducted by PowerTech Laboratories in Canada. Tests included current cycle, creep and stress relaxation, torque and force, and aging tests for conductivity. The results showed the conductivity and reliability of copper significantly exceeding that of aluminum and aluminum alloy. With the results in hand, CDA North America's staff actively shared this information with professionals at tradeshows in North America as well as in international conferences.

Copper's proven reliability makes it the material of choice in underground cabling. In 2015 the German Bundestag adopted a legislative proposal strongly increasing the amount of underground cabling in Germany's future grids. In response to local concerns, any new high-voltage direct current (HVDC) project must give priority to undergrounding. In addition, the decision makers in Europe are paying more attention to the environmental impact of various conductors. Through a life-cycle analysis (LCA), the Copper Alliance® proved copper cable's superior environmental performance over aluminum cable, thus allaying the fears of local communities.

In China copper cables hold dominant position with 99 percent market share in high-voltage applications. Copper's numbers are equally impressive in mid- and low-voltage applications, with 90 percent and 80 percent market share, respectively. These statistics come from a recent report by the Shanghai Electrical Cable Research Institute (SECRI). The report states that power cable use in China reached 2.3 million tonnes in 2014. Chinese aluminum cable manufacturers are seeking to gain market share from copper through faulty claims in the areas of safety and reliability, price and weight, and environmental impact.



In reality, the aluminum cable industry has failed to penetrate the market to any measureable extent, far below their own expectations. According to SECRI's study, copper loss in the Chinese power cable market was around 20k tonnes in 2014, or 0.7 percent of the Chinese power cable market. This prevention of any meaningful market share loss was a major achievement for ICA Asia, supported by strong technical input from the Copper Alliance®.

ICA Asia seeks to garner scientific and objective evidence from authoritative third-party studies. An LCA study undertaken by the China National Institute of Standardization proved that copper cable is better in all three lifetime phases: raw material, use and recycling. It also showed copper cable ahead of aluminum alloy in every life-cycle indicator—climate change, acidification, eutrophication, human toxicity and fossil fuel consumption.

ICA will continue to drive research regarding power cable technology and its environmental impact, and undoubtedly, this research will reiterate and prove one fact: copper is the material of choice in power cable.

**An LCA study undertaken by the China National Institute of Standardization proved that copper cable is better in all three lifetime phases: raw material, use and recycling.**

## THINK TANK PROVES COPPER'S SUPERIORITY

*More evidence to disprove misleading messages about copper was provided by the Development and Research Center of State Council (DRC), a think-tank for the Chinese government. The DRC finished a year-long comprehensive study in order to provide scientific and authoritative guidelines for copper and aluminum power cable use in China. The report presented three conclusions:*

### ONE

*Copper is superior to aluminum in power cable.*

### TWO

*Although China lacks the domestic resources, the global copper supply is large enough to meet the demand created by China's economic expansion.*

### THREE

*Advocating the substitution of copper with aluminum in China would be a technological step backward. This change would not be consistent with end-user needs, nor would it appropriately reflect the technological advancements in China over the past several decades.*

# TRANSFORMING MARKETS WITH ENERGY-EFFICIENT PRODUCTS



As the best nonprecious conductor of heat and electricity—only silver is a marginally better conductor—copper is often a key component in energy-efficient products and systems. Energy efficiency has been a cornerstone of the ICA program portfolio for 25 years.

In 2013, ICA helped form a global public-private partnership focused on market transformations toward energy-efficient appliances and industrial equipment. The other founding partners were the United Nations Environment Program (UNEP), the UN Development Program (UNDP), CLASP and the Natural Resources Defense Council (NRDC). This initiative was communicated to the membership in its early stages under the name, "The Efficient Appliances and Equipment Global Partnership Program." In 2015, a much advanced initiative was rebranded as "United For Efficiency," or U4E.

# U4E PROVIDES ICA WITH A MEANS TO EXPAND INTO NEW GEOGRAPHIES AT MINIMAL COST AND WITHOUT THE NEED TO DEVELOP IN-COUNTRY INFRASTRUCTURES.

U4E targets motors, distribution transformers, air conditioners, refrigerators, lighting and information technology. It is estimated that these six product categories will account for more than half of global electricity consumption in 2030. Through market transformations based on proven methodologies and the collective experience of U4E's partners, some massive goals can be achieved (by 2030):

- Reduce global electricity consumption by up to 10 percent
- Lower CO<sub>2</sub> equivalent to the emissions of a half-billion passenger cars
- Deliver savings of \$350 billion annually to users of more efficient products
- Avoid investments in new power generation of up to \$500 billion

U4E is focused primarily in the developing world and emerging economies, where efficiency standards are largely absent or out of date. Action here is critical, as the global middle class is expected to grow from two billion people in 2010 to five billion in 2030. The lifestyle and products aspired to by this expanded middle class will depend on copper. Copper is critical to renewable energy, energy access, hybrid/electric vehicles, etc.

U4E aligns with the UN's Sustainable Energy For All (SE4ALL) initiative, and it is the official "energy-efficiency accelerator" for appliances under SE4ALL. ICA and UNEP serve as co-leads for U4E in the SE4ALL governance structure.

U4E advanced rapidly in 2015. A second round of funding was approved by the Global Environment Facility (GEF) in the amount of \$3.1 million (this supplements GEF start-up funding of \$1.6 million awarded in 2014).

Electrolux and Whirlpool joined U4E from the manufacturing sector (and are providing co-funding). Total funding obtained for U4E now exceeds \$20 million, and more than two dozen organizations have signed onto the U4E initiative.

U4E provides ICA with a means to expand into new geographies at minimal cost and without the need to develop in-country infrastructures. Individual countries allocate their own GEF funds to U4E projects. By the end of 2015 six countries had GEF-funded U4E projects approved or in process: Costa Rica, Indonesia, Myanmar, Kazakhstan, South Africa, and Sudan.

ICA leads outreach for U4E to ensure the partnership continues to grow. ICA also provides active support in communications activities for U4E, including the development of the website, [united4efficiency.org](http://united4efficiency.org). For each of the six product categories covered by U4E, a technical expert task force is being formed; ICA will lead the task forces on motors and distribution transformers. ICA presented on U4E for the first time at two important venues: the UN General Assembly, May 2015, and the climate change summit in Paris (COP21), December 2015.

ICA's support of U4E provides strong evidence of the copper industry's commitment to energy efficiency and climate-change mitigation. Looking ahead, ICA's members will be able to utilize the U4E brand in their own communications and outreach efforts, and members will be able to co-brand with U4E in a new video that will be produced in 2016.

# LEADING THE WAY WITH CODES AND STANDARDS



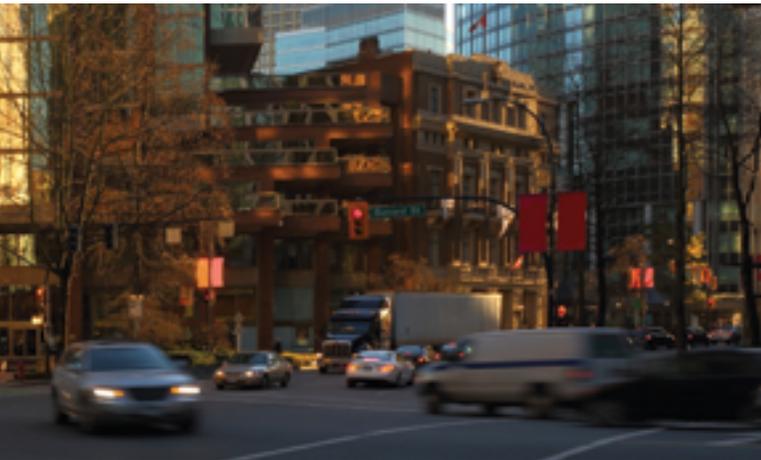
Codes and standards strongly influence copper's use and its competitive position by defining technical requirements for safety, efficiency, reliability and environmental performance. In 2015 nearly 15 percent of the ICA operating budget was devoted to this work, and this number does not include the time and effort required by associated ICA staff. From Latin America and North America to Asia and Europe, the Copper Alliance® works globally with relevant government agencies on codes and standards that maintain or increase copper usage versus competitive materials.

On average, fractional horsepower motors (FHPs) in Brazil use 18,500 tonnes of copper per year at the energy-efficiency level specified in the current standard. However, CDA Brazil led a complex process of drafting a new voluntary national standard for FHPs, with the goal to improve minimum energy performance standards (MEPS) in FHPs by two levels, which can increase copper usage by up to 4,000 tonnes annually.

While a large portion of ICA's work on codes and standards focuses on existing standards, in some instances ICA helps develop entirely new standards. For example, in China, power quality issues result in decreased productivity and increased costs. Until recently no standard existed to calculate these losses. ICA played a leading role in developing three national standards providing methodologies, tools and case studies to evaluate the economic losses caused by power quality issues. ICA also developed a trial project in Shanghai to test the methodology. These standards will lead to the widespread adoption of copper-intensive power quality solutions, which can result in 3,000 – 5,000 tonnes of new copper usage each year.

Distribution transformers are typically very energy efficient. However, because their service lives are measured in decades, even small increases in efficiency can lead to large energy savings over time. To improve the quality, reliability and energy efficiency of distribution transformers produced in India, the Department of Heavy Industries introduced mandatory quality certification in February 2016. Transformer manufacturers have to comply with the revised Bureau of Indian Standards (BIS) 1180-2014 standard, which mandates an average of 20 percent lower transformer losses than earlier MEPS. For over 10 years, ICA

Distribution transformers are typically very energy efficient. However, because their service lives are measured in decades, even small increases in efficiency can lead to large energy savings over time.



worked with the transformer manufacturers association to lobby BIS and the Department of Heavy Industries to include distribution transformers in a mandatory quality control order. Improved compliance will lead to additional copper usage of approximately 8,000 tonnes per year.

In Mexico, new legislation seeks to promote investment in power generation and to increase private participation in the maintenance and construction of distribution and transmission networks. In 2015 CDA Mexico led the process to issue three national asset management standards based on ISO 55000. Implementation will lead to increased use of higher efficiency, copper-intensive components such as generators, transformers and cables for network expansions.

Through its Polish office, ICA helped update the International Electrotechnical Commission (IEC) 60364-5-56 standard, which applies to the design of fire-safety services in public buildings and spaces in the European Union (EU). This contribution included addressing measures to improve the performance of safety services through correct sizing of conductors that need to remain functional during a fire. When implemented throughout the EU, this standard will increase copper use by approximately 20,000 tonnes per year. Replicating this work globally could increase this impact up to 400 percent.

Renewable energy systems (e.g., solar, wind,) require on average 8 – 12 times more copper per kilowatt than traditional power generation. One megawatt of solar photovoltaics (PV) utilizes about four tonnes of copper, with a significant share of copper use in PV in cabling. In Spain, price pressure was leading to the increased threat of substitution. A successful countermeasure was the publication in February 2015 of the EN-50618 standard for electric cables for PV systems. This standard and the upcoming IEC (international) standard will protect the global PV market estimated to be 80,000 tonnes in 2014.

In the United States, CDA maintains representation on five National Electric Code panels to strengthen copper's position versus aluminum in grounding and bonding, rooftop wire size, voltage drop, etc. Their work includes addressing the direct attack on rooftop wire sizing by aluminum and defending a previous CDA code change addressing wire upsizing to account for solar-driven temperature increase and solar effect on insulation.

The codes and standards work undertaken by ICA demands patience and a high level of expertise, but the results deliver an attractive and long-lasting return on investment for members.

# COPPER. MAKES THE WORLD WORK BETTER.™

One of the three key strategic pillars of the ICA Value Proposition is image/reputation-building. The ICA *Copper Makes the World Work Better*™ campaign strengthens our strategy in this area. In this campaign, ICA develops and packages messages for use by members in their communications and other outreach efforts. Targeted audiences include journalists, government officials, regulators, investors, copper industry employees and more. By having ICA's members share these messages with a common voice, audiences will receive a more balanced view of the copper industry.

With the support of a focus group comprised of communications leaders from six ICA member companies, the campaign developed the overarching message, *Copper Makes the World Work Better*. The campaign conveys that copper is essential to sustainable development and a modern quality of life, and copper and the copper industry are making a positive impact on many of society's greatest challenges.

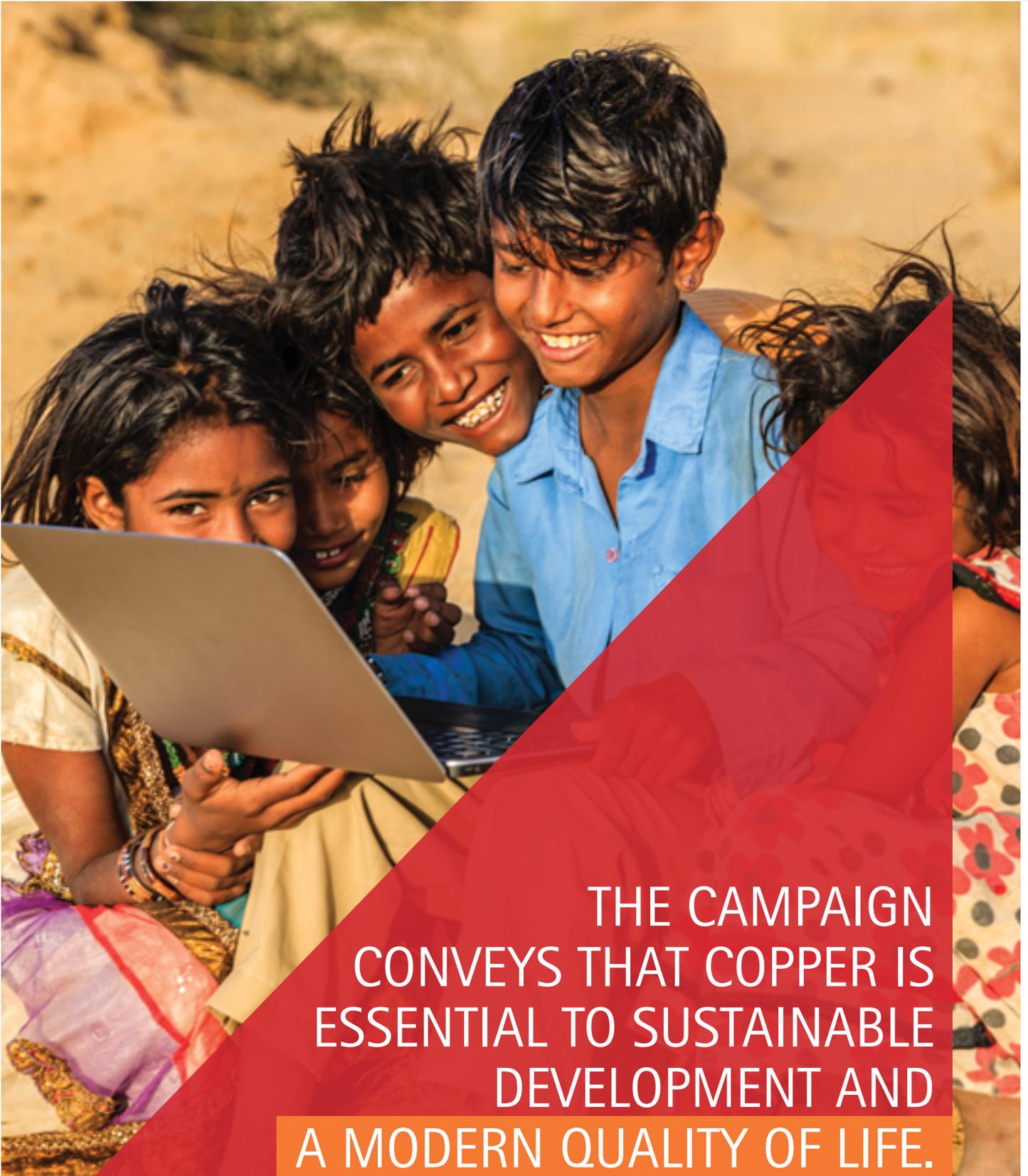
An event was organized in Santiago, Chile, at the start of CESCO Week in April 2015 to launch the campaign. Speakers included Jean-Sebastien Jacques (Rio Tinto Chief Executive Copper & Coal and ICA Chairman of the Board) and Nelson Pizarro (Codelco President). Attendees included representatives from across the copper value chain, government officials, and the media. A video premiered at the event entitled "Copper: Material for a Modern World." Expert spokespersons from various industries appear in the video explaining how copper makes their world work better. With this guiding message defined, the campaign continued with a focus on how copper delivers on this overarching theme. A second video and supporting materials centered on copper's role in energy efficiency and its benefits—most notably, climate-change mitigation. The video was shown during the global climate-change summit in Paris in December 2015 (COP21). A third video highlighted the sustainability of copper itself,

with the message that copper is infinitely recyclable, along with its associated lifecycle benefits. This is critical to ICA's market-development efforts, as copper needs to compete—and succeed—versus competitive materials in final, end-use products.

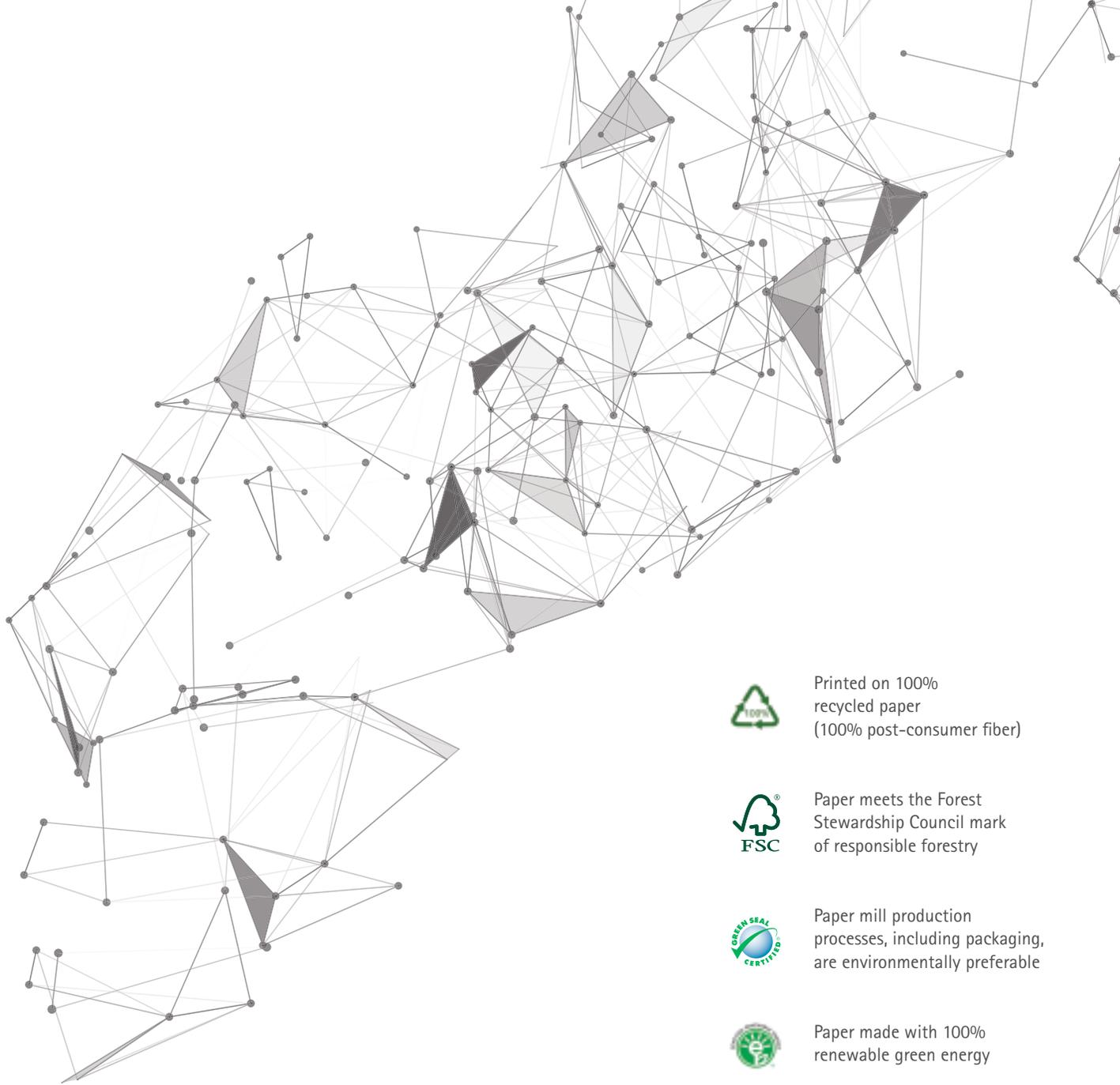
*Copper Makes the World Work Better* is intended to be an ongoing campaign that, over time, will support ICA's members in efforts to enhance their social licenses to operate. ICA will work with its members on messaging priorities supporting this goal.

In line with this key strategic consideration, ICA partnered with members to develop statistics and messages to demonstrate the copper industry's contributions to sustainable development and a modern quality of life. ICA's objective is to continue to augment and strengthen these messages over time. Twenty-two ICA members, representing around 40 percent of the world's annual copper usage, agreed to provide datasets substantiating the copper industry's efforts to operate in a more sustainable manner. A new ICA website, [sustainablecopper.org](http://sustainablecopper.org), provides an aggregated view across a range of well known sustainable-development indicators, such as CO<sub>2</sub> emissions, energy intensity and worker safety. For example, on average, these 22 members emit around 0.15 percent of the world's total annual CO<sub>2</sub> emissions (ca. 35 billion tonnes CO<sub>2</sub>) and invest \$20 – 30 billion every year to make their operations more sustainable. These statistics and messages can be used individually by members, e.g., in employee, investor and community presentations, as well as in dialogues with policy makers.

A members-only website, InSite, was launched in 2015 to support many of our new communication efforts. The site contains all of the materials produced for the *Copper Makes the World Work Better* campaign, as well as a wealth of other information produced strictly for ICA's members. The site is password-protected, and login credentials can be received by contacting our New York office. Another new resource is a microsite ([copperalliance.org/app/](http://copperalliance.org/app/)) providing bullet-point messages and statistics on copper's contributions to sustainable development. The site is designed to behave like an app and is easy to upload to smartphones and other devices.



THE CAMPAIGN  
CONVEYS THAT COPPER IS  
ESSENTIAL TO SUSTAINABLE  
DEVELOPMENT AND  
A MODERN QUALITY OF LIFE.



Printed on 100% recycled paper (100% post-consumer fiber)



Paper meets the Forest Stewardship Council mark of responsible forestry



Paper mill production processes, including packaging, are environmentally preferable



Paper made with 100% renewable green energy



Paper manufactured from sustainable raw materials and are free of chlorine chemistry



Vegetable-based (as opposed to traditional petroleum-based) inks used throughout



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