



International Copper
Association
Copper Alliance



2012 Annual Report

International Copper Association

ICA'S MEMBERS

(AS OF 31 DECEMBER 2012)

Anglo American
Antofagasta Minerals S.A.
Aurubis
BHP Billiton Plc
Boliden AB
Buenavista del Cobre, S.A. de C.V.
Chinalco Luoyang
Compañía Minera Doña Inez Collahuasi
Compañía Minera Zaldívar
CODELCO-Chile
Daechang Co., Ltd.
Freeport McMoRan Copper & Gold
Golden Dragon Precise Copper Tube
Halcor S.A.
Kennecott Utah Copper Corp.
KGHM Polska Miedź S.A.
KME
LS-Nikko Copper Inc.
Luvata
Méxicana de Cobre, S.A. de C.V.
Minera Alumbraera Ltd.
Minera Antamina S.A.
Minera Escondida Limitada
Minera Esperanza
Minera Los Pelambres
Minera El Tesoro
Mitsubishi Materials Corporation
Mueller Industries
Nexans
Outotec Oyj
Palabora
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
Xstrata Copper
Yunnan Copper Industry (Group) Ltd.





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MESSAGE TO MEMBERSHIP FROM ICA'S CHAIRMAN AND PRESIDENT

Dear Valued Members,

2012 brought significant change to the ICA organization globally, and the theme of this report is appropriately entitled "A Year of Change." 2012 was the first year of ICA's new five-year Strategic Plan, and it is fitting that our new President, John Holland, officially joined in February to provide leadership and guidance in the implementation of the plan. The new Copper Alliance™ identity was also implemented worldwide and use of the brand is now universal among the 26 offices that form the Copper Alliance.



Charlie Sartain
Chairman



John J. Holland
President

This new Strategic Plan is designed to deliver on the ICA Value Proposition, which has evolved in recent years. While a key pillar of the strategy continues to focus on copper demand—over the plan period of 2012 – 16 ICA's programs are expected to make a positive impact on global copper demand in excess of one-million tonnes—a growing emphasis is placed on the Societal Benefits of Copper. Our metal is a significant contributor to modern society and its sustainable future and has a positive effect on many of society's greatest challenges, including public health, energy efficiency, greenhouse gas reduction, food supply, emerging technologies and more. At the pinnacle of this effort is an ICA-led communications campaign that provides the copper industry with new and powerful messages to demonstrate how copper is providing important societal benefits. Through the unified use of these messages as an industry, we have a positive story to tell in terms of copper's contribution to a

sustainable and healthy society while at the same time positioning the industry in a more positive light.

The Societal Benefits of Copper campaign was started in 2011, and in 2012 it was expanded beyond ICA's global membership to include organizations normally served by regional and local copper centers. In addition, the members of the International Wrought Copper Council (IWCC) were invited to join the campaign. On this last point, we offer thanks to Mark Loveitt for his support of this important initiative. We challenge all of our members to join in this campaign and do more to effectively communicate the many benefits that copper provides society.

The ICA Value Proposition effectively serves the upstream value chain (by improving copper demand) and the downstream fabricator base (through new applications for copper, as well as stronger positioning of existing applications versus competitive materials and technologies). Another key component of the ICA Value Proposition is to continue helping the industry navigate a complex global regulatory environment. The "Initiatives Highlights" section of the report offers practical demonstrations of how ICA's programs deliver on our Value Proposition.

We challenge all of our members to join in this campaign and do more to effectively communicate the many benefits that copper provides society.



The new Strategic Plan brought an important change to members' governance of the organization. In 2012, the role of the Program Review Committee (PRC) was modified and strengthened. The PRC now provides direct oversight over the implementation of the Strategic Plan. At the beginning of each year, ICA management identifies key milestones it aims to achieve over the course of the year to demonstrate progress against the goals outlined in the Strategic Plan. These milestones are approved by the PRC, and at its annual meeting (generally in October), its members review the results of these milestones. Through the guidance of the PRC, members now have an annual assessment of ICA's performance versus its goals. While the plan period is five years, the organization maintains the flexibility to revise strategic elements to ensure the needs of members are being met. This new role for the PRC is instrumental to ensuring the plan evolves over time as needed. We would be remiss if we did not acknowledge Steve Higgins (President – Freeport McMoRan Sales) for his five years of dedication and leadership as Chairman of ICA's Program Review and Advisory Committees, which has been instrumental in ensuring the organization's well being.

While contributions from members accounted for nearly \$69 million, additional contributions of \$9 million (industry) and \$17 million (nonindustry) in the form of co-funding significantly augmented the scope and reach of ICA's activities. ICA is a 501c (6) not-for-profit organization incorporated in New York, and this tax status presents limitations on who can provide funding to ICA. As a result, the Copper Foundation, a 501(c)(3) tax-exempt charity, was formed in New York as a supporting organization to ICA. This



opens the door for the Copper Foundation to receive funding from charitable foundations with missions that align with ICA strategy, as well as governmental grants and contributions from the general public. The Copper Foundation will focus on rural and slum electrification and public health projects (through copper's unique antimicrobial characteristics) in developing countries. ICA members will be able to fund Copper Foundation projects through their own charitable investments (for example, corporate social responsibility, or CSR, programs). The final U.S. registrations for the Copper Foundation are in process as of this writing, and we expect to be able to report initial successes in the next annual report.

Membership in ICA continues to represent about 60 percent of global copper production. ICA provides an important link between copper producers and fabricators, and that link is strengthened through the efforts of ICA's Copper Alliance partners. ICA's Value Proposition can be enhanced by greater industry participation. We encourage current representatives of ICA's member companies—in particular, the Board of Directors—to assist ICA

management in recruiting industry colleagues to join ICA. The work of the ICA and the Copper Alliance benefits the whole of the copper industry. Greater participation by industry will increase the impact of the ICA.

ICA's membership consists of 43 organizations. Copper Alliance partners are widely spread across the copper industry represented within over 500 organizations worldwide, with activities in nearly 60 countries on six continents. As always, we offer thanks to all these valued partners and to the Copper Alliance employees worldwide. Collaboration between members and employees continues to grow in effectiveness, which we hope is best evidenced by the subsequent pages of this report.

Yours sincerely,

Charlie Sartain
Chairman

John J. Holland
President

NEW ICA CHAIRMAN

In October 2012 ICA's Board elected Peter Beaven (President, BHP Billiton–Base Metals) to serve as Chairman of the Board of Directors for the next two years. We welcome Peter and look forward to his leadership and guidance of the ICA as it continues to serve the world's copper industry.

We would like to express our sincere thanks to Charlie Sartain for his leadership, skilled guidance and commitment to ICA over the past three years. Charlie served as Chairman during a demanding period in ICA's history. The "Message to Membership from ICA's Chairman and President" notes a number of significant organizational improvements that took place under Charlie's leadership, including governance changes, a new Strategic Plan and a strengthened Value Proposition.



Anthony C. Lea
Sr. Vice President
Marketing & Strategic Planning

KEY ACHIEVEMENTS AND DEVELOPMENTS

In 2012, to strengthen the implementation of the new five-year International Copper Association Strategic Plan, improved approaches to long-term planning and tracking performance were introduced.

ICA has now moved to a rolling-plan concept whereby each year the Strategic Plan is refined to fit evolving market conditions. This will maintain its relevance and should also make future strategic-planning cycles more streamlined and efficient.

In parallel, a system has been introduced to monitor progress against the published plan via the development of a series of key annual milestones for each initiative. The milestones for 2012 were published at the start of the year and reported on using a color-coded dashboard system at the annual member meetings. Across the five core initiatives and four support initiatives outlined in the Strategic Plan a total of 54 milestones were set for

2012. Of these, 40 (or around 75 percent) were accomplished either to or above expectations. The remaining 14 fell behind schedule but will continue to be pursued in 2013. This highly transparent approach to reporting will result in increased accountability for program delivery and allow members to understand how their investment in ICA is delivering against the Strategic Plan.

From the many important achievements of the first 12 months of the Strategic Plan, a few have been selected to demonstrate the breadth and depth of ICA activities, and the advances made.

One of the most effective ways of combining the clear benefits of copper to society with actual tonnage delivery is through regulations to improve energy efficiency of copper-intensive equipment and appliances. For example, in the power distribution sector where the loading of transformers is high and continuous, operating efficiency can be increased by increasing copper content, thereby reducing system losses, saving energy and reducing carbon emissions.

In all regions, the Copper Alliance™ has been working to improve transformer efficiencies through the establishment of Minimum Energy Performance Standards (MEPS), the promotion of Total Ownership Cost (TOC) purchasing criteria, and the introduction of regulations and incentives for early equipment replacement. In summary, based on our achievements in 2012, transformer programs are on track to deliver at least 65 kt additional copper demand in 2016, with the accompanying energy and carbon emission savings.

Of particular note is the progress made in China where revised MEPS represent a substantial efficiency increase over the standards last set in 2006. To supplement this measure, ICA China has worked with the authorities to introduce financial incentives for transformer upgrades with as much as 80 percent of the incremental cost of the higher-efficiency transformer now being met. In addition, a voluntary standard has been issued encouraging utilities to adopt TOC purchasing practices

including a consideration of the residual value of scrap metal at end of life, and the opportunity cost of not being able to sell electricity lost due to inefficiency. Together these measures should result in an incremental copper demand of 35 kt in 2016, which is ahead of original expectations.

Now that the clear benefit to society of Antimicrobial Copper® is firmly established, the supply chain of fabricators and equipment suppliers are increasingly recognizing the opportunity this presents. 2012 saw major gains in the number of downstream manufacturers partnering with Copper Alliance in the Antimicrobial Copper brand. In total, there are now 60 copper and alloy fabricators participating in the program together with 90 manufacturers supplying equipment ranging from door handles to stethoscopes to hospital beds.

This proliferation of supply chain activity is beginning to deliver a real presence in the market, allowing healthcare and other sector decision makers to specify and easily source Cu+ products. This is seen in the rapid increase in the number of actual installations of Antimicrobial Copper in healthcare facilities, which now number 70 around the world.

As part of the new Strategic Plan the Technology Development and Transfer (TDT) initiative provides greater focus on transferring new technologies to the supply chain. Some of the most significant achievements along these lines have been made by optimizing air-conditioning tube technology. ICA 5mm tube designs are showing rapid penetration in the critical Chinese market reaching over 10 kt demand during 2012. Ten million room air conditioners now use this technology.

TDT has also published its five-year *Copper Applications Technology Roadmap* for air conditioning outlining the transfer of 5mm and 4mm tube technology to larger air-conditioning systems and other applications such as water heaters, refrigeration, heat pumps and energy storage. The road map also addresses optimization for new refrigerants, heat



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exchanger design software for OEMs and the ICA response to improved efficiency requirements.

This proactive development of reduced tube diameters shows that by optimizing technology and stressing resource efficiency, the ICA can demonstrate good stewardship of copper products while defending copper from the threat of substitution by other materials.

The new Strategic Plan called for an increase in ICA activity in the field of sustainable development. As a first step, the management team was strengthened with the creation of a dedicated position mandated to develop and lead a sustainable development program within the existing Health, Environment and Sustainable Development (HESD) initiative. In addition, industry participation was enhanced through a review of member representation in HESD activities and by active outreach to the fabricator community to understand and prioritize their needs.

Building on the historical core function of applied research and advocacy, the increased resource and focus on sustainable development has set ICA on-track to provide a range of critically important data, such as life-cycle indicators and various recycling ratios, and to highlight how copper and ICA programs are of benefit to society.


A final critical element of the new Strategic Plan has been the launch of the new Copper Alliance™ brand. Without affecting the vital independence and autonomy of regional and national copper centers around the world, the organization has transitioned to a common identity under the umbrella trademark Copper Alliance. Over the course of 12 months, all copper centers have transitioned their external identity into a harmonized format, exemplified by this annual report.

To support the launch of the new brand, a new website portal now provides common and efficient access to all Copper Alliance websites around the world. The portal, copperalliance.org, has already seen traffic rise to over 30,000 visits, including a 23 percent return visitor rate.

These advances go far beyond the visual changes made; they allow all our stakeholders to appreciate the degree of consistency and coherence in strategy and structure that underpins Copper Alliance activities, rather than be distracted by fragmented organizational branding.

The achievements highlighted in this section are only a partial representation of the progress made in the first year of our new Strategic Plan. In the following pages, readers will clearly see all the major achievements of our regions and initiatives in 2012.

ICA'S MISSION: Defend and grow markets for copper based on its superior technical performance and its contribution to a higher quality of life worldwide.







WHAT IS THE COPPER ALLIANCE™?

The Copper Alliance™ brand represents a network of 26 regional and local copper centers, led by ICA.

- Use of the Copper Alliance brand permits the ICA Network to maintain a stronger web presence and better position copper centers within the ICA
- Never before have copper and the copper industry been in a position to make a positive impact on so many of society's greatest challenges
- As global issues like energy, CO₂ and health become more urgent, copper has an increasing role to play in almost every industry
- Copper Alliance is positioning copper—the material and the industry—based on its unique benefits to society

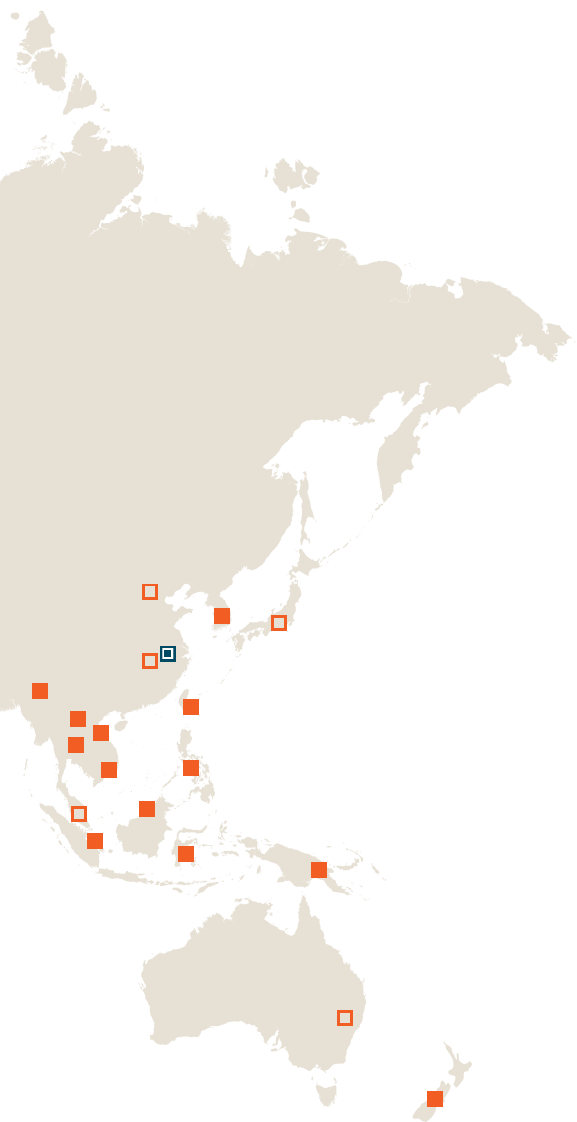




-  CORPORATE HEADQUARTERS
-  REGIONAL OFFICES
-  COPPER ALLIANCE™ CENTERS
-  COPPER ALLIANCE™ ACTIVITIES



COPPER ALLIANCE IS ACTIVE IN NEARLY 60 COUNTRIES



Asia

Australia
Bangladesh
Brunei Darussalam
Cambodia
China
India
Indonesia
Japan
Laos
Malaysia
New Zealand
Papua New Guinea
the Philippines
Saudi Arabia
Singapore
South Korea
Sri Lanka
Taiwan
Thailand
the UAE
Vietnam

Europe and Africa

Belgium
Bulgaria
Cyprus
Czech Republic
Finland
France
Germany

Ghana
Greece
Hungary
Italy
Luxembourg
Netherlands
Nigeria
Poland
Romania
Russia
Senegal
Slovakia
South Africa
Spain
Sweden
Ukraine
United Kingdom

Latin America and the Caribbean

Argentina
Brazil
Chile
Colombia
Dominican Republic
El Salvador
Mexico
Peru

North America

Canada
United States of America



REGIONAL FOCUS

The global ICA organization (Copper Alliance™) is a regionally based structure. We are headquartered in New York, and while many activities are coordinated by ICA's global-level employees, a majority of our activities are developed and implemented at the regional level. There are four primary regions in ICA: Asia, Europe and Africa, Latin America and North America.

Within these regions are 26 copper centers with activities focused in specific countries or groups of countries. In recent years, we have also expanded our reach into emerging geographies. In total, Copper Alliance™ program activities reach nearly 60 countries.

A large part of our success is predicated on engagement with local industry in all geographies where we are active. In many instances, copper industry companies are members at a regional or country level, which greatly enhances our ability to execute on our mission to promote and defend copper and copper markets worldwide.



In addition to the 43 global-level members of ICA, we collaborate with more than 500 regional and local members and project partners around the world.

Each "Regional Focus" is presented by the relevant Regional Director, and each Regional Director is supported by a talented group of employees. We encourage our members and other stakeholders to engage with the copper centers in geographies important to their businesses, and to participate in the various Regional Councils and other local groups to ensure we continue to develop and deliver programs that meet the needs of the copper industry.



Richard Xu
Regional Director
International Copper
Association Asia Ltd.

ASIA

2012 saw a continuing shift in the world's attention toward Asia. Growth globally was weak, with austerity measures continuing in the Eurozone, deflationary conditions in Japan and relatively slower growth in both China and the U.S. (the two largest economies in the world). However, we are beginning to see a brighter outlook for 2013, due to especially encouraging economic and industrial production numbers from China and the U.S. The ICA Asia team is well positioned to take advantage of the "pivot to Asia" as well as the improving economic conditions. We continue to lay groundwork in emerging and developing countries as well as entrench and defend copper use in developed and industrialized countries in Asia.

In China, standards were established for the Combined Cooling, Heating and Power (CCHP) and incentive policies for heat pump water heaters.



Strong emphasis remains in the power sector against potential substitution in end-use applications, especially transformers and power cables. Korea issued its first ever Minimum Energy Performance Standard (MEPS) for Distribution Transformers (DT), whereas India issued MEPS for DT from 200 – 2,500 kVA to supplement existing MEPS for up to 200 kVA. China introduced a new Total Ownership Cost (TOC) standard for DT. For power cable, our collaboration in Japan led to the approval by the IEC (International Electrotechnical Commission) of an environmental conductor size optimization program. In Southeast Asia, the Harmonization Program with utilities in the Lower Mekong Sub-region continues to ensure that copper conductors are the preferred material as major cities undergo modernization and begin to run cables underground. ICA efforts in the important

power sector segment are estimated to deliver additional copper demand of up to 100 kt by 2016. For China alone, a market study by Hui Chong Research estimated that copper end-use demand in the power sector will increase from the current 1.25 million tonnes to 2.05 million tonnes in 2017.

ICA is also positioned to support the copper-intensive technologies for new and renewable energy as the world moves toward greener and sustainable energy technologies. In China, standards were established for the Combined Cooling, Heating and Power (CCHP) and incentive policies for heat pump water heaters. In Vietnam, the first collaboration with Electricity of Vietnam (EVN) on wind-grid interconnection standards made good progress.

ICA efforts in the important power sector segment are estimated to deliver additional copper demand of up to 100 kt by 2016.



Another key challenge that copper faces is the constant threat of material substitution in the major application of building wire and conductors. In 2012, the China and Southeast Asia team successfully defended against the penetration of aluminum-alloy cable and copper-clad aluminum cable through long-term relationships with regulators and major supply chain partners. Although the annual defensive market is only 12 kt, the impact of substitution could be serious for copper.

In 2012, we further strengthened our strategic partnership with the Asia Development Bank (ADB) to promote regional integration and environmentally sustainable growth in Asia. This started with the Asia Pacific Dialogue on Clean Energy Governance, Policy & Regulation, leading to a presentation of several ICA programs at the Asia Clean Energy Forum in Manila and the Asia Clean Energy Expo in Bangkok. We continue to strengthen our relationships with key influential policy and standards makers at the Asia-Pacific Economic Cooperation (APEC) level, through the Expert Groups for Energy

In 2012, we further strengthened our strategic partnership with the Asia Development Bank (ADB) to promote regional integration and environmentally sustainable growth in Asia.

Efficiency & Conservation and New & Renewable Energy (EGEE&C and EGNRE) where approval of our proposals total about \$500k (€376k) of APEC funding. We were also successful in two proposals to EU Switch Asia, with a combined amount of €3.5 million (\$4.6 million).

The ICA team in Asia continues to pursue strategic partnerships to develop copper demand and expand our positive image through sustainable energy and growth. We plan to leverage platforms like the Asia Copper Week to not only showcase our goals and achievements, but also the strategic foresight of some of our programs for copper in Asia.





John Schonenberger
Chief Executive
European Copper Institute

EUROPE AND AFRICA

In 2012, the EU was characterized by rising unemployment, fiscal austerity and zero growth. Based on the latest figures from the International Copper Study Group, Europe's refined copper demand is expected to be down around 10 percent versus 2011.

The combination of reduced government spending, conservative bank lending to consumers and the high relative price of copper-based solutions has strongly affected the construction sector. Semi-fabricator members have responded by reducing headcount and closing excess capacity.

The EU's many policy responses to the current economic malaise provide both threats and opportunities for the copper industry. A core function of the European Copper Institute (ECI) is to monitor the most relevant policies and to work with members to make necessary corrections to promotional programs, as well as to develop and engage in the required political advocacy. (ECI serves as the European Regional Office for ICA.)

The European Commission's October communication on "A Stronger European Industry for Growth and Economic Recovery," lays out the challenge of reversing the declining role of industry, from its current level of around 16 percent of GDP to as much as 20 percent by 2020. The Commission proposes to jointly focus investment and innovation on six priority areas—advanced manufacturing technologies, key enabling technologies

(e.g., nanos), bio-based products, sustainable industrial and construction policy and raw materials, clean vehicles and smart grids.

These new technologies require affordable and reliable access to energy and raw materials. Energy prices for European industry went up by 27 percent in real terms between 2005 and early 2012. Effective implementation of an efficient internal market for energy, more investment in energy infrastructure, further diversification of energy sources and increased energy efficiency are needed. One specific requirement of the October communication is the installation of intelligent metering systems in at least 80 percent of households by 2020. This is a first step toward the deployment of smart grids. By 2020, the EU will need to invest an estimated €60 billion (\$80 billion) in these grids, rising to around €480 billion (\$650 billion) by 2035.

Copper-based products and systems are required to reach these ambitious goals. We remain involved in the Ecodesign Directive that sets out requirements for several energy-related products, including motors, pumps, fans and chillers. Although energy has been the main target so far, the

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Directive foresees improvements related to all environmental aspects, including material efficiency. This offers innovation opportunities for the copper industry through alloying, miniaturization and application designs facilitating end-of-life recycling.

In parallel, the copper industry needs to manage potential competitive threats in the area of raw materials. An ICA member CEO has been appointed to the new, high-level advisory panel of the European Innovation Partnership on raw materials. The Commission will publish a revised program on raw materials in September 2013.

Our members, plus those of the ten copper centers across Europe, again delivered \$3.5M in cash co-funding, plus significant senior executive time to oversee priorities and effective project implementation of the annual operating plan.

Across Africa, demand is expected to remain unchanged at approximately 0.3 million tonnes. In South Africa,

spearheaded by a new Copper Development Association (CDA) Africa Director, the main achievements involved trials of various alloy meshes for marine aquaculture cages, broad outreach on the benefits of Antimicrobial Copper® during the Infection Prevention and Control Africa Network conference, and the promotion of copper in solar water heater installations. The CDA was also involved with South African authorities on efforts to reduce copper theft and illegal scrap exports.

We will continue to be active in advocacy and copper image development toward the main European stakeholders. We will also respond to increasing substitution threats by strengthening the promotion of copper's benefits relative to competitive materials.

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Miguel Riquelme Alarcón
Regional Director
Latin America

LATIN AMERICA

During 2012, the refined copper consumption for the Latin American and Caribbean Region increased approximately 6 percent compared with 2011, reaching 950 kt. Regional co-funding amounted to \$3.1 million, which represents 56 percent of direct program costs. This figure is 14 percent higher than 2011, mainly due to a new regional fundraising program.

One of the projects in progress relates to the agricultural fruit sector, with an encouraging impact for products with copper content such as wire and cables, efficient motors and pumps.



Photo Credit: INDAP –
Ministerio de Agricultura de Chile
(Chilean Agricultural Ministry)

The estimated copper tonnage impact, driven by Copper Alliance™ activities in the region, increased by more than 22 kt, a figure validated by local and regional fabricators.

This past year activities in Latin America focused on supporting ICA's global Strategic Plan, with emphasis on overcoming the market challenges facing the copper industry, e.g., environmental concerns, electrical safety and substitution, to name just a few.

As part of ICA's dedication to safeguarding the environment, Latin America supports this focus on sustainable development. We have partnered with governmental associations and power utilities in the installation of solar water heating systems in low-income homes in Brazil, Mexico and Chile. The regional study, "Copper's Contribution to Fight Climate Change," prepared jointly with the International Energy Initiative, estimated that through more efficient end-use technologies, over one million tonnes of CO₂ per year can

be mitigated through the contribution of copper, reinforcing our Societal Benefits of Copper campaign.

In support of ICA's work in bringing an understanding of electrical safety to growing economies, ICA Latin America has worked to increase end-users' awareness of electrical risks through our prestigious Safe House Program. Additionally, we assisted with the promotion of the Energy Management International Standard (ISO 50001), thereby establishing a framework to approach the continuous improvement of energy performance. In support of this standard, we co-sponsored regional sustainable energy training in Mexico City.

Xstrata Mining and CDA Peru have created a case study to evaluate the use of premium-efficiency motors for the Antapaccay project, which will produce 160,000 tonnes of copper per year. The project considers the installation of 583 premium-efficiency motors with a power range between 1 and 250 HP, allowing energy savings of 1.4 GWh/year.

We have partnered with governmental associations and power utilities in the installation of solar water heating systems in low income homes in Brazil, Mexico and Chile.

To help combat the effects of substitution, achievements were attained in areas of potential copper market growth. Six licenses to use the Cu+ brand in health, transportation and education sectors were granted. All local copper centers actively participated in green-building councils to introduce solar water heating and optimized cable sizing themes, which help solve issues associated with energy efficiency and reduce CO₂ emissions. To overcome the threat of substitution, a joint effort was developed with wire and cable manufacturers in Mexico to deter the introduction of residential aluminum cables under the updated electrical code.

Also on a positive note, after 18 months of work in the new fundraising program, a portfolio of over 20 projects has been identified in cooperation with international government and private agencies. One of the projects in progress relates to the agricultural fruit sector, with an encouraging impact for products with copper content such as wire and cables, efficient motors and pumps.

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Communication activities during the year highlighted ICA's focus on environmental issues. The successful Societal Benefits of Copper campaign was adapted by many member companies that turned our resources into their own impactful communications tools.

The retention and engagement of members and stakeholders has been crucial in Latin America to accomplish objectives during 2012, and it will remain a key element to execute the Strategic Plan in the next year and beyond. We thank you for your continued support and guidance.

Photo Credit: CDA Chile





Andrew G. Kireta, Sr.
President & CEO
Copper Development
Association, Inc.

NORTH AMERICA

While North America waits for a full recovery from tough economic times, we are encouraged by strong automotive sales and signs of sustained growth in the housing market.

Each year, starting in June, Copper Development Association (CDA) staff, along with our Member Councils and the Operating Committee, creates and proposes the Operating Plan for the following year. In 2012, this plan consisted of 29 projects, each backed by a specific proposal outlining the strategic goals of the project, the funding required to achieve those goals, and the milestones and achievements the project would strive to deliver to demonstrate value to our members. Through our projects and outreach we are able to make a strong and positive impact for copper and the copper industry and, ultimately, our members. (CDA is the North American Regional Office for ICA.)

One project that continues to gain momentum is Antimicrobial Copper®. This project is divided into two strategic areas, demand creation and supply chain development. We actively engage decision-makers all along the demand chain, from facilities owners and infectious disease doctors to design and construction personnel. The Cu+ team and the Building Construction team presented the antimicrobial message at 17 healthcare-specific trade shows and conferences this year and delivered 28 face-to-face

seminars with attendees from nearly 500 businesses. The supply-chain element of the Antimicrobial Copper® program helped component makers bring Cu+ products to market by delivering high-profile installation and promotional opportunities. Through the combined efforts of our staff, our members and component makers, we have been able to confirm antimicrobial product specifications on four additional healthcare projects this year.

A crucial Health, Environment and Sustainable Development (HESD) milestone mitigated a threat presented by the U.S. National Oceanic and Atmospheric Administration (NOAA). NOAA's studies claim that copper reduces salmon populations by impairing their sense of smell so predators cannot be avoided. We used an enhanced communications program to challenge NOAA's claim at three Chemosensory symposiums. We continue to work in collaboration with NOAA on a saltwater olfactory study underway in the Seattle area to gain appropriate scientific evidence on this issue.

To meet the needs of the sustainable design community, we have been developing updated life-cycle information

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(LCI) on copper building products. We are working with the HESD team to develop this information using the global copper cathode LCI and North American fabrication variables. This will help us create data suitable for the North American market without producing interregional competition for the "greenest" copper tube or sheet. To effectively communicate this life-cycle information to the market, we partnered with environmental consultants to create Environmental Product Declarations (EPDs) for copper sheet, tube and building wire.

Our Sustainable Energy program facilitated an increased use of copper in traditional and renewable electrical energy generation, transmission and use. The program engaged all aspects of the decision-making value chain, from Federal energy policy to the individual motor specifier.

In the Advocacy, Policy and Regulatory area, the main goal was to develop relationships with the U.S. Congress and allied energy agencies to influence

rulemaking activities in favor of copper use. We were successful in having comments accepted by the Department of Energy on Minimum Efficiency Standards for both distribution transformers and motors, which could result in large potential copper increases through higher efficiency standards. To generate an understanding of copper's benefits and uses in energy infrastructure, the Sustainable Energy program also engaged in a broader market communications effort.

2012 was a busy and productive year. We believe our efforts and results provide valuable opportunities for our members and the Copper Alliance™ organization.

To meet the needs of the sustainable design community, we have been developing updated life-cycle information (LCI) on copper building products.





STRATEGIC INITIATIVE HIGHLIGHTS

The annual ICA Operating Plan is organized based on the structure of our Strategic Plan, which identifies the organization's Core Initiatives and Support Functions. While this report focuses on 2012 results, the initiatives highlighted here mirror the structure of the 2012 - 16 ICA Strategic Plan.

The achievements shown in the following pages represent a small sample of the hard work and dedication of ICA's employees worldwide. We invite our members and other stakeholders to learn more about areas of specific interest through interactions with ICA's employees, by subscribing to online reports and by attending meetings.

While each report within the "Strategic Initiative Highlights" section is completed by a relevant initiative leader, the success of these initiatives would not be possible without the coordinated efforts of ICA's global teams.



SUSTAINABLE ENERGY

At the end of 2012 the United Nations unanimously declared 2014 – 24 as the "Decade of Sustainable Energy for All."

The UN has also set three goals: ensuring universal access to modern energy services, doubling the rate of improvement in energy efficiency and doubling the share of renewable energy in the global energy mix. ICA has been supporting these goals for years, even including them in our Strategic Plan. ICA's programs carried out by the Copper Alliance™ catalyze the development of progressive energy policies, standards and regulations nationally, regionally and transnationally; promote the adoption of copper-intensive energy technologies; and provide training and education on sustainable energy practices. These programs also secure the energy use markets for copper and enhance its position as an essential contributor to sustainable energy.

During 2012, at a transnational level, the Copper Alliance provided copper-relevant content and developed a campaign focused on energy regulators partnering with the Clean Energy Solutions Center, a global knowledge resource for energy policymakers set up by the 23-country Clean Energy Ministerial (CEM) and UN Energy. Joint programs on energy-efficient transformers, motors, air conditioners and heat pumps commenced with the 21-country Asia-Pacific Economic Cooperation (APEC). We co-sponsored the training of more than 50 participants from 23 Latin American and Caribbean countries on energy-efficiency policies and technologies with the International Energy Agency (IEA), the Inter-American Development Bank (IDB) and the Mexican government. The International Electro-technical Commission was persuaded to adopt environmentally optimized cable conductor sizing as a goal, in a joint effort

with Japanese cable makers. In Europe, cable sizing was included in the second work program of the EU energy-related products directive based on an estimation of potential provided by ICA. We also helped develop International Energy Management Standards representing Brazil on the ISO/TC242 committee.

At a national level, Copper Alliance supported the development of energy standards and regulations for copper-intensive equipment and appliances in the U.S., EU, China, Japan, Korea and Mexico among others. In the U.S., our advocacy efforts focused on Congressional members who were sponsors of or on committees involving key pieces of energy legislation. Australia made it obligatory for each distribution utility to annually disclose its actions in reducing energy losses, thus encouraging investments in energy efficiency.

We continued to promote the adoption of copper-intensive energy technologies as well. A new die-casting facility for copper rotor induction motors was created by Castman Ltd. in Korea, thus addressing an identified supply constraint. Super Premium efficiency induction motors were developed using copper rotors. To create a demand-pull effect, an energy-savings program based on replacing aluminum with copper rotors in existing installations was accepted by the China State Council.

A key element of our programs is the provision of training and education on sustainable energy practices. Leonardo Energy, a global community of Sustainable Energy professionals set up and managed by the European Copper Institute,



Ajit Advani

Director
Sustainable Energy

2012 Operating Budget:
\$11.9 million

conducted training webinars for more than 2,000 participants from 80 countries. In order to assist companies with the practical implementation of ISO 50001 Energy Management Standards, the ICA conducted programs for energy manager training and certification in South East Asia and China. In November, a presentation was made to the European Sector Forum for Energy Management (SFEM) for the possible extension of the program to Europe.

Going forward, the initiative shall continue to strengthen its partnerships with governmental and intergovernmental organizations to promote the goals of energy efficiency, renewable energy and energy access, thereby enhancing copper's position as an essential contributor to sustainable energy while simultaneously safeguarding its markets.



These programs also secure the energy use markets for copper and enhance its position as an essential contributor to sustainable energy. ■



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BUILDING CONSTRUCTION

Copper applications in Building Construction (BC) are uniquely able to address sustainable development challenges in ways that benefit society.

Demand for copper products in BC is strongly linked to the stability of economic growth and the adoption rate of technological innovation. In each Copper Alliance™ region, BC program managers work to capitalize on opportunities to create demand while defending against substitution. BC projects are typically executed in one region, and at the end of the project, the outcomes and deliverables of technical importance are shared with the other regions. This allows all regions in the Copper Alliance to benefit from one region's work and experience.

Compelling marketing communications materials are in development after further advances in laboratory testing in the wire substitution threat program. The lab testing was conducted to obtain sound, new and updated technical data comparing the performance of copper wire and cables. This information will help younger generations of technical experts and non-specialist decision-makers understand copper's attributes versus the apparent innovative image of other competitive materials. The BC team in Asia will share the results of this program with the global BC team.

BC's electrical safety program seeks to minimize potentially dangerous situations involving illegal or unsafe energy distribution by actively participating in electrical code discussions, and through adoption of electrical inspections in many countries throughout the world. The program also encourages a favorable regulatory position for copper products through the integration of value-chain partnerships. During 2012, data from more

than 35 countries led to the development of "electrical safety barometers" that will be launched during 2013. This program, led by the European Copper Institute (ECI), contributes to society by reducing risks to the general population through the safe use of electricity.

The Global Solar Water Heating initiative advances supply-chain, copper-intensive technologies. In partnership with United Nations Global Environment Fund, this program promotes a range of useful technologies, including the use of solar thermal systems in developing countries through an open-source, knowledge-management system at the core of the knowledge exchange. Under ECI's management, the new solarthermalworld.org has already attracted 6,000 subscribers and supports dialogue on social media. Applications, from hot water and desalination to heating and space cooling, are included in the establishment and enablement of policy frameworks and enhanced key stakeholder awareness.

Two business models that were developed within the Casa Segura (Safe House) Program (Latin America) portfolio have reported their first results. One is a joint program with a major Brazilian bank offering loans for small and medium-sized businesses highly dependent on electrical energy. These loans are dedicated to retrofit electrical installations, creating new opportunities to increase copper demand. The second model was developed in partnership with the municipal government of Zacatecas, Mexico to manage a voluntary civil defense-led



Efred Franco
Initiative Leader

2012 Operating Budget:
\$14.7 million

(BC Electrical: \$6.7 million;
BC Non-electrical: \$8.0 million)

electrical inspection. Results indicate a reduction of 70 percent in electricity-related fire incidents.

The BC team remains true to its strategy to enhance the position of copper as a key contributor to reliable, efficient and sustainable buildings while coordinating with other initiatives to continuously improve marketing strategies and to deliver additional benefits to copper's largest market segment.



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ANTIMICROBIAL COPPER®

2012 witnessed unparalleled growth in the commercial marketplace for products made with Antimicrobial Copper alloys.

Building upon indisputable scientific evidence and strong clinical trial data, manufacturers and consumers alike recognize copper as a key contributor to the preservation and improvement of public health. Now utilized in a variety of commercial and institutional settings, including hospitals, schools and mass transit facilities, copper is seen as the material of choice for antimicrobial applications. Antimicrobial Copper® is creating new market opportunities for copper on touch surface products traditionally manufactured with other metals and plastics. The future for Antimicrobial Copper has never looked brighter.

Throughout 2012, Antimicrobial Copper was featured at several key global events. At the International Federation of Infection Control conference, held in Zagreb, Croatia, Cu+ took center stage as the platinum sponsor for the three-day event that attracted 350 top infection control professionals from around the world. The highlight of the event was a symposium featuring three key opinion leaders presenting lab and clinical trial research to an audience of over 100 infection control doctors and nurses. At MEDICA, the world's largest medical equipment exposition, a broad range of innovative products were showcased. In the U.S., 60 top healthcare CEOs attended a private event featuring world-renowned architect and product designer Michael Graves, held in conjunction with the American Hospital Association's Health Forum Leadership Summit.

Several highly visible stories featuring copper's antimicrobial properties appeared around the world. "Health and Home Report," a U.S. television program, featured Antimicrobial Copper products installed in a Ronald McDonald House. A high-visibility media tour touted the benefits of Antimicrobial Copper on 23 radio and TV stations in the U.S. as well. In India, the Chief Architect for the Ministry of Health provided a major endorsement for the adoption of Cu+ in healthcare facilities in an important healthcare publication.

In Europe, the number of commercial manufacturers offering Antimicrobial Copper products and installations continues to grow. The first installation in Poland took place at the WSSK Hospital in Wroclaw. Other installations included Hospital Val d'Hebron in Barcelona and the Craigavon Area Hospital in Northern Ireland, which undertook its third installation of Cu+ products.

The Antimicrobial Copper Promotion Alliance program was launched at the China International Hardware Expo in Shanghai. The program recognized the first ten commercial manufacturing companies offering Antimicrobial Copper touch surface products in China. Huadon Hospital became the first commercial installation to feature copper products. Growth also continued in the use of Antimicrobial Copper in commercial and residential water tanks in China with retail outlets at Apple, Disney and Dior. The first commercial supplier of Antimicrobial Copper products in India was welcomed, while hospitals in Japan and Australia installed copper products to enhance the safety of their patients.



Andrew K. Roth
Director

2012 Operating Budget:
\$7.0 million

With regulatory requirements finally addressed with the United States Environmental Protection Agency (EPA), manufacturers started to formally market commercial Cu+ products. This has led to commercial installations in hospitals located in New York, Maryland, Montana and California.

In Latin America, awareness continues to grow. The oldest pediatric facility in Chile, Roberto del Rio Children's Hospital, installed Antimicrobial Copper in their intensive care and treatment rooms. Commercial manufacturers in the region have introduced copper products including shopping carts, hospital furniture and door hardware.

The Antimicrobial Copper initiative looks to continue to promote the public health benefits of using Cu+ and to increase supply chain outreach so more products are available in the marketplace.



Antimicrobial Copper[®] is creating new market opportunities for copper on touch surface products traditionally manufactured with other metals and plastics. ■



The first commercial supplier of Antimicrobial Copper products in India was welcomed, while hospitals in Japan and Australia installed copper products to enhance the safety of their patients.

HEALTH, ENVIRONMENT AND SUSTAINABLE DEVELOPMENT (HESD)

When used responsibly, copper is widely recognized as essential to health, safe for the environment and an important contributor to sustainable development.

This year was marked by a significant shift from a period of basic and applied health and environmental science defining the program's role in copper stewardship to a new period of copper in sustainable development. The fundamental precepts of sustainable copper were identified and a forward-looking program was defined to underscore the sustainable features of copper and demonstrate the copper industry's growing commitment to sustainable practice.

Following the 1972 UN Brundtland Commission's definition of sustainable development, ICA committed to a triple-bottom-line demonstration that copper processes and products are consistent with sustainable economic, social and environmental viability of people throughout the entire copper value chain. The HESD team undertook a range of projects, from stewardship in health and environment and long-term copper resource availability to copper recycling and its recyclability and lifecycle, to demonstrate the sustainable nature of copper products and the industry's commitment. To address these areas, the HESD program uses a number of tactics including applied and product-related health and environmental research, technical data collection and analysis on sustainable development indicators, and regulatory and copper-market issue management. ICA's increased focus on sustainable development throughout all technical and marketing programs presents exciting opportunities to share and spread our message. HESD worked collaboratively with Communications and the other initiatives this year to develop structured messages about copper's benefits for relevant key stakeholder sectors.

We worked to engage directly with regulatory bodies, NGOs and members to deliver sound health, environment and sustainable development information. Responding to growing international interest in storm water runoff from copper roofing, ICA initiated a demonstration study to accurately measure runoff copper concentrations and to understand release rates and the fate of the copper once released. Because of some perceptions that copper roof runoff is harmful to waterways and wildlife, restrictions and bans have been placed in certain geographies. We believe the study will shine a more positive light on architectural copper.

ICA and the European Copper Institute (ECI) supported the copper industry in its obligations to classify the hazard for concentrates in bulk cargoes and disposal of cargo residues according to specifications of the United Nations International Maritime Organization (IMO). We developed a methodology for assessing copper concentrates involving mineral and elemental composition analyses and application of sound science. The methodology was used to classify the hazard and develop notifications for human health and the environment. Sixty-seven copper concentrates produced by industries around the world were analyzed, consolidated and characterized.

Ten ICA copper mining and smelting member companies participated in the industry's first aggregate life-cycle inventory for producer copper cathode, representing the most comprehensive picture of six major environmental impact categories for copper cathode ever produced using state-of-the-art scientific methodology. As a followup to this effort, ICA is leading an activity among eight metals associations to harmonize life-cycle inventory methodology across metals.



Scott Baker, Ph.D.
Director

2012 Operating Budget:
\$6.0 million

Under the European Chemicals Agency Registration, Evaluation, Authorisation and restriction of Chemicals (ECHA REACH) initiative, increased regulatory requirements are being established for chemical intermediates that can be produced and used only under strictly controlled conditions. ECI led a multimetal group, working with ECHA, to ensure mutual government-industry acceptance of sound scientific approaches in assessing environmental and occupational impacts of multi-metallic materials of varying compositions in smelting, refining and fabrication. Building on its prior REACH success, members of the copper REACH Consortium articulated a revised strategy, updating and upgrading its 12 intermediates dossiers to ensure compliance.

The Health, Environment and Sustainable Development (HESD) program strives to ensure that copper becomes widely recognized as essential to health, safe for the environment and an important contributor to sustainable development. The program's ultimate goal is to demonstrate that the copper industry is, in fact, sustainable.



The HESD team undertook a range of projects, from stewardship in health and environment and long-term copper resource availability to copper recycling and its recyclability and lifecycle, to demonstrate the sustainable nature of copper products and the industry's commitment.



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TECHNOLOGY DEVELOPMENT AND TRANSFER

Society benefits from copper-related technology today, and copper has a fundamental role in building a better, sustainable future. In the Technology Development and Transfer initiative, we select our projects based on their potential for positively influencing copper use in ways that provide meaningful benefits to industry and society. Our objective is to transfer innovative technology advances to copper fabricators and end-product manufacturers to defend and grow markets for copper.

Over the past 50 years, the per capita usage of copper has roughly doubled, reflecting copper's role in the advancement of technology, expansion of economic activity and increased standards of living. Copper contributes to many technical systems in developed regions such as air conditioning, energy, communications and transportation. In less developed regions, copper supports important building blocks needed to raise standards of living, bringing electricity, clean water, reductions in infectious disease transmission, and efficient transportation to support expanding economies.

To engineers designing future technical systems, copper has a unique and valuable combination of properties. However, end users of any input material, including copper, face constant competitive pressure to improve performance, reduce cost and demonstrate sustainability. This leads end users to intensify materials' competition, minimize material usage and focus on high-value applications, driving the need for innovation in copper applications.

Our *Copper Applications Technology Roadmap* points toward promising, new copper developments with the potential for global application. A novel copper sorbent fights air pollution by reducing engine emissions. A unique no-maintenance engine-generator operating on biogas brings reliable electrical power to rural villages. A compact water heating system saves energy and space in cramped city apartments. A superelastic copper material

protects buildings from damage during earthquakes. An enormous copper-alloy net pen stays clean, keeping farmed fish healthy. A precisely engineered copper rotor induction motor makes electric and hybrid cars fast, efficient and affordable. A copper-carbon nanocomposite reduces electrical losses in power grids.

These advances are possible because ICA staff and members across the copper value chain direct technology project teams comprising a global network of scientists, engineers, and business professionals from academia, government, and copper-related industries. Our project portfolio spans engineering design, process development, and high-risk investigations to achieve technical breakthroughs. Governments provide co-funding to our projects because they see the clear link between copper technology and benefits to society.

Copper has the best electrical conductivity of all commercial metals. Over 60 percent of copper is used in electrical conductivity applications. Nonetheless, it is constantly exposed to substitution threats. ICA is supporting several research activities aimed at increasing copper's ambient temperature electrical conductivity. We believe that ultraconductive copper, a copper-carbon nanocomposite material, will reduce electrical losses wherever electrical conductors are used and be of immense benefit to society. Today, engineers are limited to a few good electrical conductors. If our work is successful, we can expect a new range of electrically conductive



Hal Stillman
Director Technology Initiative

2012 Operating Budget:
\$6.2 million

copper materials and a change in copper's competitiveness in this most important application.

Farmed seafood is the world's fastest growing protein source, yet troubles with current net pen technology cause avoidable environmental impacts. Fish farmers from China to Chile are seeing economic, environmental, and fish health improvements through the use of copper-alloy mesh net pens. These pens resist corrosion, keep fish in and predators out, and stay clean, reducing stress on fish and avoiding the need for treatment events. Fresh farmed seafood is one of the newest ways in which copper benefits society.

Through ICA's Technology Development and Transfer initiative, the copper industry is exploring new ways in which copper's properties can be applied to improve the sustainability and welfare of global society.



ICA is supporting several research activities aimed at increasing copper's ambient temperature electrical conductivity. ■



In less developed regions, copper supports important building blocks needed to raise standards of living, bringing electricity, clean water, reductions in infectious disease transmission, and efficient transportation to support expanding economies.

COMMUNICATIONS

With ICA's 2012 - 16 Strategic Plan in place, a maturing Value Proposition based largely on copper's benefit to society and adoption of a new external identity created alongside a branding campaign referred to as Copper Alliance™, 2012 was a year of progress for Communications.

The changing landscape of society and accessibility to web-based information requires us to provide an aligned, relevant and positive perspective regarding all aspects of copper and the copper industry. Now, as the Copper Alliance, we have strengthened our influence and our voice. This unified identity and branding is seen on our global web portal, copperalliance.org, providing our visitors with information about the Copper Alliance, our local centers, our members and our programs.

Our evolved Value Proposition focuses on positioning copper and the copper industry as delivering significant benefit to society in areas of critical and timely concern. The Global Communications initiative continues to live this tenet through the Societal Benefits of Copper campaign.

In 2012, we completed a successful second program year with an expanded audience, including CDA (U.S.) members and International Wrought Copper Council (IWCC). In partnership with ICA's program managers, we developed strong messages on critical global issues: Renewable Energy, Human Health, World Electrification and Technology. These concrete and thought-provoking messages are shared directly with communications personnel within ICA's membership and other copper industry organizations. This harmonization in messaging helps the copper industry to communicate to a wide array of audiences. Our successful program has seen members utilize messages in television commercials, print advertisements, sustainability bulletins, internal and external communiques and websites.

Because copper continues to be advantageous to a sustainable society, we anticipate four additional sessions in 2013 as well as continued outreach to a broader audience. We also expect further expansion and adaptation of our Societal Benefits of Copper web content to engage and educate targeted audiences including the general public.

The Societal Benefits of Copper campaign has shown the power of strong messages. An ambitious project for 2013 is the integration of strong universal messaging into our work process. This endeavor is meant to support the whole organization with consistent, collective messaging, to simplify processes and to allow our members to continue sharing messages with their internal and external stakeholders.

Recent efforts have focused on alignment with the initiatives to develop activities and create communication pieces aligned to our Value Proposition. More specifically, we have supported the Health, Environment and Sustainable Development function in its efforts to create strong messages about how copper can create a sustainable society.

Marketing Communications continues to play a key role and functions as the "promotional" aspect for our programs. By concentrating on project needs and targeted audiences, ICA provides our members with market development resources and assistance.



Steven L. Kukoda
Vice President



Jeryl Turner
Director, Communications

2012 Operating Budget:
\$4.5 million

The structure of the Global Communications Team has changed. Steve Kukoda transitioned to the role of Vice President, focusing on internal and external funding, as well as member relations. Jeryl Turner assumed Steve's role as Director, Communications. The New York-based team is rounded out by the Marketing Communications expertise of Nicole Witoslawski.

ICA and the Copper Alliance help members achieve success through research, market development programs and communications, resulting in a positive and improved perception of copper and the copper industry. Communication is an integral part of this success. Through our efforts, we provide a link for intra-company relationships, assuring that our activities connect to our strategic initiatives and sustainable development efforts. With a strong, aligned foundation in place, we will continue to focus on expanding member reach and providing value.



Our evolved Value Proposition focuses on positioning copper and the copper industry as delivering significant benefit to society in areas of critical and timely concern. ■



We also expect further expansion and adaptation of our Societal Benefits of Copper web content to engage and educate targeted audiences including the general public.

MARKET INTELLIGENCE, DATA AND MEASUREMENT (MIDM)

The Market Intelligence Data and Measurement (MIDM) initiative continues to be a stimulus for Copper Alliance™ strategic planning. With guidance and oversight by the global MIDM member group, value chain intelligence is generated, and data sets are maintained for both market development and measurement purposes.

Development of a global copper semi-fabricated end-use data set yields important insight for the Copper Alliance, members and selected external organizations. The latest information, which covers 2011 data, details copper content end use by market, product and geography. Now in its seventh year, the data are used throughout the Copper Alliance for program-planning purposes, market size definition and detailed trends tracking.

Expansion of ICA's existing data sets has enabled a new detailed view of copper end use worldwide. By re-mapping the established semi-fabricated end use data set, it is now possible to identify global copper demand according to the location of the decision to use it. Use of existing ICA data enables consistency and verification among both data sets.

MIDM's survey of material substitution in copper markets provides a global source of information on the way in which material specifications are changing either in favor of or against copper. 2012 geographical data for China (the first-ever collected) show that the largest volume of substitution in the country is in infrastructure, followed by equipment. On the global level, the largest substitution is seen in commercial tube, followed by alloy rod and bar and telecom cable. In total, global substitution reached around two percent of world market size per annum. Among other drivers, substitution may be linked with relative material cost, technological advances or regulation change. This data is vital in providing

guidance on future resource allocation for Copper Alliance defensive programs and is used by the Global Strategy Team (GST).

In the field of sustainable development, progress continues to be made on a worldwide copper flow model. Providing a range of important recycling indicators at the global, regional and application level, the model output more precisely defines the recycling challenge facing copper. Findings in the work have greatly strengthened ICA's life-cycle inventory (LCI) and life-cycle analysis (LCA) activities. The model indicators are of critical importance to governments and end-user organizations planning to use copper in the future.

Targeting both global- and regional-level programs, independent program impact measurement remains an essential function covered by MIDM, on behalf of members. Seven new assessments were conducted in 2012, focused mainly on programs in Asia. The level of refinement, relative importance and tonnage impact reached by the programs enabled the structured ICA assessment process to begin. The whole of the assessment process contributes positively to improving member confidence in the Copper Alliance work portfolio.

Global and regional strategic planning benefits from MIDM's capability to anticipate, develop and convey important value-chain intelligence work. MIDM's ability to understand and react quickly to sector issues enables continual improvements in Copper Alliance market development activities.



Colin Bennett
Manager
Market Intelligence,
Data and Measurement

**2012 Operating Budget:
\$1.8 million**



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In the field of sustainable development, progress continues to be made on a worldwide copper flow model.

TECHNICAL AND MARKET SUPPORT

Technical information is key to the use and understanding of copper and copper alloys. This technical information is provided in various ways through use of various mediums such as websites, technical articles, seminars and brochures. These information delivery systems assist the Copper Alliance™ and members as they search for answers.

The Technical and Market Support initiative focuses on outreach, education and defense of copper materials and provides valuable support to the complete supply chain, from fabricator to end user, and to other communities such as regulators and universities, and reinforces the use of copper as a high-performance material.

One of the ways we promoted copper as a high-performance material was through support of MicroGroove™ technology, which continues to draw interest and inquiries. CDA-U.S. visited an Original Equipment Manufacturer (OEM), Super Radiator Coils (SRC) in Richmond, Virginia, to discuss the advantages of small diameter copper tubes. SRC manufactures commercial and industrial HVAC coils for a wide range of applications including condensers, evaporators and steam coils. As a result of discussions, SRC has made 5mm copper tubes part of their product line. SRC has also asked to use the MicroGroove brand in their advertising. This outreach highlights the importance of developing relationships and sharing information to not only get industry to specify copper, but to help retain a market that may be lost to substitution.

The Copper-Nickel Task Group completed a market research project quantifying the global market size and share for copper-nickel pipe and tube in seawater applications—the first study of this kind since 1996. Findings indicate a modest decrease in copper nickel usage in this market area. This can be viewed as a success because it was thought that the

market had diminished at a greater level. Overall, results indicate our market defense of this segment has worked. As a result of Copper Alliance efforts, the market share remains close to what it was 15 years ago.

The ICA China Transportation project has initiated a New Energy Vehicle (NEV) commercialization research workgroup. The project team hopes its research will help develop high-efficiency transportation vehicles, from cars to bikes and scooters. The research will be used to adjust future national resource formulation (i.e., government funding, regulations and codes). This pilot is expected to deliver at least 7,000 tonnes of copper use in the next three years. The Society of Automotive Engineers of China, the Beijing Institute of Technology, and 15 automakers and battery manufacturers are on board. An initial co-funding of \$200,000 is expected.

The Technical Reference Library was visited over 11,000 times during 2012 for information on copper and copper alloys. This important resource is constantly growing and contains approximately 1,000 articles and technical papers. An upgrade to the copper.org website technical database was started in 2012 and will finish in 2013. This necessary update allowed us to review the technical data content and its presentation in order to better serve users. In addition, the worldwide inquiry system received and answered over 7,000 inquiries in 2012. Inquiries are received throughout the Copper Alliance.



Jim Michel
Initiative Leader

2012 Operating Budget:
\$3.3 million

The Technical and Market Support Initiative aids the use of copper products in existing and new applications by providing independent technical, design and specification assistance, and health, environment and sustainability information to technical and regulatory decision-makers. In addition, through highly pro-active participation in all forms of policy, code and standards-setting bodies, in all regions, the Copper Alliance ensures that the benefits of copper use are fully appreciated and correctly reflected in all areas of the regulatory environment.



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FUNDING AND PARTNERSHIPS

Cash co-funding complimenting members' contributions and in alignment with the ICA Strategic Plan totaled almost \$27 million in 2012. The copper industry's allies in the fabricator and wire and cable sector provided over \$8 million in support of Copper Alliance™ local centers and projects. Contributions to projects supported by and/or jointly managed with the many external partners with whom ICA shares common goals and strategies amounted to close to \$19 million.

The United Nations Foundation and the ICA extended their collaborative efforts on sustainable energy, and in June 2012, at the Rio + 20 Sustainable Development Conference, announced the launch of a new initiative, the "Global Partnership for Energy-Efficient Buildings." Industry, government and nongovernmental organizations were encouraged to join this effort.

In Asia, cash awards were issued to a coalition of partners, including ICA, by the Super-Efficient Appliance Deployment (SEAD) and the Asia-Pacific Economic Cooperation (APEC).

SEAD is one of the initiatives of the Clean Energy Ministerial. ICA was invited to their third annual meeting in London to explain to government and industry leaders why the copper industry supports the development of super efficiency. APEC funding is aimed at harmonizing energy-efficiency standards for distribution transformers and air conditioners.

Additionally, in Asia, the European Union Switch Asia program approved €1.8 million (\$2.4 million) for China heat pump water heating and €1.7 million (\$2.3 million) for the harmonization of energy-efficiency standards within the Association of South-East Asian Nations (ASEAN).

In Europe, a new partnership was formed between several copper industry companies and academia. The coalition applied for major European Union funding to develop ultra-conductive copper, a novel technology that hopes to become commercially viable by the end of the

decade. The technology should open the door to the creation of new applications and further improvements in energy efficiency.

For Latin America, the Inter-American Development Bank (IDB) signed a Memorandum of Understanding with ICA to jointly participate in areas of corporate social responsibility, including energy, water, sanitation and waste. The IDB's Multilateral Investment Fund (MIF) has approved an initial project that aims to improve energy efficiency and promote renewable energy in the agricultural fruit sector of Chile. The coalition of Chilean partners, MIF and ICA committed resources of over \$1 million with plans to expand activities to all of Latin America and the Caribbean once an assessment of the Chilean project is completed.

Finally, the Copper Foundation was approved by the Executive Committee of the Board of Directors of ICA in October 2011 as a 501(c)(3) tax-exempt charity, was formed in New York as a supporting organization to ICA in 2012. The Copper Foundation will prepare for gradually commencing operations during 2013. The focus will be on serving poor communities of the developing world, in urban areas and rural villages, with access to electricity. The Copper Foundation will encourage and support the development of sustainable economic models that provide and guarantee safety, effectiveness, energy efficiency and affordability. The Copper Foundation will also focus on improved infection control in healthcare facilities through the installation of Antimicrobial Copper®-alloy touch surfaces.



John R. Mollet
Vice President

**2012 Cash Co-Funding
Secured: \$27.0 million**



The Copper Foundation will encourage and support the development of sustainable economic models that provide and guarantee safety, effectiveness, energy efficiency and affordability.



APEC funding is aimed at harmonizing energy-efficiency standards for distribution transformers and air conditioners.



John J. Kearns
Principal Financial
and Administrative Officer

FINANCE AND ADMINISTRATION

During 2012, the Finance and Administration Group provided our members with continued transparency regarding fiduciary responsibilities along with value-driven and effective organizational governance.

- The 2011 audit was completed with no material issues, a "clean" audit. The results were reviewed with the ICA Audit Committee and a report provided to the members at the annual meeting. The ICA Audit Committee has increased to five members.
- Human Resource administrative responsibilities have been outsourced to TotalSource, a Professional Employment Organization (PEO) and a subsidiary of ADP. In addition to payroll duties, the partnership with the PEO will allow both ICA and CDA U.S. to participate in larger medical and dental groups, thereby reducing expenditures and mitigating potential future increases. The transition to ADP took place in early 2013.
- Enhancements were made to the Copper Alliance™ Project Proposal System requiring defined milestones to be reported for every project. This was implemented for the 2013 budget submission.
- Training on anti-corruption, both the U.S. Foreign Corrupt Practices Act and the U.K. Anti-Corruption laws, was provided to all global Copper Alliance staff members.
- CDA U.S. and ICA have renewed the sublease for the shared offices in New York City. This was completed after receiving input from members and extensive work investigating other opportunities. As part of the sublease renewal, a construction allowance is being utilized to update the offices. The office renovations will be completed in early 2013.







ACCESSING THE COPPER ALLIANCE™

The following pages provide a directory of our regional and local offices. We invite you to contact these offices directly. Each office maintains a website in its respective local language, and we encourage you to explore the web to learn more about our programs and activities. A directory of these websites can be found at copperalliance.org.

The directory also provides current lists of members on various global-level committees that guide the organization. ICA is a member-driven organization, and we gratefully acknowledge the many members who dedicate their time and effort to ensure our continued success and support of the world's copper industry. Space limitations of this report do not allow for a more complete listing of member-company representatives actively engaged in the ICA's day-to-day activities.

In addition to members' committee lists, current lists of officers and headquarters staff round-out the report. As is the case with members' committee lists, space is not available to list all our employees worldwide. Their contributions to the achievements in this annual report cannot be underestimated.



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Committee members and officers as elected
by ICA's Board of Directors in October 2012

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CODELCO-Chile
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Francis Krähenbühl
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M. Brian O'Shaughnessy
Rio Tinto Plc
Patrick Keenan
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Sr. Vice President, Marketing and Strategic Planning	Anthony C. Lea International Copper Association, Ltd.
Principal Financial and Administrative Officer	John J. Kearns International Copper Association, Ltd.
Vice President/Assistant Secretary	Steven L. Kukoda International Copper Association, Ltd.
Secretary	Stuart D. Baker Chadbourne & Parke LLP

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(as of 01 January 2013)**

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