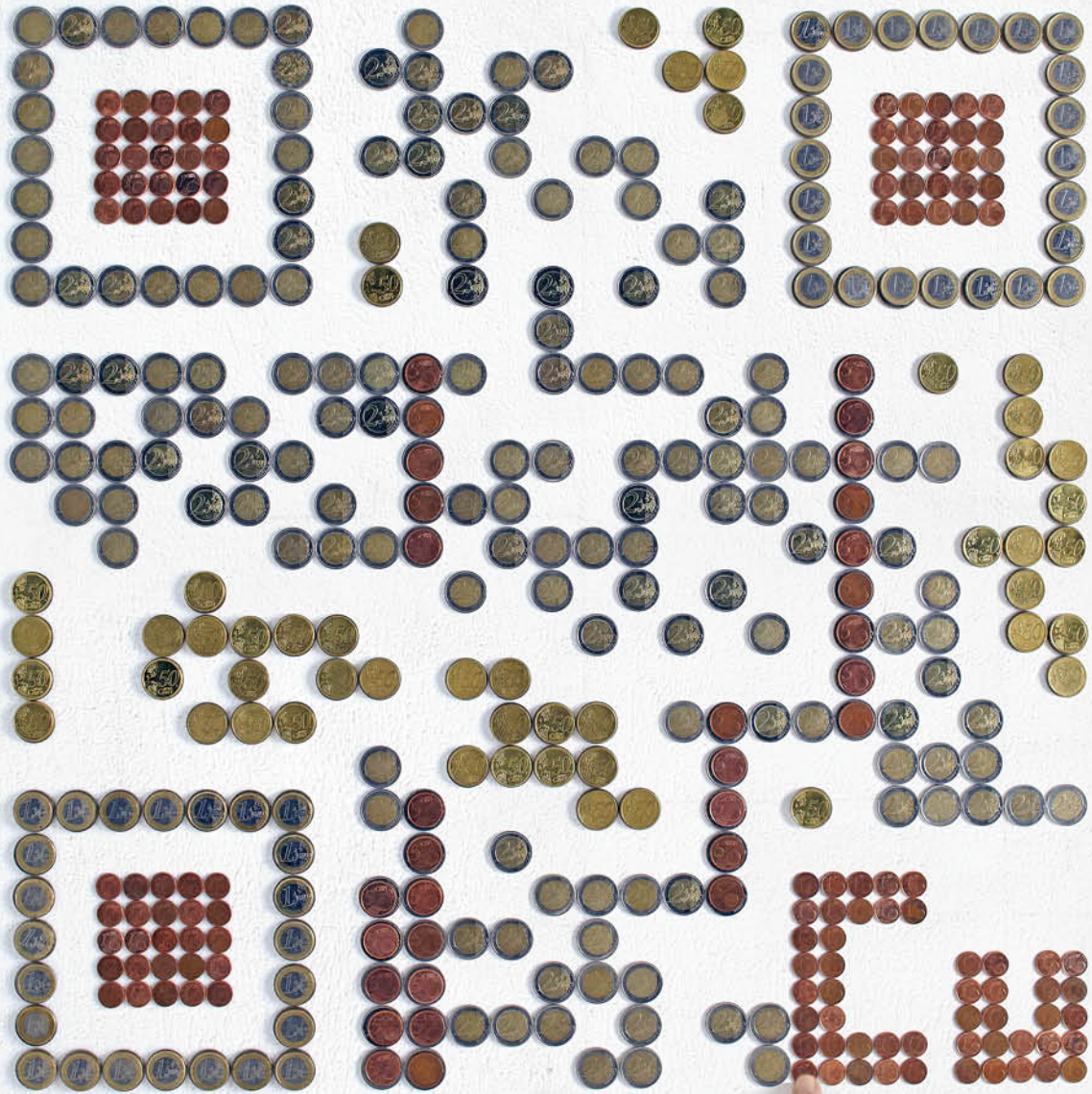




European
Copper Institute
Copper Alliance



2011 Annual Report

European Copper Institute





Copper has been with us for thousands of years and still has much more to offer, for example in the fight against life-threatening bacteria, or to help increase energy efficiency, to make transport systems more sustainable and in the advancement of renewable energy.

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Our Vision

Inspiring Europe about copper's essentiality for health, technology and quality of life.

Our Mission

The European Copper Institute (ECI), founded in 1998, is a joint venture between the world's leading mining companies, custom smelters, semi-fabricators and the European copper industry.

ECI is also part of an international network of trade associations whose common mission is to defend and grow markets for copper, based on its superior technical performance and contribution to a higher quality of life. Early in 2012, this network was unified under a common brand and visual identity, the Copper Alliance.

Read more on page 9.



A NEW FACE FOR COPPER

2011 was a challenging year for the copper industry. Largely as a result of low activity levels in many national construction markets, the International Copper Study Group* expects EU27 refined copper usage to be slightly below the 2010 total of 3.33 million tonnes. Demand in the rest of Europe will increase by 35%, driven mainly by Russian tariffs which favoured the export of wire-rod over cathodes. Globally, refined demand will be close to 20 million tonnes, up 3.6% on 2010.

The mining industry supported this growth with global refined production expected to increase 3% above 2010, resulting in year-end metal exchange inventories remaining at

around 550 thousand tonnes. As one clear example of the mining industry's major commitment to support growing demand, the Chilean Government's Copper Commission published data

showing an expected \$15 billion investment profile over the period 2011 to 2014.

Following a strong start to the year, metal prices declined by 15% after the summer. Overall, the average 2011 London Metal Exchange copper price of 8,811 \$/T increased by 17% versus the 7,539 \$/T of 2010. This sustained period of high metal prices, relative to competing materials, continued to present significant demand and profitability challenges for independent smelter/refiners, semi-fabricators, as well as many copper users along the value chain. However, as you will read

elsewhere in this report, the industry's products remain very important in addressing society's current high priority needs. As one example, using more copper increases energy efficiency, expands renewable energy sources and enables the development of hybrid and electric vehicles, all of which reduce harmful greenhouse gas emissions.

We were pleased to see the European Commission address issues critical to the future competitiveness of the European industry. Given that 40% of EU copper demand is met through imports, policies that support

Chairman's message

competitive access to primary raw materials and encourage increased levels of recovery and recycling are extremely important.

In challenging times, the image of an industry and the benefits its products provide become even more important. All of the industry's outreach and advocacy activities have recently been unified under a global umbrella identity – the Copper Alliance. While we will maintain the strong reputations, built up over many years, through the continued use of existing national association names, the copper industry is fully

committed to using the new global identity to reinforce its commitments to the downstream value chain, to the regulatory community and to the general public.

I would like to thank the International Copper Association and the European copper industry, plus our many project partners, for their continued funding and support. Also, on behalf of the membership, to thank the European Copper Institute and its European networks for their many achievements throughout the past year.

Werner T. Traa
Member of the Executive Board
Wieland-Werke AG



* The International Copper Study Group (ICSG) is an inter-governmental organisation, based in Lisbon, which publishes copper production and demand statistics. Visit www.icsg.org for more details.

Chief Executive's message

ADDRESSING SOCIETY'S NEEDS

With the fallout from the Eurozone crisis likely to impact both public and private investment for several years, boosting employment and addressing global competitiveness have become even higher priorities for the EU and national governments. One critical building block remains the efficient use of energy, along with its multiple sources of supply and its costs.

Eco-design studies demonstrate that the use phase of electrical equipment, such as motors and transformers, accounts for over 95% of the economic and environmental impact throughout their overall life cycle. Copper's superior electrical conductivity helps drive higher energy efficiency, not only in more traditional industrial and infrastructure uses, but also in cutting-edge technologies such as electric vehicles and heat pumps. Through the Energy Efficiency Industrial Forum and the Coalition for Energy Savings, ECI provided the EU institutions and Member States with the benefits of adopting more ambitious energy efficiency targets.

Clinical trials, funded by US Department of Defense, showed that copper and alloy touch surfaces

delivered a >40% reduction in the risk of patients catching a hospital acquired infection. Results were presented at the World Health Organisation's International Infection Prevention Conference in Geneva. As market awareness and resulting demand develops, an increasing number of hardware manufacturers have signed up to use our Antimicrobial Copper Cu+ brand.

End user and regulator demands for information on the sustainability of raw materials continue to build. ECI has just updated its life cycle assessment data for the key wire, tube and sheet products. Members are now using the results to prepare Environmental Product Declarations for use with their own customers. ECI also commissioned a comprehensive study to

better understand global copper recycling rates. This showed that, for the past ten years, around 35% of annual demand has been met by recovering offcuts from the manufacturing value chain and by recycling end-of-life products.

Traditional raw material industries, including non-ferrous metals, are under increasing scrutiny and competitive pressure from EU policies such as REACH and the Emissions Trading Scheme. The copper industry has continued to invest significantly in its health and environment resources in order to build regulatory acceptance for the methodologies and results from its comprehensive REACH registration dossiers.

Our website, www.eurocopper.org, is regularly updated with

content for policymakers, the media and the general public. Whatever your age, or position, a mix of electronic press kits, downloadable publications and short, creative YouTube videos will open your eyes to the reasons why we firmly believe that "Copper is Essential for Everyone".

John Schonenberger
Chief Executive
European Copper Institute



Introducing the new Copper Alliance brand



On 1st March 2012, the European Copper Institute adopted the new **Copper Alliance** brand and identity. Around the world, under the strategic leadership of the International Copper Association Ltd. (ICA), the copper industry funds a network of associations whose common mission is to defend and grow markets for copper, based on its superior technical performance and its contribution to a higher quality of life. Today, this network of global, regional and national associations has been unified under a common brand and visual identity, the Copper Alliance.

The Copper Alliance encompasses regional offices in Brussels, New York, Santiago and Shanghai which support 27 local copper centres and their industry members.

We believe that, today, copper and the copper industry are better positioned to make a positive impact on many of society's greatest challenges. When combined with copper's superior technical performance, we trust that the use of the new **Copper Alliance** brand will strengthen our public image and improve the effectiveness of our promotional, regulatory and technical outreach activities in more than 60 national markets.



More information can be found at:
www.copperalliance.org.

HIGHLIGHTS

Throughout 2011, ECI and the eleven national Copper Associations across Europe continued their activities to promote and publicise the beneficial properties of copper. In many markets, including energy and electricity, healthcare and building construction, the performance of copper containing products and systems will help to address today's social, economic and environmental challenges.

Take a brief look at...

Health, Environment & Sustainable Development

Energy & Electricity

Building Construction

Technology & Innovation

Regulatory Affairs

Antimicrobial Copper



HEALTH, ENVIRONMENT & SUSTAINABLE DEVELOPMENT

Taking centre stage

Europe leads the world in policies and regulations designed to protect human health and the environment, to help conserve natural resources and to reduce waste. Since copper is sustainable, durable and versatile and can be recycled indefinitely, without any loss of performance, it plays an important role in these endeavours. The European copper industry continues to proactively assess and demonstrate the safe production and use of its products as required by EU regulations such as REACH, Classification and Labelling, and the Integrated Pollution Prevention and Control Directive.

Regular updates for REACH

In 2011, based on the joint dossiers submitted by the members of the ECI managed REACH Copper Consortium, ECI developed standard safety datasheets for copper metal, as well as for the various by-products (referred to as intermediates) arising out of the copper production process. These datasheets are now being used by member companies to communicate

information, plus any risk management measures, further down the value chain. ECI will work with its members to regularly update the REACH dossiers in accordance with the latest scientific information and regulatory guidance. For the registration of copper intermediates, ECI worked with Eurometaux, the EU association of the non-ferrous metals industry, to provide the European

Chemicals Agency (ECHA) with examples that address compliance with the guidance on "strictly controlled conditions".

Supporting updates of regulations for the transport of bulk cargoes

ECI is providing its expertise on the classification and labelling of complex metal containing mixtures into the revision of the International

Maritime Organisation's bulk cargo regulations. This is part of ongoing efforts to improve the safety of the marine transportation of bulk shipments. This is of particular importance to the EU, since more than 20% of annual demand is met by processing imports of copper containing concentrates from countries such as Chile and Indonesia.

Adopting sound methodologies for metal assessments

ECI continues to work with the scientific and regulatory communities to ensure that methodologies relevant for metals are included in

European guidelines on chemical substances. ECI was deeply involved in drafting the metals sections of the Technical Guidance for Deriving Environmental Quality Standards. These allow for the incorporation of bioavailability (freshwater, marine waters and sediments) and natural background levels and were endorsed by the EU's **Scientific Committee on Health and Environmental Risks (SCHER)**. A new user-friendly multi-metal model, downloadable from www.bio-met.net/bio-met-bioavailability-tool, was discussed at a specific European Commission workshop and is

currently being trialled by several Member State regulatory agencies.

In September, ECI and other leading metal commodity associations participated in an OECD workshop, hosted by the International Council for Mining and Metals. The goal was to commence a rolling programme that introduces high-quality hazard and risk assessment concepts and data into the OECD. Building on the success of the MERAG (Metals Environmental Risk Assessment Guidance) and HERAG (Health Risk Assessment Guidance for Metals) publications, this will help to create more robust

metals specific assessments worldwide. The programme could have significant benefits as, in many parts of the world, environmental quality standards are often set using data derived from scientific concepts not readily applicable to minerals and metals. This programme will enable governments to create more environmentally relevant standards.

At the forefront of innovation

ECI continues to collaborate with scientists on health, environment and sustainable development issues that influence end-use markets. Areas currently under investigation include the relevance of biofilms in copper drinking water installations, an improved understanding of releases of metals from various copper alloys and an awareness of the fate and effects of copper releases to freshwater, estuarine and marine waters. As one specific example, our Scandinavian Association consulted with the Swedish Environmental Institute (IVL) on a report which demonstrated that natural background transportation and the interaction of fresh and saltwater were the primary sources of the copper measured in the sediments of the water basins around Stockholm.



ENERGY & ELECTRICITY

Ever more essential

Copper has two performance characteristics that make it an indispensable material for a sustainable energy economy – it has very high conductivity and it is 100 percent recyclable. With life cycle assessments demonstrating that one kilogram of copper added to the cross section of a conductor has an environmental return of 100 – 1,000 times throughout the equipment's lifetime, these characteristics should put copper clearly at the heart of renewable energy systems, energy-efficient motors, transformers and cables. However, our market intelligence has shown that copper's advantages as an electrical conductor are often not sufficiently known, nor taken into account, across the value chain.

To raise decision-maker awareness, ECI recently launched its Copper and Conductivity marketing platform.



Influencing EU policy and regulations

ECI's advocacy on energy efficiency is divided into two parts. The first relates to providing regulators with technical information on the standards for energy-using equipment. As a follow up to our inputs on setting the minimum efficiency performance standards for electric motors (published in the EU Official Journal on 23rd July 2009), ECI has also been advocating, since 1998, for higher standards for distribution transformers. With the EU's preparatory study completed in 2011, the regulatory process is now

underway, with an approved regulation expected in late 2012/early 2013.

Using an approach similar to that contained in the USA, an ECI report demonstrated the significant potential for energy savings from upgrading the efficiency standards of fractional horsepower motors. As a result, this application has been proposed as the fourth priority for the next work programme under the EU's Directive for Energy-Related Products (ERP). Under the subject of "power cables", ECI presented the energy-saving

potential of economic cable sizing in buildings.

This is estimated to have a saving potential of 82 TWh/year of primary energy by 2030, equivalent to the household electricity use of around 13 million citizens. This proposal has been retained as the fifth priority, among a total of about 50 product groups.

ECI's second advocacy pillar focuses on actions to stimulate more ambitious European policies. ECI is a member of both the Energy Efficiency Industry Forum and the broader Coalition for

Energy Savings. A key 2011 document from the latter, "The Coalition Portfolio", emphasised the need for the coordination of finance mechanisms, their delivery and evaluation, and attempts to align both public and private financial instruments. ECI's proposals included allowing industry greater access to public funds and low-interest, long-term loans, along with no significant burden on industry through taxation or market-based instruments.

Modernisation essential to EU objectives

The electrical installation in many homes has not changed for decades, which is in sharp contrast to the many new technologies that have entered into our daily lives. To raise awareness of the many benefits gained through modernisation, ECI developed a "new electrical installation" concept which encourages public authorities to double refurbishment rates to 3% per year. Benefits include improving safety and providing flexibility for lifelong living, along with increasing functionality and

ease of use. The concept is essential in achieving many of the EU's energy policy targets. Without modernised installations, there can be no heat pumps, photovoltaic roofs or charging stations for electric vehicles.

Our Polish Association is helping to formulate a course of action that will modernise over 11.2 million residential buildings across the country. Apartments built before 1995 operate with aluminium circuits that are highly susceptible to overloading, resulting in unsafe access to limited energy supplies (3.5 – 4.5 kW). The goal is to

demonstrate how installing copper across the network will help deliver modern power requirements, reduce energy consumption and increase efficiency.

Using EU experience to support the developing world

ECI is committed to using its knowledge to support the provision and performance of electrical installations elsewhere in the world. As one example, the overall potential for energy saving in West Africa is estimated to be 40% of current consumption, and the

cost of making one extra megawatt hour available, through energy-efficiency measures, is less than the investment required to produce it. This makes improving energy efficiency a rational way to reduce the cost of programmes aimed at expanding energy access in urban, peri-urban and rural West Africa.

In 2010, ECI brought together eight partners to develop the "Supporting Energy Efficiency for Access in West Africa" project. In 2011, this was granted €1.5 million by the European Development Fund and will now be carried out by the Economic Community of West African States and its Centre for Renewable Energy and Energy Efficiency. The objective of the programme is to overcome the barriers that limit the implementation of energy-efficiency measures and systems. Its actions will target public authorities, the private sector and the general population. The real beneficiaries will be the new users who will gain access to energy as a result of the improved economics of energy services.

Significant role for microfinance in the electrification of Africa
PlaNet Finance, an international microfinancing organisation, acknowledged that microfinancing could be a suitable business model for slum electrification projects in peri-urban Africa. In slums, while actual electricity theft is rare, it is often sold on, illegally, at high prices. Inhabitants typically spend 10% of their income on electricity, a figure that could be halved using official and energy-efficient connections.

ECI and PlaNet Finance established the feasibility of financing regular electricity connections through microfinance and are now investigating the role of local utility companies in strengthening low- and medium-voltage grids to facilitate such projects.

Improving electrical safety around the world
An awareness of electrical safety, plus its link with tragic fire statistics, is growing across the world.

Historically more limited to OECD countries, interest became much wider in 2011 and ECI was invited to start a campaign in Sri Lanka. On the back of this, the Indian Copper Association initiated an electrical safety programme in Bangladesh. Safety has also become a hot topic on the Arabian Peninsula.

ECI's Leonardo ENERGY initiative demonstrated that only copper wires and cables, covered with fire-resistant insulation, are suitable for supplying power to equipment that assists in the evacuation of people from a building during a fire. The Polish Association sponsored the EXPO Cable 1st Trade Fair of Technology & Industrial Cable Management, where it gave a paper on "The influence of the power supplied to the electrical devices required to function during fire". ECI also presented on "Modern Fireproof Cables – fire-safety, classification, properties and research" to manufacturers of cables and wires, machines, process cables, fibres, sockets and wiring accessories.

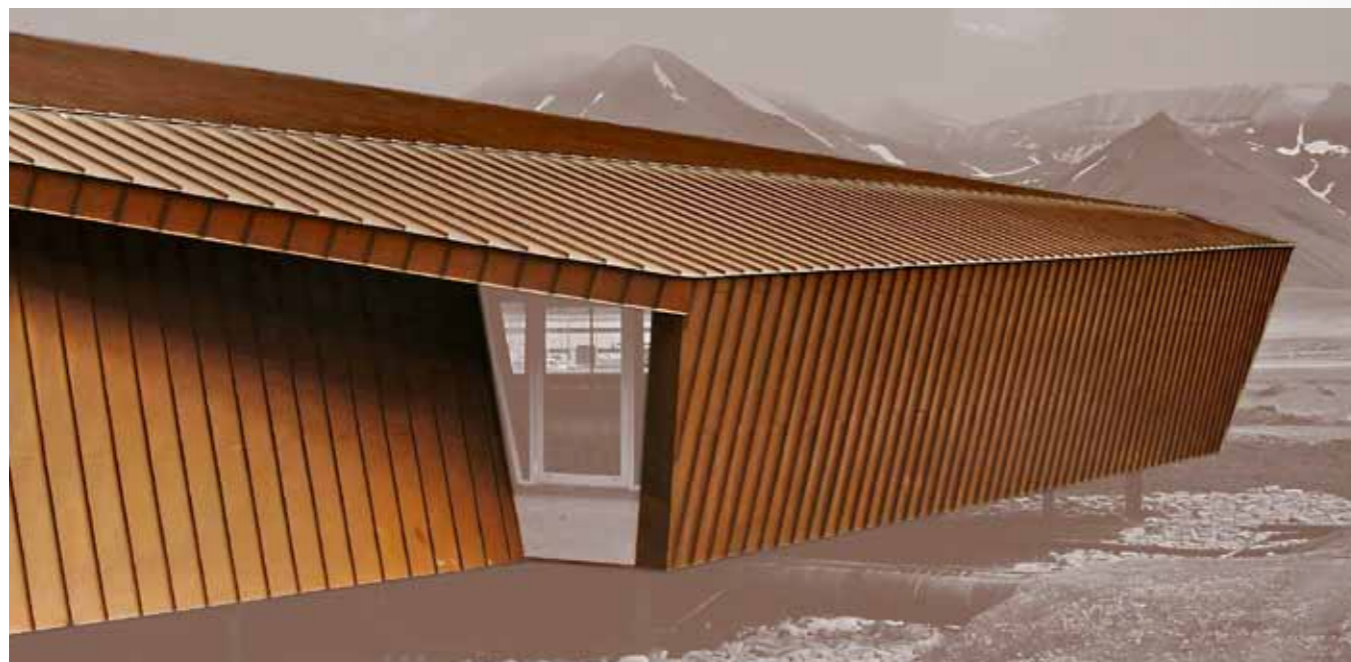
Publicising opportunities in renewables
Stanford University and Ecofys (on behalf of WWF), a leading energy consultancy, have both created roadmaps towards achieving a 100% renewable energy scenario by 2050. Leonardo ENERGY promoted these visions

through two dedicated webinars. About 500 people registered, with the online transcripts viewed more than 68,000 times in the two weeks following the event. In close coordination with Procobre, our sister Association in Chile, the International Energy Initiative organisation presented its analysis on the market, technologies and outlook for renewable energy in Latin America in 2020. More than 500 registrations were received and the page was viewed over 23,000 times in a two-month period.

Partnering with the Clean Energy Solutions Centre

ECI agreed on an editorial initiative with the Clean Energy Solutions Centre (CESC), a joint initiative of the United Nations and the Clean Energy Ministerial, a global forum to promote policies and programmes that encourage the transition to a global clean energy economy. The current Leonardo ENERGY editorial content on energy efficiency and renewable energy will become part of the CESC's newly launched stream on energy policy. While this agreement will enable both entities to deliver broader content, it will also increase significantly the visibility of our Leonardo ENERGY activities.

A new joint webinar programme features a 10-lesson course on Regulation and Sustainable Energy in Developing Countries. Up to the end of December 2011, more than 1,100 people from 106 different countries had registered, including representatives from development banks, rural electric cooperatives, electricity regulation authorities, governmental bodies, renewable energy and utility companies.



BUILDING CONSTRUCTION

Copper is a versatile material for the built environment

Copper's properties make it suitable for an exceptionally broad range of applications both inside and outside a building. These include roofing and façades, under floor heating and radiators, drinking water and gas distribution, power and lighting systems and interior decorations. Its excellent electrical and thermal conductivity, durability and ease of use, as well as its antimicrobial functions and total recyclability, make it a material that is enjoying increased use, especially in designs oriented toward more eco-sustainable lifestyles.

Increasing homeowner awareness and confidence
ECI's innovative "Copper in the Built Environment" (CuBE) campaign represents a strong commitment by the copper industry to encourage and support the use of its products across the new build and renovation sectors. The campaign, which was piloted in Germany (*Mein haus kriegt kupfer*) in 2008, was extended to Italy (*Il rame nobilita la casa*), Poland (*Miec*

miedz), France (*Ma maison mérite du cuivre*) and Spain (*El cobre crea Hogar*) during 2011. Directly targeting homeowners and developers, it explains the benefits that copper-containing products and systems provide in today's homes and buildings. The campaign is made up of emotionally engaging advertisements and articles in print and online media, national web portals and supporting media relations.

More than 70 articles were published in the trade press, 80 articles online and over 100 articles and newsletters on national Association websites. Overall, including PR and adverts placed in different magazines or online, we estimate that the campaign's messages have been viewed by an audience reaching 200 million.

The CuBE campaign was also present at Poland's

Future4Build 2011 exhibition, an international conference on the sustainable built environment. In Spain, press materials were created for the Casa Decor Barcelona 2011 design fair, as well as for CONAIF, the Spanish Confederation of Associations for Plumbing, Gas, HVAC and Fire Protection.

Supporting professionals along the value chain

Many national activities support the campaign. Managed by our Hungarian Association, one key 2011 action was a facelift for our www.copperconcept.org website. By making available a range of aesthetical, technical and regulatory content, this website is all about inspiring Europe's architects.

Content is available in 17 languages and the site receives around 90,000 architect visitors each year. Elsewhere, our eleven national Associations service the needs of the many professionals (e.g. engineers, installers, planners, and plumbers) working in the value chain. In a broad range of national languages, they develop and disseminate promotional and technical information, online and print articles and brochures, plus educational tools. As one example, our Spanish Association presented at the country's primary exhibition for plumbing and HVAC, Climatización 2011. It published an advert and six-page article on the "green credentials" of copper tubes in four main trade magazines distributed at the event.

Copper in Architecture

The 30th and 31st editions of our high-quality Copper Architecture Forum magazine for architects were published. 25,000 copies in 13 languages were distributed in 16 countries.

Supported by our Benelux and UK Associations, the 2011 European Copper in Architecture Awards saw the largest ever number of entries, 66, in their

15-year history. The outright winner, from a list of seven shortlisted projects, was the Chapel of St. Lawrence, Vantaa, Finland, designed by Avanto Arkkitehdit. The building features a patinated copper roof and other exterior and interior applications, and many of the ceilings are finished with removable, perforated copper trays. The glazed walls toward the graveyard in the chapels are also covered with patinated copper mesh. All 2011 entries can be seen at www.copperconcept.org/awards. The awards are a celebration of the very best in contemporary European architecture and recognition of the influence of copper in modern design.

Copper is also one of the most important materials being used in the construction of the Warsaw Museum of the History of Polish Jews, due to open in 2013. Copper is featured on both the façade and in the cladding of the inner walls of the auditorium. Our Polish Association organised a seminar dedicated to the use of copper in modern architecture and this museum in particular.

Helping develop future professionals

The 8th annual online competition, organised for Czech, Hungarian and Slovak plumbing students, attracted its highest ever number of

attendees – 730 students from 71 schools competed. Future plumbers answered tube installation and general copper questions, while future technicians and engineers were also required to solve a variety of calculations.

Supporting EU and national regulatory compliance

In addition to its role in the national CuBE campaign, our German Association plays a key role in supporting stakeholder compliance with legislation that aims for convergence of the respective national approval schemes for materials and products in contact with drinking water. The main 2011 priority was to bring to a close many years of industry research that will confirm the positive list of copper alloys for use in fittings, taps and valves, etc. This test work, plus the complex methodologies behind it, has been done in cooperation with the four Member State group (Germany, France, Netherlands and UK). During the year, our experts also provided guidance to representatives of industry groups further down the value chain, e.g. impeller and pump manufacturers.

New legislation brings new opportunities

The revision of the Russian Federal Norm on Gas Installations, which came into force in May, includes several clauses relevant for copper, including press-fit technology. To support awareness of the new norm, our Russian Association published

a series of articles in print media and on a well-known website.

In France, compliance with the 1998 European Directive on the quality of water intended for human consumption will require the full, systematic replacement of existing lead pipes. Our French Association has been carrying out a broad communications campaign to inform end users of the law, the need for compliance, as well as to promote the many advantages of using copper in the replacement systems.

Copper and the Home

More than 360 projects, from all over the world, were entered into the 3rd Copper and the Home competition run by our Italian Association. Entries came from professional architects and designers, as well as students in schools of graphics, design, interior design and architecture, who had used copper and its alloys to create household furnishings or decorations.

In the professional category, First Prize was awarded to the designer Emanuele Magini for "Willy", a radiator in copper tubing that takes on the guise of a clothes rack in a wry interpretation of a useful household object. Anaick Lejart from the École Nationale Supérieure des Arts Appliqués et des Métiers d'Art, Paris won First Prize in the student category with the project "4.5 mm". The lamp made visual a system of electrical and copper wires that would normally be hidden behind walls.

Our Italian Association also facilitates www.copperindesign.org, a global community used by designers who favour copper and copper alloys in their creations.

TECHNOLOGY & INNOVATION

Innovations that optimise the use of valuable raw materials

As society further develops, and the resulting demands on natural resources accelerate, it becomes increasingly important to design not only for in-use performance but also for end-of-life considerations. During 2011, the copper industry has introduced innovations that allow society to use and reuse its valuable raw materials in increasingly efficient ways.

MicroGroove™: the cool answer

Refrigeration equipment is facing a number of challenges. These include the need for redesigns that minimise the environmental footprint of systems, contribute to the security

higher energy efficiency. As one example of its ability to miniaturise systems, the air conditioning giant, Chigo, reduced the tube weight in one of its systems by 30%. Suitable for use with R290 and R744 refrigerants,

Extensive print and electronic media awareness campaigns were undertaken to support a MicroGroove presence at major industry events in the US, China, Korea and Europe. At the AHR Expo in



of energy supply and use alternatives to HCFC (hydrochlorofluorocarbons) and HFC (hydrofluorocarbons).

New MicroGroove™ technology reduces the amount of raw materials, including copper, required in heat exchangers for air conditioning and refrigeration products. Small diameter copper tube contributes to product innovation, offering designers a solution to energy saving by enabling higher heat transfer coefficients and, in turn,

MicroGroove tubes offer long-term solutions for the air conditioning market.

The MicroGroove.net website hosted two webinars – “The MicroGroove Advantage: Achieving Higher Energy-Efficiency with Smaller-Diameter Copper Tubes” attracted more than 120 registrants and “Boost ACR Energy Efficiency with Copper MicroGroove Tubes” for which over 300 people registered. The website also offers information on events, webinars and a supplier directory.

Las Vegas, attended by more than 54,000 visitors, five different coils were displayed which allowed strong link ups between the coil producers and the final air-con unit assemblers. Our market intelligence suggests that this technology has already become very important in the end-use market, with more than 15 million MicroGroove containing units sold in 2011.

Supporting output growth in marine aquaculture

Copper alloy meshes naturally inhibit biofouling and the growth of parasites and

pathogens, improve water flow and circulation, help maintain higher oxygen levels for healthier fish, and resist corrosion, offering them a lifespan of five years or more. Mesh cages are also able to maintain their shape against strong waves and currents, minimise maintenance costs, resist predators, such as sharks and seals, and prevent fish escapes.

ECI attended AquaNor 2011, the world's largest aquaculture exhibition, in Trondheim, Norway, where it demonstrated the use of copper alloys for both nearshore and offshore marine aquaculture enclosures and highlighted copper's role in meeting the three main challenges of the fish farming industry; to ensure product quality, to protect human health and to take care of the local environment.

In July, the Dardanelles Strait, which divides Europe along the Gallipoli peninsula from Asia Minor, became the first European site to install aquaculture cages made out of copper alloys. Selected by scientists at Canakkale Onsekiz Mart University, Turkey, and the University of New Hampshire, USA, the cages are deployed in 50 metres of water to stock 15,000 European sea bass. Initial results are positive with the contained sea bass growing to nine times their



original stocking size over a 90-day period.

A copper alloy wire, developed for a new aquaculture project in Greece, is currently being tested for its corrosion resistance and fish protection properties. The project is coordinated by our Greek Association and the Institute of Aquaculture of the Greek Marine Research Centre. Buoyancy of the cage has already been determined.

Exploiting copper's conductivity in renewable powered heating and cooling

The Global Solar Water Heating Market Transformation and Strengthening Initiative, funded by the United Nations Development and Environment Programmes, is working closely with several members of the Copper Alliance to build awareness and support national implementation efforts. The overall aim is to accelerate the global commercialisation and market transformation of solar water heaters in order to reduce the current use of fossil fuels to heat water.

Over the past year, many best practices and lessons learnt

have been shared via the project's global knowledge management component. This facilitates the transfer of information and incentivises the structuring of the solar thermal industry, local capacity building and the establishment of test facilities. The superior conductivity and durability of copper products used in both the collector plate and the water distribution pipework help to optimise overall energy efficiency.

The initiative's www.solarthermalworld.org web portal was part of many political and industry events, including the European Solar Thermal Energy Conference (ESTEC) 2011. This is the solar thermal industry's science and politics forum that brings together policymakers, national associations, industry and researchers. The content-rich portal, which includes an incentive programme database, a calendar of solar thermal events and regular news updates, has become the standard reference and now has over 4,000 subscribers.

ECI supported a solar industry workshop in Chile where

several South American government and non-government representatives met to identify needs and possibilities for cooperation. We also improved visibility for large-scale solar thermal installations by highlighting the largest installation in the world to date (25MWth), located in Saudi Arabia. In the EU policy and regulatory arena, ECI assisted the industry in making contributions to the International Energy Agency and the European Solar Thermal Technology Platform roadmaps for solar thermal technology.

ECI also presented at the European Solar days, a pan-European campaign promoting the use of solar energy for the production of electricity, heating and cooling. Copper's electrical and thermal conductivity play important roles in improving the overall efficiency of photovoltaic and solar thermal installations.

Enabling innovation in the downstream value chain

A core strength of the Copper Alliance is the reputation of its member associations

to provide commercially neutral technical advice, e.g. on product selection, applications, standards and regulatory compliance, to the very diverse downstream value chain.

A new publication “Copper Alloys for Marine Environments” was prepared by our UK Association to support its presence at the 5th International Tidal Summit, in London. Key messages were on the role of alloys, mainly copper-nickels, in the rapidly expanding offshore renewable sector.

Experts in our German Association responded to over 1,500 individual information requests throughout 2011. One hundred and twenty academics, copper industry representatives and downstream users also attended its annual event, at Leibniz University in Hanover, on the material sciences of copper.

REGULATORY AFFAIRS

Managing increased complexity

The number of EU regulatory initiatives with potential impacts on the copper industry and its markets continues to increase. Policies are also becoming much broader, and hence more complex, requiring industry to develop new datasets and ways to communicate concerns over future competitiveness.

ECI's approach towards EU regulatory engagement

"The European Copper Industry believes that the EU should strive to achieve a regulatory framework that balances both high levels of sustainability and a competitive environment for industry to innovate, grow and sustain employment". At the time of ECI's 2010 well-received exhibition in the European Parliament, this core message was communicated in the European Copper Industry's manifesto.

During 2011, ECI developed policy briefs on five important areas of EU regulatory focus:

1. Energy and climate change: Damaging the competitiveness of European copper producers,
2. Industrial policies: EU policymakers should ensure a balanced regulatory environment that creates incentives rather than excessive burdens.
3. Recycling: Stronger enforcement of end-of-life policies and waste shipment legislation is required to reverse the increase in illegal exports.
4. Resource efficiency: EU support for research and innovation could provide the indispensable leverage to

through CO₂ costs that are not incurred by their global competitors, will help little in the fight against climate change. It also risks the prosperity and employment provided by the downstream sectors that exploit copper's performance characteristics.

enable the evolution towards a more resource-efficient, lower carbon economy.

5. Sustainable raw materials: EU policies must be better integrated with the relevant international policies to ensure undistorted and efficient access to both primary and secondary raw materials.

The one-page briefs have been customised from the common positions developed by Eurometaux. Each contains background information, relevant facts and figures, and a summary of ECI's position. Used by industry leaders to support advocacy at a national level, this consistent set of messages will help to raise EU, national and local regulator awareness of the issues being faced by the copper industry.

One important indicator of a more balanced agenda was the European Parliament's vote against raising the unilateral 2020 EU emission reduction target to 30% in July 2011.

Registering ECI's role as an important influencer

While Eurometaux is the core advocacy voice of the European non-ferrous metals industry, ECI also elected to register with the EU Transparency Register. This was created to provide society at large with information about who is engaged in activities aimed at influencing the EU

decision-making process, which interests are being pursued and what level of resources are invested.

Copper displays its green credentials

ECI was one of a very small number of industry representatives invited to exhibit at the European Commission's Green Week on Resource Efficiency. Under the slogan "Living Better... with Copper", ECI highlighted both sides of the resource efficiency argument. One side communicated "achieving more with less" though the industry's introduction of smaller diameter copper tubes for air conditioning units. These MicroGroove branded materials combine reduced metal usage, lower refrigerant charge and increased energy efficiency. The other side communicated "achieving more with more" by increasing the use of copper in electrical equipment. This improves operating efficiency and reduces losses thereby contributing to a reduction in harmful greenhouse gas emissions.

During the same event, ECI called upon the EU to be more ambitious in setting binding energy efficiency targets and highlighted the need to secure the supply of valuable raw materials through measures to increase the recovery and recycling of copper. A member company, Boliden from Sweden, spoke on its technology developments enabling it to

recycle increasingly complex end-of-life electronic scrap.

Investing in the future

The European copper sector is developing its own roadmap to a low-carbon economy by 2050. Underpinned by a 50% unit energy reduction, between 1995 and 2009, the European copper industry represents 0.05% of the EU27's total industrial CO₂ emissions. Since metallurgy is mostly governed by the laws of thermodynamics, unless there is a major technological breakthrough, very limited improvements remain.

On the other hand, increasing the copper intensity of use in motors, transformers and power cables could make a significant difference by delivering energy savings estimated at ca. 200 TWh (or 6% of EU27 electricity consumption) and CO₂ savings of ca. 95 million tonnes by 2020 - 2025.

The roadmap will substantiate the potential savings behind these copper applications, thus enabling ECI to engage in a constructive dialogue with EU decision-makers on issues that will shape our industry's future business and investment decisions.



Antimicrobial Copper

Addressing a global need

According to the World Health Organisation (WHO), healthcare associated infections (HCAI) affect hundreds of millions of people worldwide every year. In Europe alone, there are reported to be 147,000 HCAI-related deaths per year, resulting in a cost to society of €7 billion.

Copper's intrinsic antimicrobial efficacy can help tackle this human and cost problem through the installation of copper and copper alloy touch surfaces in healthcare facilities, as well as in other public spaces such as transport hubs, schools and offices.

Managed by our UK Association, ECI's European programme is built around three main pillars. The first is to communicate the underlying science, plus the patient benefits assessed from clinical trials, directly to multidisciplinary stakeholders. The second is to work with material and component manufacturers to develop a supply chain that can deliver the required range of products, colours and surface finishes. And the third is to generate broader awareness amongst the media and general public.



Promoting patient benefits

The lack of consistency of healthcare systems and facilities across national boundaries has driven the need for national clinical assessments. These have been used to leverage national supply chains and engage local copper spokespersons from the scientific and clinical communities. Examples include installations at the Attikon and Pirakon Hospitals in Greece and at the Rambouillet Hospital in France.

Decision-making in hospitals varies substantially across the EU but is typically done by a multidisciplinary team, with infection control professionals acting as key influencers in purchasing decisions. An effective means of reaching these influencers is through national and international infection control conferences. Expert speakers are supported by Antimicrobial Copper exhibition booths where local Copper Association experts and industry representatives are available to deal with queries.

During 2011, Antimicrobial Copper was represented at over 20 healthcare events in Europe. The most notable were the World

Health Organisation's inaugural International Conference on Infection Prevention and Control in Geneva, The International Federation of Infection Prevention and Control in Venice, and The European Congress of Clinical Microbiology and Infectious Diseases in Milan.

In July, in Geneva, game-changing infection reduction results* were announced from clinical trials conducted in the USA. Funded by the US Department of Defense, the trials carried out in three separate hospitals provided the first evidence of direct patient benefits. The use of Antimicrobial Copper surfaces in intensive care unit rooms resulted in a greater than 40.4% reduction in the risk of acquiring a hospital infection.

In the second half of the year, the infection-control community's awareness of these benefits and their buy-in to this type of scientific evidence were assessed via surveys. These showed that 80% of respondents would recommend that their facility install Antimicrobial Copper and that 62% were already aware of copper's role with the media, events and scientific papers listed as the main sources.

National Associations, with the support of regional copper research experts, have presented sound science and established credibility with the leading infection control professional associations in Poland, Germany, Greece and the UK.

As a result, Antimicrobial Copper components are now in use in several prominent facilities across the UK, Germany, France and Greece. Ward types include geriatric, paediatric and cystic fibrosis, and hospital types include private, public and military. The new CIGMA facility for the treatment of the elderly and babies in Laval was the first building in France to use copper components to fight against hospital infections and is set to be a model for the future.

Developing the supply chain

Clinical trial teams have helped to define a list of high-risk touch surfaces which should be upgraded to Antimicrobial Copper. The list, based on a combination of microbiological sampling and experience of a busy clinical environment, includes items such as door handles and push plates, bed rails, IV poles, toilet fixtures, trolleys and even health professionals' pens and computer mice!

Copper producers and component manufacturers are ramping up efforts to design and produce these components from the most appropriate alloys. To build decision-maker confidence in their choice of materials, ECI is supporting the supply chain's use of the Antimicrobial Copper brand and the Cu+ mark. Acting as a form of industry stewardship scheme, the combination of the two is backed by scientific evidence that supports the claim of copper being "the most effective touch surface material".



Already more than 40 companies are using the Cu+ brand, with another 10 expected soon. Details on the growing value of this global brand can be found at www.antimicrobialcopper.org.

Marketing support offered to companies using the brand has resulted in an increased level of well targeted communications to the downstream supply chain and specifiers. Readily accessible resources, developed by the UK and Hungarian Associations, such as presentation materials, images, press releases and online forums, have been created and shared with the Cu+ supply chain. They represent a substantial reason to become part of the Antimicrobial Copper brand.

In Poland, our national Association catalysed the formation of a broad consortium of commercial and academic stakeholders to apply for EU funding to support the development of a national supply chain.

Generating broader public awareness

In the healthcare sector, governmental and intergovernmental initiatives have generally focused on hand hygiene as the central pillar for infection prevention and control. However, as evidence grows of the role of the environment in the transmission of infection, intelligent solutions are being sought for the design of healthcare infrastructure, which provide opportunities for copper. Applications being explored and promoted include heating, ventilation and air conditioning (HVAC) components.

The Scandinavian Association's stand, promoting the use of Antimicrobial Copper in HVAC applications at the Indoor Seminar and Fair in Finland, received substantial visitor interest. Our French Association assisted Hydronic, a French manufacturer, with the production of the first certified Antimicrobial Copper coil air handling unit for use in hospitals.

The UK Association joined an initiative between the Department of Health, Cardiff University and Campden BRI, the UK's largest independent organisation carrying out research and development for the food and drinks industry, to assess opportunities in this extensive end-use sector.



"Studies have repeatedly shown copper to be an effective antimicrobial material, and support its use in public places to reduce the spread of infection."

— Professor Keevil, microbiological researcher and Head of Environmental Research at the University of Southampton, UK

National media campaigns have succeeded in securing coverage in the general and healthcare trade press. Surveys have shown these to be important channels for raising target audience awareness.

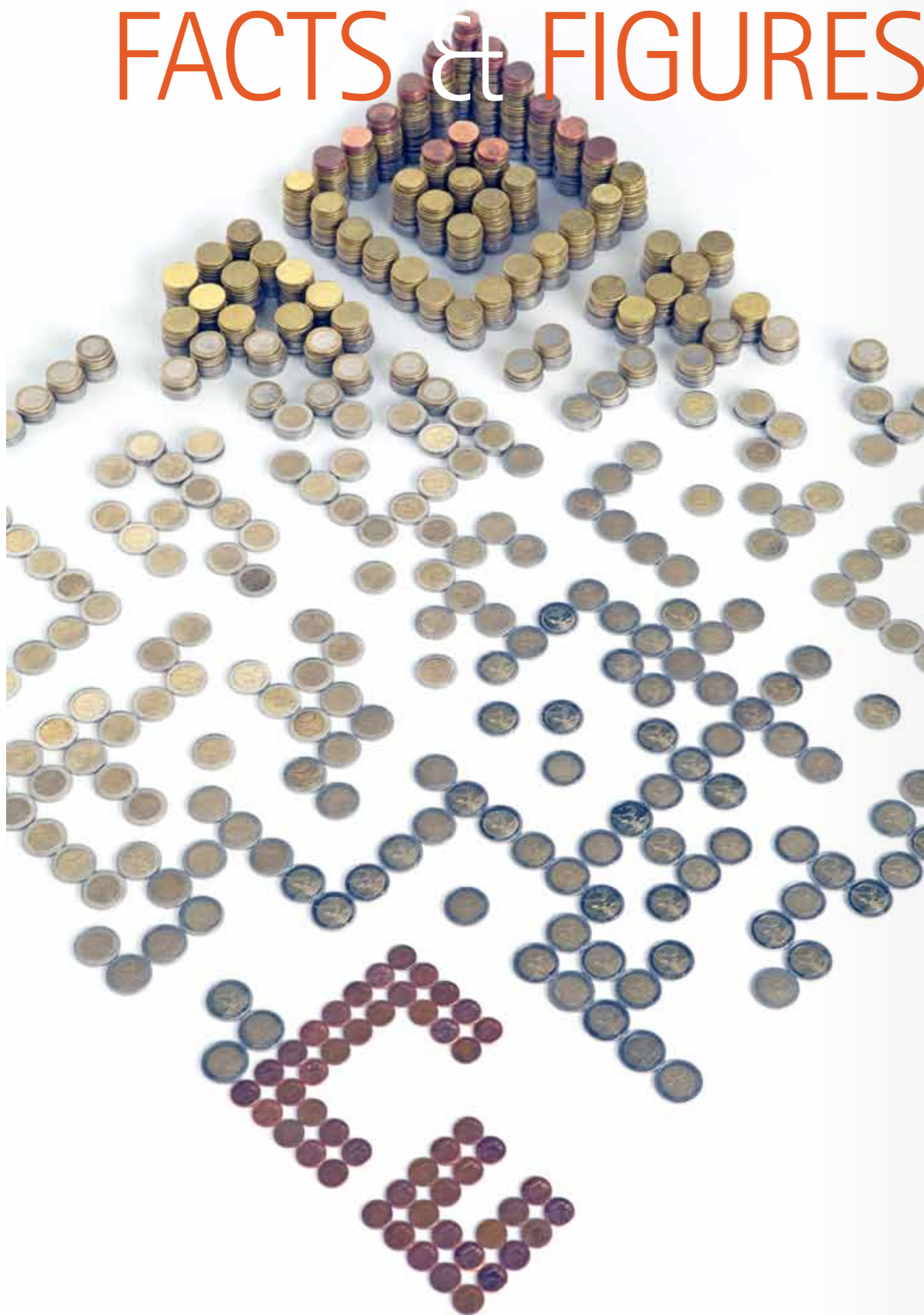
Through its role as the global coordinator of our public relations efforts, the UK Association has facilitated the sharing of news from other regions, including hand-rail installations in the metro system in Santiago, Chile, and in the Ronald McDonald House of Charleston, USA, where Antimicrobial Copper bronze and brass products have replaced steel, wood and plastic touch surfaces.

A number of high-profile events with global outreach were also staged, including a laboratory demonstration (www.antimicrobialtouchsurface.org) to mark World Health Day on 4th April. Broadcast from the University of Southampton, the event, which compared the lifetime of harmful pathogens on a copper versus competing material surface, was watched live on more than 2,000 web channels in 93 countries.

As our evidence base grows, programme messages have been updated, translated and disseminated around the region, reaching an audience of over 200 million people. The global website now contains chapters in English, French, Polish and Spanish.

* Schmidt MG, Copper Touch Surface Initiative, Microbiology and Immunology, Medical University of South Carolina, Charleston, USA, BMC Proceedings 2011, 5(Suppl 6):053 (Oral presentation delivered at 1st International Conference on Prevention and Infection Control, 29 June-2 July, 2011, Geneva.)

FACTS & FIGURES



Throughout 2011, ECI and its network of eleven national Copper Development Associations operated with a budget of \$17.6 M (€12.8 M) for promotional and regulatory affairs activities across the region.

In addition, European resources within the Copper Alliance managed a \$4.4 M budget for projects targeted at impacting the global demand for copper. The International Copper Association, representing the world's leading mining companies, independent smelter/refiners and semi-fabricators, provided 70% of the annual budget.

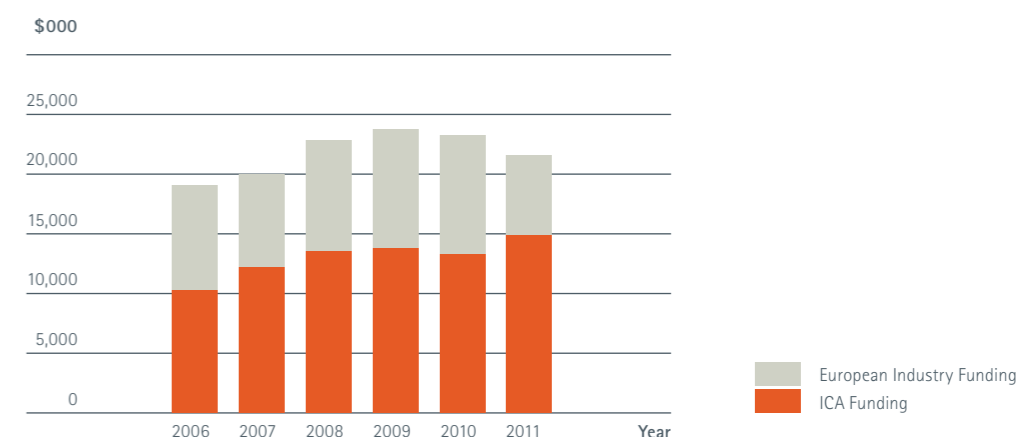
Over 100 partners, both academic institutions and industrial companies, continue to provide strong support for ECI's Leonardo ENERGY programme, which broadly promotes the sustainable generation, distribution and use of electrical energy. 2011 was the fourth year in which our efforts benefited from a 2008 grant from the United Nations Global Environment Fund. The GEF awarded \$12 M to the ICA, over a five year period, to promote the use of solar thermal energy technologies in six countries around the world (Albania, Algeria, Chile, India, Lebanon and Mexico).

Towards the end of the year, ECI was successful in signing two partnership agreements. The first is with the Economic Community of West African States, worth \$0.9 M/year for 2012-2014, to carry out promotion and advocacy on energy efficiency. The second, worth \$3 M/year for 2012-2014, is with the Clean Energy Solutions Centre, a joint initiative of the United Nations and the Clean Energy Ministerial, to promote policies and programmes that encourage the transition to a global clean energy economy.

2011 Funds (\$000)

Strategic Initiative	ICA Funding	European Industry Partners	Total
Building Construction	\$4,100	\$4,200	\$8,300
Electricity & Energy	\$3,900	\$700	\$4,600
Technology & Innovation	\$1,800	\$300	\$2,100
Market Intelligence	\$100	\$0	\$100
Antimicrobial Copper	\$1,300	\$300	\$1,600
Health, Environment & Regulatory Affairs	\$1,600	\$400	\$2,000
Communications	\$1,200	\$100	\$1,300
Administration	\$1,600	\$400	\$2,000
Total Funds	\$15,600	\$6,400	\$22,000

ECI Promotion Funds (2006-2011)



Year	ICA Funding	European Industry Partners	Total \$000
2006	\$10,820	\$9,090	\$19,910
2007	\$12,700	\$7,900	\$20,600
2008	\$14,000	\$9,300	\$23,300
2009	\$14,500	\$9,800	\$24,300
2010	\$13,900	\$10,000	\$23,900
2011	\$15,600	\$6,400	\$22,000

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