Cu

Sustainable, durable, versatile and essential to life, copper is an important resource that is an integral part of a rich past, a challenging present and a bright future. The European copper industry is responding to today's economic challenges with innovation and vigour.

European Copper Institute • Annual Report 2009

ECI VISION

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

ECI MISSION

- The European Copper Institute is a joint venture between the world's leading mining companies, custom smelters and semi-fabricators (represented by the International Copper Association, Ltd.) and the European copper industry.
- Its mission is to promote copper's benefits to modern society across Europe, through its Brussels based office and a network of eleven Copper Development Associations.

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Chairman's Message

Challenging Times

2009 was a difficult year for the copper industry value chain in Europe. The global financial crisis, which resulted in a severe tightening of credit and re-prioritised public sector spending, led to dramatic declines in housing starts, lower industry investment and a reduction in the sales of consumer goods, such as cars and electrical products.

The most recent data from the International Copper Study Group[1] indicates a dramatic (20%) fall in European refined copper usage versus 2008. Elsewhere, strong declines in Japan (25%) and the USA (19%) were offset by growth in China (38%) and India (5%). While world demand remained equal to 2008, at 18 million tonnes, excluding China, it fell by around 15%.

This decline resulted in a 25% fall in the average London Metal Exchange price, from $6,955/tonne in 2008 to $5,163/tonne in 2009. However, within that twelve month period, the highest daily price was more than twice the lowest. Such volatility creates real challenges for downstream fabricators, profoundly affects the competitiveness of the independent smelter/refiners and generates uncertainty over major capital investments in the global mining sector.

Boosted by capacity investments in 2006 and 2007, the global mining, smelting and refining sectors increased output by 2%. This led to a modest year on year increase in the stocks held on the various metal exchanges.

While economic recovery within the EU remains fragile, I believe that the performance attributes of copper and its alloys provide good growth opportunities for the European copper industry. One key area is in enabling the EU to achieve its carbon emissions targets. This will require the continued electrification of transport, both in high speed train infrastructures and in electric/hybrid vehicles, plus a significant increase in renewable energy supplies. A much more visible commitment from the European Commission and Member States is needed to capture the many electrical energy efficiency opportunities that exist across a whole range of industrial and consumer applications.

I would like to thank the International Copper Association and the European copper industry, plus our many project partners, for their funding and support. Also, on behalf of the membership, to thank the European Copper Institute and its European network for their many achievements throughout an uphill 2009.

Javier Targhetta

Senior Vice President, Marketing & Sales
Freeport McMoRan Copper & Gold Inc.

[1] The International Copper Study Group (ICSG) is an inter-governmental organisation, based in Lisbon, Portugal, which publishes copper production and demand statistics. Visit www.icsg.org for more details, particularly on how Chinese usage is determined.

Chief Executive's Message
Looking to the Future

Most copper containing products or systems such as a refrigerator, an industrial electric motor, the central heating system in a house, or a renewable energy wind farm, have long life-spans. Today's buying decisions therefore have consequences that last for decades. In challenging economic times such as now, whether you are a government, an industrial company, or an individual consumer, it is often tempting to go for the lowest up front cost option.

However, virtually all eco-design studies demonstrate that the operating life of such products and systems accounts for over 95% of their economic and environmental impacts. Therefore, investing some extra euros now in higher performing products and systems, that include a higher copper content, will save their operators many times that amount in the years ahead.

One of ECI's key roles is to deliver easy to understand information that demonstrates the benefits of investing wisely now in order to save in the future. Our promotional and advocacy efforts are focused on improving the understanding of Europe's policy makers, its industries and its citizens. Using this knowledge, people are able to make informed decisions that take into account the environmental, social and economic benefits available through buying products and systems with a higher copper content.

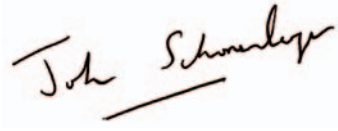
One question this may raise is whether there's enough copper to support such growth. According to the United States Geological Survey, known reserves are around 550 million tonnes. However, total copper resources are much higher and short term supply limitations, which often result in upward price trends, act as a spur to the exploration of new deposits and the exploitation of others previously considered uneconomic.

In Europe, recycling is a significant source of supply, currently meeting around 40% of demand. Copper's ability to be recycled, again and again, without any loss in performance, is an important sustainable benefit.

ECI's latest communications tools, our "Imagine Life Without" video and website, plus our "Curious about Copper" brochure, are raising awareness, particularly amongst the younger generation, of the beneficial role that copper plays in our daily lives.

Momentum is building behind our efforts to demonstrate the effectiveness of using antimicrobial copper touch surfaces to reduce the spread of harmful pathogens in hospitals. We believe that St Francis in Mullingar, Ireland is the first in the EU to install copper door knobs as an extra line of defence against MRSA and *Clostridium difficile*.

In addition to our promotional work, covered extensively in this report, ECI is fully involved in a variety of regulatory issues affecting the European copper industry. We are managing the Consortium, set up to help the industry meet its REACH obligations, and are coordinating the complex data inputs required to assist the Commission in its work on the Emissions Trading Scheme, the Raw Materials Initiative and the revision of the Integrated Pollution Prevention and Control directive.



John Schonenberger
Chief Executive
European Copper Institute

HIGHLIGHTS

Throughout the past year, ECI has focused its energies on a diverse range of initiatives such as raising stakeholder awareness of the many benefits of copper, highlighting its contributions towards innovation in the EU economy and advocating for policies that safeguard the industry's future competitiveness.

A few highlights from the pages ahead include…

HEALTH & ENVIRONMENT: Using peer reviewed science to demonstrate that copper is a sustainable resource that is mined, produced, used and recycled responsibly.

ENERGY & ELECTRICITY: Exploiting our Leonardo ENERGY initiative and membership in the Energy Efficiency Industry Forum to advocate for much more ambitious EU and Member State policies to capture the huge climate change benefits from energy efficiency.

BUILDING & CONSTRUCTION: Providing user friendly marketing tools, technical information and education for the hundreds of thousands of professionals and skilled technicians that work in this diverse sector.

INFRASTRUCTURE & TRANSPORT: Utilising market intelligence and policy analysis to guide the industry in its efforts to develop new products that support innovation, value chain competitiveness and resource conservation.

COMMUNICATIONS: Creating innovative web-based tools and media partnerships to increase the public awareness of the many benefits that copper products provide in all walks of life, as well as its essentiality for life itself.

REGULATORY ISSUES: Developing the information necessary to maintain value-added dialogue with the EU institutions on the policy developments and standards issues that will safeguard the future competitiveness of copper markets and the copper industry in Europe.

Environment

A Resource We Can Count On

There are very few materials that play an essential role in our everyday lives and can be recycled indefinitely, without any loss of performance or properties. Copper is one of them.

With issues such as sustainability, resource conservation and corporate social responsibility increasingly viewed as an integral part of the business agenda, ECI strongly believes this heightened awareness means a secure future for copper. As detailed elsewhere in this report, copper provides a key building block in areas such as renewable energy, improved electrical energy efficiency, sustainable construction, transportation and healthcare.

Europe Leads in Recycling

ECI continues to position copper as a sustainable resource that is mined, produced, used and recycled responsibly. Copper derived from recycling, whether through the direct re-melting of factory off-cuts, or the use of sophisticated processes to extract metals from complex products, such as printed circuit boards, is an indispensable complement to primary copper production.

The most important sources are from building demolition and renovation, obsolete electrical and electronic equipment, and scrapped vehicles. To improve supply security, resource efficiency and environmental protection, the EU is strongly encouraging recycling. The End of Life Vehicles Directive is aimed at maximising the recycling of obsolete vehicles and the Waste Electrical and Electronic Equipment Directive seeks to reduce the amount of this type of waste going to landfill, by improving recovery and recycling rates. In 2007, an estimated 40% of the copper used in Europe was sourced from recycling, more than any other region of the world, reducing carbon dioxide (CO_2) emissions by 650,000 tonnes versus primary production.

Imports meet around 50% of EU copper needs. At the same time, the EU is a net exporter of 600,000 tonnes/year of end of life materials, mainly due to the higher prices affordable by purchasers operating with much lower environmental standards.

To safeguard both the environment and the competitiveness of the European copper industry and its downstream value chain, more must be done to recycle these end of life materials in Europe. Revisions to the Emissions Trading Scheme must not worsen this situation by taxing industry on the carbon content of these increasingly complex materials.

The Material of Choice

Copper is the material of choice for a vast range of applications, in particular where resistance to corrosion, excellent conductivity and antimicrobial performance are required. One of ECI's key roles is to increase stakeholder awareness of these benefits so that downstream users, regulators, the media and the general public can make informed choices. For example, in 2008, hospital-acquired infections were estimated to cost the EU Member State health services around €7 billion. Using antimicrobial copper, in door handles and push plates, in taps, toilet seats and other touch surfaces, has been shown to reduce the contamination levels of harmful pathogens, such as MRSA and *Clostridium difficile*, by a staggering 95%.

As copper is capable of infinite reuse in almost all of its applications, it is rarely lost from the world's total resources. ECI's membership recognises its obligation to support demand growth with responsible production from primary resources and from recycling. This balanced approach will enable the sector to meet current demand without compromising the needs of future generations.

Energy & Electricity

Sending a Powerful Message

Electrical energy efficiency and energy saving efforts are important demand drivers for the European copper industry.

After a year to put the organisation on a firm footing, the real work of the Energy Efficiency Industry Forum got underway in 2009. Set up by ECI, along with eight other Brussels-based organisations, the Forum's key goal is to advocate for a more ambitious EU energy efficiency programme. The Forum has already been able to brief the new EU Energy Commissioner and has input into the next revision of the EU's Energy Efficiency Action Plans.

ECI launched an English language webinar programme of eight training modules on electricity market regulation in the EU, attracting over 600 registrations. Their success led to similar programmes in Spanish and Portuguese. Basic engineering lessons on issues such as earthing installations, photovoltaics and power electronics were equally appreciated in the Latin American region.

Drawing on a related initiative in Japan, we launched, in partnership with the European cable industry, a project on cable sizing in offices, industry, and renewable energy plants. An extensive study supports the argument that a typical cable sizing requires an increase in cross section of up to 200% to achieve the maximum economic and ecological benefits. This message will be disseminated via our partner network in 2010.

Continued Achievement through Leonardo ENERGY

Our Leonardo ENERGY programme provides a structured framework for our advocacy and education activities across a range of sustainable energy issues, both through an increasingly active web portal as well as via conferences and seminars across Europe.

- At the 1st International Copper Ore Mining Congress in Poland, we presented sustainable energy solutions for copper mining. Topics included power quality improvement as a means of reducing operating losses, the advantages of alternative energy sources and energy efficient electrical motors.
- The strong links between copper and climate change mitigation were presented at the European Conference to Promote Local Action to Combat Climate Change, in Huelva, Spain. The audience was drawn from the Covenant of Mayors, a European Commission initiative to promote local sustainable energy action plans in European towns and cities.
- Minimum Efficiency Performance Standards for electric motors were published in the Official Journal of the European Union. This concluded a process, initiated in 2004, when Leonardo ENERGY published a report showing the significant CO_2 reduction potential.
- According to an International Copper Association study on the world motor market, the move towards full adoption of the IE2 standard would increase copper use by an average 0.56 kg/kW. This translates into an additional copper demand of 57,000 tonnes/year from the European motor market. On the benefits side, this would save around 10 million tonnes CO_2/year.
- Since the liberalisation of the electricity market, there has been a significant rise in the overloading of transformer units. Leonardo ENERGY published a technical guide to help users match the power transformer size with its anticipated load to avoid the dangers of overloading.

- Via active participation in the EU office lighting initiative, we were able to input into the development of the new Lighting Directive 245/2009. This leaves the market open for improved magnetic ballasts, banned under the first draft in favour of electronic ballasts. The new Directive preserves a market of 15-20,000 tonnes/year (equivalent to a 35 - 45% market share for improved magnetic ballasts). This action opened a line of communication with the association of company-owned electricity utilities, enabling us not only to promote the benefits of magnetic ballasts but also to disseminate information about copper in motors, transformers and cables.
- The EU standard for telecom buildings prescribes separate earth and neutral conductors to avoid problems of electromagnetic compatibility. During a revision of the standard, one proposed amendment was to delete this clause. Leonardo ENERGY's standards watchdog successfully defended the reasons to retain the original text.
- The use of lower efficiency and lower safety copper-clad aluminium wire (CCAW) is an increasing problem in many parts of Africa. A Leonardo ENERGY campaign, co-financed by the cable industry, has helped the Senegalese energy ministry to recognise the use of CCAW as a counterfeit product, when sold as copper wire. An awareness video warning against the hazards has been prepared for use on local TV channels. The same messaging can also be adapted for use in other developing economies.
- We participated in a UN-Habitat conference in Nairobi to establish a steering group for slum electrification.

The Role of Renewables

Versus the current 9%, the European Union has committed to source 20% of its energy demand from renewables, such as wind, biomass, geothermal and solar, by 2020.

Moving from a fuel-based to a technology-based energy economy offers real opportunities for copper in electricity generation and use, transportation and heating and cooling. The use of copper fin, sheet, strip and tube in solar collectors, heat exchangers, heat pumps and chillers plays an important role in increasing the systems efficiency of these rapidly expanding technologies. As a founder member of the European Solar Thermal Industry Federation and of the Renewable Heating and Cooling European Technology Platform, ECI has played a pivotal role in supporting the development of these markets.

In Europe, around 1,500 MW of solar thermal power plants have been recently brought on-stream or are under construction. By 2012, installed capacity is expected to be 2,500 MW, with 30,000 MW considered achievable by 2020.

As a partner in the UN Solar Water Heating Market Transformation and Strengthening Initiative, ECI has provided a platform, based on the Leonardo ENERGY model, to deliver market intelligence and education to the growing number of solar thermal professionals worldwide.

With the support of its key knowledge partners, Leonardo ENERGY hosted a highly successful webinar on the drivers and barriers in the concentrated solar power (CSP) market. Some 1,200 registrations included technology providers, renewable energy developers, equipment providers, consultants, researchers and academics worldwide, as well as representatives from the World Bank and reputed sustainability institutions. Further training sessions on CSP technology will be delivered under the guidance of Seville University.

Curious to know more?

http://www.leonardo-energy.org/

1st International Copper Ore Mining Congress in Lubin, Poland : **www.sitglubin-kongres.pl/home_page.html**

European Conference to Promote Local Action to Combat Climate Change: **www.laccc.es/index.php/en**

Building and Construction

A Solid Foundation for the Future

While tough global conditions had a significant impact on demand for copper from the building and construction sector, we continued to improve awareness of its benefits for both interior and exterior applications. There is growing realisation, backed by results of trials and research in both the private and commercial sectors, that investing wisely in long-term sustainable and durable materials is a better way forward for both the environment and the user.

Health and environmental science, derived from the industry's Voluntary Risk Assessment and life cycle data, is supporting our efforts to promote copper in hospitals, offices and other public places. Rigorous clinical trials have successfully demonstrated copper's ability to clearly outperform alternative touch surface materials in reducing harmful pathogens. Our industry is working towards the 2010 launch of a major campaign to promote antimicrobial copper.

Our building and construction programme continued to deliver end user friendly communications and marketing tools, including training courses for young plumbers and architects, press advertising, publications, school education kits and environmental workshops. Training opportunities have been provided to plumbers and installers through liaison with training centres, associations or directly under the European Copper Plumbing Promotion Campaign. In Spain alone, for example, some 10,000 installers have received our training CD.

Significant contributions by our fabricating members increased the programme's effectiveness and ensured that national projects were tailored to meet national market needs. Our input into discussions on environmental product declarations and impact categories on sustainability in construction helped improve stakeholder understanding of our products and their use.

In Germany, we supported a pilot scheme highlighting the many benefits that copper tubes and fittings offer to building owners in their plumbing and heating systems. Early signs are positive and efforts will continue into 2010.

In France, seven years of intelligence gathering and advocacy led to the introduction of a new law to improve electrical safety in residential properties. From 1st January 2009, all properties over 15 years old put up for sale, require a mandatory electrical safety inspection. The resulting increase in renovation rates will boost market demand for building wire and ancillary components. ECI's Forum for European Electrical Domestic Safety project, which showed that more than 70% of Europe's housing is over 30 years old, was pivotal in attracting partners, such as the French Consumer Association and the Electrical Installers Federation. We are now working with our national network to establish similar advocacy partnerships in other Member States. We have also agreed with the European Fire Association to collect statistics that may allow this issue to be raised to EU level.

Visual Impact

Visual impact can be a powerful influencer. The European Copper in Architecture campaign and its related awards scheme is a perfect example. The campaign was boosted with the launch of a dedicated website featuring the use of copper on building facades. The awards entries enjoyed significant media coverage across Europe, particularly in the UK, Spain and Hungary. Several eye-catching features were picked up by leading trade publications for designers, architects and engineers. The campaign also helped to boost awareness and growth in Eastern European markets.

Acting Smart

Europeans spend increasing amounts of time indoors, whether at work, socialising, or at home. Technological advances are helping ensure these indoor environments are fit for purpose, i.e. that they are healthy, secure, comfortable, convenient and beneficial to the user. Copper plays a key role in virtually every aspect of this technology, from the electrical wiring that supplies the power for lighting, heating and cooling, computers, audio visual systems and appliances, to the functional fixtures and fittings, plus beautiful designs.

The 'smart house' is no longer the stuff of sci-fi, it is a reality. Recognising that each and every one of us has a responsibility to the environment and to future generations, individuals increasingly want to ensure that they are making the right choice of material and product. That is why they are turning to copper and copper-containing products.

Curious to know more?

Design: **www.copperconcept.org**
Antimicrobial: **www.antimicrobialcopper.com**

Infrastructure & Transport

Copper at the Cutting Edge

Europe's transport systems and modes of travel continue to evolve. Copper and copper alloys play an essential role in transport, whether in the intricate cabling of new high speed trains and their related infrastructure, or improving vehicle performance, or helping power the next generation of hybrid and electric vehicles.

Innovation enables the European copper fabricating industry to stay at the cutting edge of the entire transport value chain. One example is CuproBraze®, an advanced technology, based on brazed copper and brass alloys, which improves fuel efficiency, reduces greenhouse gase emissions and improves air quality in the off road, mass transit and freight transportation markets. CuproBraze® can withstand much higher temperatures than other metals, enabling customers to produce heat exchangers which are more efficient, compact, lighter, durable and corrosion resistant.

We're on the Right Track

Important drivers for investment in Europe's rail network are the environmental benefits, primarily reduced emissions and energy use, achieved with the conversion from diesel to electric trains. ECI figures show that switching from diesel to electric trains for the distribution of freight halves energy consumption (from 460 to 230 kJ/tonne.km), and slashes emissions from 35 to 9.3g $C0_2$/tonne.km. Furthermore, switching from air travel to high speed rail cuts energy use from 7.8 to 2.5 l/passenger.km, and emissions from 186 to 43g $C0_2$/passenger.km.

There are roughly 120,000 km of electrified railways in the EU27, plus at least 100 tramway systems varying in length from 100 to 300 km. Demand for copper and copper alloys comes from the electrification and refurbishment of existing mainline systems, the expansion of new high speed systems, and the maintenance and extension of the power infrastructure required for urban trams and trolley buses.

A high speed train contains around 20 tonnes of copper, some 5 tonnes in an electric locomotive, and 2 tonnes in each carriage. With nearly 7,000 track km of new high speed lines being built between 2009 and 2017, demand for copper catenaries is forecast to remain strong. All new high speed lines require a full set of copper wires (contact, catenary and feeder cables) to be installed over each km of track.

The Road Ahead is Full of Opportunity

Nevertheless, the car remains the primary form of transport for most Europeans. The copper industry continues to cooperate closely with the automotive sector to achieve better resource utilisation, fuel consumption and safety. Auto manufacturers seeking performance aspects such as corrosion resistance, durability, heat transfer, electrical conductivity and machinability know copper and its alloys will deliver.

Environmental issues, such as climate change, plus tougher regulations, are key factors in the development of new models, requiring a true 'cradle to grave' assessment. As the disposal of obsolete vehicles becomes more tightly controlled in Europe, the recyclability of individual components and their constituent materials are important criteria for design engineers.

Vehicle emissions account for around 20% of European greenhouse gas emissions, prompting growing interest in hybrid and electric powered models. Some commentators even predict a market of 5 million units by 2020. Hybrids require up to 33 kg of copper for the electric motor, battery, wiring, cooling and other components. Between 15-20% of the total mass of a lithium ion battery is copper which, together with the electric motor, adds up to some 20kg.

Traditional and New Sources of Demand

All-electric vehicles retain several of the traditional uses of copper, such as in the wire harness, synchronous rings and the many small motors that deliver comfort features. The new drive motors and generators have rotors or stators containing copper and the dynamic energy storage systems contain power electronics. Additionally, applications for cooling electronics, inverter block and water cooling for engine parts all potentially contain copper. This sector also offers the possibility of exploiting a new technology that involves a higher efficiency cast, versus a wound, copper motor rotor.

The vast majority of the safety and comfort features in a modern car are based on electronics – from GPS navigation, braking systems, car-phones and emission controls, to anti-theft devices, park and cruise distance controls and engine and transmission management systems. These all require specialist copper alloys that combine high electrical conductivity and high tensile strength.

Curious to know more?

Visit: **www.cuprobraze.com | www.coppernickel.org**

Communications

A Natural Curiosity

In today's environment, where ever-increasing sources of both good and bad information are accessible with a couple of key strokes, an effective and focused outreach strategy is more vital than ever before.

The highlight of our communications activities during 2009 was an innovative three-phase campaign aimed at increasing public awareness of the benefits of copper in all walks of life, as well as its essentiality for life itself.

The project "Imagine life without", which makes full use of the power of the internet, is designed to appeal to all levels of understanding. It features a teaser video, website and, as the year ended, the publication of the "Curious about Copper" brochure.

The campaign exploits people's natural curiosity with a 2-minute video that leaves viewers interested to know more. They can access a website that explains the film and how it demonstrates that copper is used literally everywhere around us. Feedback has been excellent and plans include targeted activities for students. The format has also proved international in its appeal with a Spanish version successfully introduced to Latin American audiences.

These efforts were well aligned with our ongoing national media relations and EU-focused public affairs initiatives to communicate, for example, copper's recyclability, its role in improving electrical energy efficiency and in reducing the spread of harmful pathogens on touch surfaces in hospitals.

Keeping Our Members Up to Date

We also issued regular electronic newsletters to ensure that our members and the members of our national associations were kept fully up to date with developments.

Another initiative which achieved success with the broader public was the October launch of the Copper in Design website, a visually striking showcase and meeting space for contemporary designers and their followers. The site, intended for creators, design professionals, journalists and all design-loving netsurfers, describes the properties of copper that makes it an attractive choice for designers.

The Value of the VRA

Following EU approval of the copper Voluntary Risk Assessment, ECI developed a range of tools to communicate its positive outcomes to a wide range of our stakeholders, including the downstream value chain, local authorities and communities, the industry itself, as well as the public at large. This pioneering scientific study, set up by the copper industry with the support of the European Commission and Member States, has comprehensively evaluated potential risks for man and the environment from the manufacture, use and recycling of copper. Not only does it form the cornerstone of the copper industry's registration dossier under the EU's REACH regulation on chemicals, it will also be of considerable value in the industry's wider interactions with policy makers and regulators around the world.

Looking ahead to 2010, ECI will be focusing on an important communications campaign to promote copper's antimicrobial properties, particularly in the healthcare sector. The "Cu+" brand, available for use throughout the global copper industry, will highlight the fact that, better than any other touch surface material, copper continuously kills bacteria, never wears out and is safe to use.

Curious to know more?

Information campaign: **www.imaginelifewithout.org**
www.imaginalavidasin.org
Design: **www.copperindesign.org**
Voluntary Risk Assessment: **www.eurocopper.org/vra/en/**
Antimicrobial: **www.antimicrobialcopper.com**

COPPER

ESSENTIAL FOR EVERYONE

Piotr Borys
MEP Sponsor

Jacek Protasiewicz
MEP Sponsor

The European Copper Institute
invites you to discover
the vital role that copper plays
in mankind's journey into the future.

European Parliament, Brussels

29 June -1 July 2010

Mezzanine, 3rd floor, JAN Building

Opening: 29 June at 6.30 pm

www.essentialforeveryone.eu

Regulatory Issues

Staying Ahead of the Curve

ECI closely tracks legislation and regulations affecting the copper industry at European and national level. Our proactive and cooperative approach ensures these efforts are effective and beneficial for our membership.

Leading on REACH

ECI plays a leading role within the REACH Copper Consortium, a standalone business venture open to all potential REACH Registrants. The Consortium covers copper as well as copper slags and copper intermediates arising during production. In its role as secretariat, ECI provides ongoing support to members' activities related to complying with REACH. We made considerable progress on the dossiers for copper intermediates and slags, specifically on agreeing substance identities and the development of hazard assessment data that avoids unnecessary animal testing.

The Voluntary Risk Assessment (VRA) on copper and several copper compounds, drafted by ECI in cooperation with the Italian Istituto Superiore di Sanità, forms the heart of the REACH registration dossier for copper and has the full recognition of the European Commission (EC). The EU regulatory authorities approved the dossier in 2008, and it was further endorsed by the EC's Scientific Committee on Health and Environmental Risks during 2009. The full VRA report and the EC evaluations have been posted on the European Chemicals Agency (ECHA) website panel.

The VRA concludes:

- The use of copper is, in general, safe for Europe's environment and the health of its citizens.
- Copper deficiency may be of concern for some European citizens - with actual daily intakes below the World Health Organisation's nutritional guidelines of 1.4 mg Cu/adult (70 kg)
- Copper is neither a CMR (carcinogenic, mutagenic, reprotoxic) nor a PBT (persistent, bio-accumulative, toxic) material

The VRA also:

- Demonstrates the proactive steps taken by the copper industry to meet its duty of care
- Provides the copper value chain and public authorities with a solid scientific platform on which to base future regulatory initiatives
- Forms the basis of a risk reduction measurement plan in a few specific local situations where risk management actions may be required
- Provides the copper industry with the information it needs to meet its obligations under REACH

There are an estimated 5,000 potential registrants for copper, many of whom are still unclear about their responsibilities due to uncertainties surrounding the exemption on recycled materials and expected changes to waste legislation. This means a key task for ECI is to ensure the Consortium stays ahead of the curve as new developments emerge, and that the group maintains an open and transparent approach on future activities. ECI has set up a dedicated REACH website (see panel) which offers all potential registrants with an effective means of keeping up to date with this important topic.

Getting a Grip on the GHS

The EC's adoption in January 2009 of the Regulation on classification, labelling and packaging (CLP) signalled the implementation of the United Nations' Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Under the GHS, all substances (even ores and concentrates, which are REACH exempt) need to be compliant by 1st December 2010. ECI is leading the global copper industry data-gathering efforts for copper ores and concentrates produced in or imported into Europe, enabling industry to meet its GHS obligations.

We also cooperated with EC experts on drafting the technical guidelines for the environmental classification of metals.

EU Water Framework Directive

As part of the EU Water Framework Directive, a Technical Guidance Document for deriving Environmental Quality Standards for chemicals has been drafted by the EC. The guidance includes the integration of metal bioavailability as part of the compliance checking scheme for surface waters, sediments and biota (freshwater as well as marine water).

ECI, on behalf of the European Association of Metals, Eurometaux, is an active member of the metal-specific drafting group. The guidance will be finalised in 2010 and will be used to set quality standards at European and national level, as appropriate.

Copper is under evaluation as part of a second list of priority substances being drawn up by the EC for surface waters. We have delivered several rounds of comments on the relevant documentation and are objecting to the inclusion of copper based on available information. ECI will continue to monitor this activity in 2010.

Adopting a Common Position on ETS

The EU's efforts to reduce greenhouse gas (GHG) emissions through its Emissions Trading Scheme (ETS), launched in 2005, was the world's first international company-level "cap-and-trade" system of allowances for emitting CO_2 and other GHGs. At the heart of the ETS is the common trading "currency" under which one allowance gives the right to emit one tonne of CO_2.

The ETS currently affects over 11,500 energy-intensive installations across the EU. The copper industry will be impacted under phase three of the ETS (2013 – 2020), when the scheme is widened to cover additional sectors and total EU industrial emissions are capped at 21% below 2005 levels by 2020.

In 2009, ECI helped the European copper industry build a strong common position, and successfully negotiated that the free allowances for the copper sector would be allocated on a "fall-back" option rather than the more stringent product benchmarks set at the level of the sector's top 10%. Another positive outcome is that the copper sector has been recognised as being affected by carbon leakage (i.e. an increase in CO_2 emissions in one country as a result of an emissions reduction by a second country with a strict climate policy) and thus will receive more free allowances.

ECI is geared up to deal with a number of important challenges in the run-up to 2013. Our efforts will focus on the issue of financial compensation for the indirect emissions from electricity consumption. These efforts will be pivotal to determining the future competitiveness of our industry. We remain confident in the ability of the Commission to take appropriate measures to support the European copper sector until a truly global system is in place to ensure our industry is competing on a level playing field.

Curious to know more?

VRA: **echa.europa.eu/chem_data/transit_measures/vrar_en.asp**
REACH: **www.eurocopper.org/copper/reach.html**
GHS: **guidance.echa.europa.eu/docs/guidance_document/clp_en.htm?time=1260956616**

Best Available Technology update

The ECI working group on Best Available Technology (BAT) comprises all its EU smelting and refining members. The Commission's second draft of the revised BAT Reference document for the non-ferrous metals industry includes a substantial contribution based on the members' updated site descriptions as well as the Commission's site visits. ECI will continue to participate in this activity during 2010.

Life Cycle activities

ECI has a well-established track record in using the life cycle approach and has further extended the Life Cycle Inventory (LCI) data on copper to include non EU mining activities. During 2010, downstream users will be able to make use of new life cycle data for copper-based building products.

Policy Map

Enabling the development of future technologies
In the future will we be able to do more with less? How can technologies continue developing, increasing functionality yet diminishing in size and consuming fewer resources? Do we have what it takes to develop high-tech research infrastructures?

Meeting the 20-20-20 energy targets
Reducing energy consumption, improving energy efficiency, slashing CO_2 emissions and remaining competitive: can Europe solve the energy jigsaw? Are smart grids just a pipe dream or can they become reality?

Tackling public health threats
Can the spread of infectious diseases and antimicrobial resistance in hospitals, passenger planes and the food industry be contained?

Reducing the carbon footprint of transport
Moving more people and goods across borders, faster and with a smaller impact on the environment: is this mission impossible? How can the trans-European transport network be realised? When will affordable electric cars hit our roads?

Reducing waste and pollution
Prosperity and reducing waste: are the two compatible? Is there a way to make resource intensive EU industries sustainable and competitive at the same time?

Copper will provide, or will be part of, the solution to these challenges.

CDA Achievements
Focus on the National Network

Benelux – Copper Benelux
Effective messaging

Our latest market research on the Elux campaign, which is being piloted in the Benelux to promote domestic comfort and convenience through the effective use of electricity and electrical appliances, showed that the percentage of participating electrical contractors has now reached around 7%. We expect to reach critical mass, estimated at between 15-20%, in the next couple of years.

Our website continued to provide our main communications channel for both our plumbing and architecture campaigns, as well as for our regular newsletters. We also prepared a DVD for use by architects and installers highlighting the superior durability, fire resistance and high pressure performance of copper versus competing piping materials.

At the end of the year, we organised a seminar highlighting the antimicrobial properties of copper and its alloys, together with its effectiveness in combating *Legionella*. The seminar was very well-received, with feedback showing that we had achieved our objective of providing timely, useful and well targeted information to participants. Our messages on copper's role in minimising the occurrence of *Legionella* in water distribution systems within buildings will be expanded across Europe in 2010.

France – Centre d'Information du Cuivre
Building on experience

We published two Environmental Product Declarations (EPDs), based on the NF P 01 010 French standard, reinforcing our strong focus on providing architects and building engineers with the information they need on the environmental impacts and benefits of using copper products. The EPD on copper tubes is the result of two years' work by our organisation and is the first to be published in the piping sector. Building on the experience gained, we brought out a second, covering the roofing sector, just months later.

In other efforts aimed at the building and construction sector, we produced a 15-minute video illustrating new under-floor heating solutions. We also distributed over 20,000 hard copies of a brochure promoting the use of copper piping. Through the use of an interactive true/false format, this highlighted eight key points designed to correct decision-maker bias against copper. Both launches were backed by a mini video campaign on YouTube.

In the electricity and energy field, our partnership with Schneider Electric delivered the publication of a study analysing market demand and needs on improving the energy efficiency of buildings and the comfort of those who live in them.

Our new French language chapter of ECI's Leonardo ENERGY web platform, which delivers advocacy and education to professionals working in the area of sustainable electrical energy, attracted 1,000 visitors a month.

Germany – Deutsches Kupferinstitut e.V.
Advancing key issues

We continued our efforts to promote the antimicrobial properties of copper touch surfaces in the health care environment. Our press conference, publicising the successful completion of trials in Hamburg's Asklepios Hospital, was a real success, with the resulting media coverage estimated to have reached over 40 million people. The proof that copper fittings can reduce the build up of harmful pathogens, such as MRSA and *Clostridium difficile*, resulted in a surge of interest from hospitals, nursing homes, the medical profession and even industrial companies interested in specifying or retrofitting with copper alloys.

Another success was the launch, at Germany's largest medical trade show, MEDICA, of a new inhalation testing device. This is the first in its field to use antimicrobial copper in a key functional part, as well as in the handle.

We responded to an increased demand for technical support on copper alloys across a broad range of industrial applications. We published a new welding brochure and an update of our copper and alloy machining data, participated in research on fatigue in next-generation automotive wire harnesses, and expanded our technical seminar programme. We hosted our sixth annual Copper University Symposium which attracted strong industry and researcher participation.

In the building sector, we continued with our European pilot promotional programme "Mein Haus kriegt Kupfer" designed to show-case the durability, sustainability and health benefits of using copper in drinking water and heating systems to home owners and developers.

Greece – Hellenic Copper Development Institute

Public health at the fore

We continued our Public Health outreach programme with the publication of Greek language "Antimicrobial Copper" brochures, supported by a number of press releases. We also distributed a DVD featuring presentations from the first international congress on Copper & Public Health, hosted by the HCDI in late 2008. As an example of the effectiveness of the copper network's global promotional efforts, the use of copper alloy surfaces in hospital intensive care units was demonstrated to a team of Greek health policy experts in a conducted tour of Memorial Sloan Kettering Cancer Center in New York, USA.

We participated in a London meeting of the growing number of manufacturers of copper hardware fittings and continue to seek close cooperation with local producers and importers. We are supporting the Greek Health Infrastructure Development Corporation with the data it needs to consider establishing specifications for copper components in Greek hospitals. We started discussions with the Medical School of Patras University on ways to certify the antimicrobial properties of copper and its alloys.

Building on the success of the French and Spanish "Electrical Safety in the Home" programmes, we initiated talks with various commercial companies and professional associations aimed at establishing a similar programme in the Balkans.

In the plumbing sector, we held around 80 seminars, reaching some 2,000 students, and plan a new series to cover the installation of copper roofing and guttering.

On the broader communications front, we continued our regular publication of newsletters and made regular updates to our website. We also updated the Greek section of ECI's website, www.copperconcept.org, which seeks to inspire architects and designers on the beauty of copper in modern architecture.

Hungary – Hungarian Copper Promotion Centre

Local language communications are key

Given the four countries – Hungary, Czech Republic, Slovak Republic and Romania – that fall within our area of responsibility, the use of local language websites to communicate copper's advantages proved to be both a cost effective and successful tool. We received more than 50,000 visitors during 2009. A press release on copper's inactivation of the H1N1 virus, commonly referred to as swine flu, was picked up by a Hungarian daily economic newspaper "Napi Gazdaság" and used by several other websites.

In the building sector, our online competition for plumbing students attracted responses from more than 500 students from 55 schools. Our national trade press publicised the European Copper in Architecture Awards, managed by our colleagues in the UK. This year's award nominations featured three projects from our region. All the entries were featured on the European copperconcept website, which received over 50,000 visitors from this region.

We continued to provide teachers and students in the plumbing and engineering fields with the latest information on copper piping, and continued our certification programme for professional installers working in the gas piping sector.

We organised a series of seminars for building engineers to promote copper's contributions to sustainable building and construction through its use in renewable energy technologies, such as solar thermal, geothermal and photovoltaics.

Italy – Istituto Italiano del Rame

Positive developments

We promoted copper's benefits at two major exhibitions – at SAIE, Italy's leading building trade fair, and at SolarExpo, the leading exhibition on renewable energy technologies. In addition, we organised 28 seminars, highlighting the advantages of copper in installations and sustainable building, which attracted around 2,200 architects, planners, and industry experts. As part of our educational programme, we presented to students in 25 vocational schools and 6 universities of architecture and engineering. Our expertise was well recognised by the Italian standards body, UNI. A new standard for composite copper tube was issued and work has started on the one for its fittings. We have also been accepted as a member of the UNI working group on "Sustainability in Building".

Recognising the evolving needs of our target audiences, we invested heavily in expanding our web based delivery routes. Our main IIR website was completely redesigned and updated. This enabled us to distribute 18 e-newsletters, covering a wide range of topics in plumbing, architecture and electricity.

In cooperation with ECI, we launched www.copperindesign.org. The site offers visitors the chance to rediscover a material whose natural properties and beauty have established it on the design scene over many years.

Poland – Polish Copper Promotion Centre

Networking opportunities

In 2009, we initiated a new campaign to promote copper applications in solar systems and ground source heat pumps. This activity comprised a series of seminars for sanitary engineers, architects, installers and investors.

The 1st International Copper Ore Mining Congress in Poland was an opportunity to effectively showcase the benefits of copper products to modern society. In line with the Congress's theme "Perspectives and Challenges", an experience exchange network was set up to address issues related to global copper ore mining. The Leonardo ENERGY initiative was promoted through an exhibition booth and presentations, including energy efficiency solutions, to 310 participants from different countries.

An official governmental approval for the new legislation covering copper plumbing in water, heating and gas installations was granted for the DSTU standard in Ukraine.

We organised three press conferences in major Polish cities, at which scientists and sanitary inspectors shared their knowledge and ideas on copper as an antimicrobial agent with more than 50 national and local journalists.

With the internet playing an important role in our communications and outreach activities, we focused on upgrading the existing website www.pcpm.pl, developing a new educational platform www.miedz.edu.pl, and complemented these with our technical database at www.ciim.pl. The combination of these offers an excellent source of on-line information to the general public and to students, as well as to value chain professionals such as installers and sanitary engineers.

Russia – National Copper Center

Raising awareness

Increasing public concern over the cross-border transfer of viruses and infections enabled us to increase our communications activities on the antimicrobial properties of copper and copper alloy surfaces. Building on the results of hospital trials that are being carried out elsewhere in the European network, our messages showing how copper and copper alloy touch surfaces can be beneficial to public health achieved nationwide TV, internet and print media coverage. We have started to seek official endorsement of copper's antimicrobial properties through various government agencies.

These messages were also useful in defending the use of copper in plumbing applications against negative and misleading coverage in the trade press. To expand the knowledge of young persons starting careers in the plumbing and architectural sectors, we launched an on-line test and exam resource. This was particularly useful for apprentice plumbers and vocational school teachers based in more remote areas of the country.

We substantially expanded the Russian language chapter of ECI's Leonardo ENERGY programme, which promotes the use of copper across a broad range of sustainable electrical energy applications. Our efforts have achieved high internet visibility and our advocacy was quoted on a number of occasions by the national media.

Scandinavia – Scandinavian Copper Development Association

Meeting challenges

Scandinavia has traditionally had strong environmental policies and practices. We are seeking to use the results of the recently approved copper Risk Assessment to confirm the appropriateness and relevance of key policies and existing limit values. This has helped us to successfully correct erroneous environmental classifications for copper in several databases used by the building and construction sector. Recognising our inputs, the Swedish national guidelines for sustainable building and green procurement in the building sector now accept copper as a sustainable material.

Nevertheless, we continue to face challenges to copper's environmental credibility particularly in city municipalities.

We continued to support a clinical trial using antimicrobial copper and its alloys on touch surfaces at the Veteran Rehabilitation Centre in Pori, Finland. This project has been implemented in cooperation with member companies, manufacturers and Helsinki University's Department of Public Health. Results will be published in 2010.

We are also participating in a Finnish state-funded project on life cycle assessment methodologies and indicators. We are a member of the steering group, as well as various sub-projects, including a case study on the eco-efficiency of buildings. The research bodies leading this three year, €1.4 million project are the Finnish Environment Institute, the State Research Centre and three Technical Universities.

Spain – Centro Español de Información del Cobre

An active year

In the building sector, we focused on interactions with regulators, the issue of new publications on health and environmental sustainability, and a major revamp of our copper plumbing website. The latter attracted over 9,000 new visitors during the last four months of the year.

Our media relations programme enjoyed significant success. As a result of our efforts, more than 160 copper-related articles were published, reaching an estimated print media audience of over 4.7 million people. In cooperation with ECI, we organised a press trip to one of our member company production sites for the Spanish Environmental Journalists' Association. The core topic was to demonstrate the importance of copper recycling in meeting sustainability objectives.

We host the Spanish language chapter of ECI's Leonardo ENERGY programme. This education and training initiative, which develops technical publications and delivers web-based seminars, attracted more than 20,000 visits from energy professionals across Spain and Latin America.

Together with our industry partners, we made a proposal to Parliament, primarily based on improving human safety, for inclusion in the regulations covering the inspection and renovation of domestic electricity installations. While the proposal awaits consideration, its impact on safety and employment is viewed positively by parliamentary groups.

UK – Copper Development Association

From bench to bedside

Our comprehensive outreach programme has taken antimicrobial copper from 'the bench to the bedside' as the first healthcare projects have recently specified copper touch surfaces. Heightened awareness by product specifiers within the health community has led to the mobilisation of the supply chain to produce and actively market antimicrobial door furniture and bathroom fittings. The high quality and rigour of our science base has been accepted at the highest levels in the UK's Department of Health. Extensive media coverage of the interim results of our clinical trials and press communications reached an audience of around 13 million people.

Our 14th Copper in Architecture Awards received 47 entries from 16 countries across Europe. They represented a wide range of building types of a consistently high standard. Extensive media coverage of the winning entries was achieved across Europe, including by Spanish TV. All entries were uploaded onto ECI's www.copperconcept.org website.

Various aspects of the EU's drive to increase supplies of renewable energy provided additional focus for both our plumbing and marine programmes. The energy efficiency benefits of using copper plumbing in solar thermal installations were new features in our UK Copper Board campaign. We also provided technical workshops to the specifiers of offshore wind, wave and tidal power devices, showcasing the anti-corrosion, resistance to biofouling and durability benefits of using copper nickel, particularly for coolers and protective sheathing.

Facts & Figures

Throughout 2009, ECI and its network of eleven national Copper Development Associations operated with a budget of $19 million (€12.8 million) for promotional and regulatory affairs activities across the region.

In addition, the European network's resources managed a $5.3 million budget for projects designed to defend and grow the global demand for copper.

The International Copper Association, representing the world's leading mining companies, independent smelter/refiners and semi-fabricators, provided 60% of the annual budget.

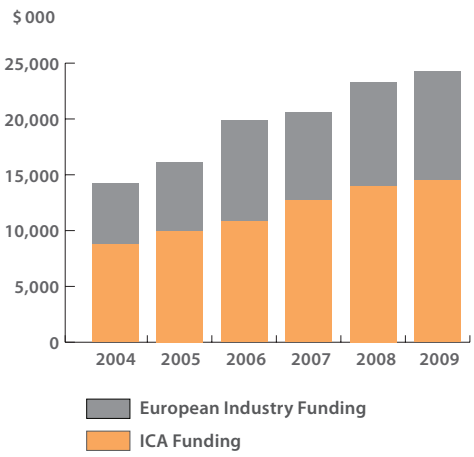
Over 170 partners, both academic institutions and industrial companies, provide strong support for ECI's Leonardo ENERGY programme. The European Union and United Nations Global Environment Fund funded a number of sustainable energy efficiency projects in the east of the region.

This was the second year in which our efforts were boosted by a 2008 grant from the United Nations Global Environment Fund. The GEF awarded $12 million 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).

2009 Funds ($000)

Strategic Initiative	ICA Funding	European Industry Funding	Total
Building and Construction	4,400	2.700	7,100
Electricity & Energy	3,700	2,800	6,500
OEM & Technical Support	2,200	400	2,600
Market Intelligence	100	0	100
Solar Thermal Energy	300	2,400	2,700
Health & Environment	1,400	600	2,000
Communications	1,000	200	1,200
Administration	1,400	700	2,100
Total Funds	**14,500**	**9,800**	**24,300**

ECI Promotion Funds (2004-2009)



	ICA Funding	European Industry Funding	Total $000
2004	**8,740**	**5,520**	**14,260**
2005	**9,960**	**6,170**	**16,130**
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**

Access the Global Network

Headquarters

Francis J. Kane, *President*
International Copper Association, Ltd.
260 Madison Avenue, 16th Floor
New York, NY 10016-2401, **USA**
Phone: + 1 (212) 251 72 42
Fax: + 1 (212) 251 72 45
E-mail: FrancisJKane@copper.org
www.copperinfo.com

Regional Offices

Europe & Africa

John Schonenberger,
Chief Executive
European Copper Institute
Avenue de Tervueren 168, b 10
B-1150 Brussels, **Belgium**
Phone : (32-2) 777-7070
Fax : (32-2) 777-7079
Email: eci@eurocopper.org
www.eurocopper.org

Benoît Dôme, *Director*
Copper Benelux
Avenue de Tervueren 168, b 10
B-1150 Brussels, **Belgium**
Phone: (32-2) 777-7090
Fax: (32-2) 777-7079
Email:
paul@copperbenelux.org
www.copperbenelux.org

Olivier Tissot, *Director*
Centre d'Information du Cuivre – Laitons et Alliages
17, rue de l'Amiral Hamelin
F-75016 Paris, **France**
Phone (33-1) 4225-2567
Fax: (33-1) 4953-0382
Email: tissot@cuivre.org
www.cuivre.org

Dr.-Ing. Anton Klassert,
Director, Deutsches Kupferinstitut Berufsverband e.V.
Am Bonneshof 5
D-40474 Düsseldorf, **Germany**
Phone (49-211) 4796-313
Fax: (49-211) 4796-310
Email: aklassert@kupferinstitut.de
www.kupferinstitut.de

Nick Vergopoulos,
Director, Hellenic Copper Development Institute
2-4 Messogion Str.
Athens Tower, Building C
GR - 115 24 Athens, **Greece**
Phone: (30-210) 686-1590
Fax: (30-210) 686-1589
Email: nbergop@eiax.vionet.gr
www.copper.org.gr

Robert Pintér, *Director*
Hungarian Copper Promotion Centre
H-1053 Budapest, Képíró u. 9.
Hungary
Phone: (36-1) 266-4810
Fax: (36-1) 266-4804
Email: robert.pinter@hcpcinfo.org
www.hcpcinfo.org

Vincenzo Loconsolo, *Director*
Istituto Italiano del Rame
Via C.d'Ascanio 4
I - 20142 Milano, **Italy**
Phone: (39-2) 8930-1330
Fax: (39-2) 8930-1513
Email: vloconsolo@iir.it
www.iir.it

Michal Ramczykowski, *Director*
Polskie Centrum Promocji Miedzi
Pl. Jana Pawla II, nr 1
50-136 Wroclaw, **Poland**
Phone (48-71) 781-2502
Fax: (48-71) 781-2504
Email: mr@pcpm.pl
www.pcpm.pl

Vadim Ionov, *Director*
National Copper Center, Russia
Office 123, IPBC,
Aviacionniy Pereulok 5
Moscow 125167, **Russia**
Phone: (7-495) 223-6981
Fax: (7-495) 223-6346
Email: vsi@cu-ru.ru
www.cu-ru.ru

Pia Voutilainen, *Director*
Scandinavian Copper Development Association
Vaisalantie 2
FI-02130 Espoo, **Finland**
Phone: (358 40) 59 00 494
Fax : (358 9) 412 30 22
Email: pia.voutilainen@scda.com
www.scda.com

José Ramón Morales, *Director*
Centro Español de Información del Cobre
Calle Princesa 79 – 1° izda.
E-28008 Madrid, **Spain**
Phone: (34-91) 544-8451
Fax: (34-91) 544-8884
Email: jrmorales@infocobre.org.es
www.infocobre.org.es

Angela Vessey, *Director*
Copper Development Association UK
5 Grovelands Business Centre
Boundary Way
Hemel Hempstead HP2 7TE,
United Kingdom
Phone: (44-1442) 275 705
Fax: (44-1442) 275 716
Email:
angela.vessey@copperdev.co.uk
www.copperinfo.co.uk

David Machet,
Managing Director
Copper Development Association Africa
53 Rendell Road
Wadeville, Johannesburg,
South Africa
Phone: (27-11) 824-3916
Fax: (27-11) 824-3120
Email: davemachet@copper.co.za
www.copper.co.za

Asia

Richard Xu, *Regional Director*
International Copper Association, China
Room 2814-24, Central Plaza,
381 Huai Hai Zhong Road
Shanghai, **P.R. China** 200020
Phone: (86-21) 6391 5816
Fax: (86-21) 6391 6331
Email: richardxu@copper.org.cn
www.copper.org.cn

Ajit Advani,
Deputy Regional Director
International Copper Promotion Council – India
602, Omega, Hiranandani Gardens,
Powai, Mumbai 400 076, **India**
Phone: (91-22) 6693-7989
Fax: (91-22) 6693-9282
Email: ajit_advani@icpci.org
www.copperindia.org

Latin America

Miguel Riquelme Alarcón, ***ICA Regional Director - Latin America International Copper Association, Ltd.***
Vitacura 2909, Oficina 303
Las Condes, Santiago, **Chile**
Phone: +56 (2) 335 3386
Fax: +56 (2) 335 3264
Email: mriquelme@copper.org
www.procobre.org

North America

Andrew G. Kireta Sr.
President & CEO,
Copper Development Association Inc.
260 Madison Avenue, 16th Floor
New York, NY 10016-2401, **USA**
Phone: (212) 251-7223
Fax: (212) 251-7234
Email: agkiretasr@cda.copper.org
www.copper.org

Access the ECI Membership

AURUBIS AG
Hovestrassse 50
20539 Hamburg, **Germany**
www.aurubis.com

CORPORACIÓN METALÚRGICA CATALANA S.L.
Colonia Lacambra s.n.
08509 Masies de Voltregà (Barcelona), **Spain**
www.lfl.es

CUPORI OY
Vaisalantie 2, Espoo, FI 02130, **Finland**
www.cupori.com

DIEHL METALL STIFTUNG & CO. KG
Heinrich-Diehl-Str. 9
90552 Röthenbach ad Pegnitz, **Germany**
www.diehlmetall.de

HALCOR S.A.
252, Pireaeus street
Athens 177 78, **Greece**
www.halcor.gr

IBP CONEX LIMITED
Whitehall Road
Tipton, DY4 7JU, **United Kingdom**
www.ibpgroup.com

KME Group S.p.A
Klosterstrasse 29
49074 Osnabrück, **Germany**
www.kme.com

LEAF BUSINESS HOLDINGS
Rue du Fourneau 43
4030 Liège, **Belgium**
www.tub-e.com

LUVATA
Europa House, Church Street
Old Isleworth, TW7 6DA,
United Kingdom
www.luvata.com

METALLO-CHIMIQUE N.V.
Nieuwe Dreef 33
2340 Beerse, **Belgium**
www.metallo.com

MONTANWERKE BRIXLEGG AG
Werkstrasse 1
6230 Brixlegg, **Austria**
www.montanwerke-brixlegg.com

MUELLER EUROPE LIMITED
Oxford Street,
Bilston, WV14 7DS, **United Kingdom**
www.muellerindustries.com

OMG KOKKOLA CHEMICALS OY
P.O. Box 286
67101 Kokkola, **Finland**
www.omgi.com

PEGLER YORKSHIRE GROUP LTD.
St Catherines Avenue
Doncaster DN4 8DF, **United Kingdom**
www.yorkshirefittings.co.uk

SANHA KAIMER GmbH & Co. KG
Im Teelbruch 80
45219 Essen-Kettwig, **Germany**
www.sanha.com

SOFIAMED S.A.
Gara Iskar
4 Dimitar Peshev str.
1628 Sofia, **Bulgaria**
www.sofiamed.bg

VIEGA GmbH & CO. KG
Postfach 430/440
57428 Attendorn, **Germany**
www.viega.com

WIELAND-WERKE AG
Graf-Arco-Strasse 36
89079 Ulm, **Germany**
www.wieland.de

ECI Directors

Chairman
Javier Targhetta –
FREEPORT MCMORAN

James Agar – *BHP BILLITON*
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Jaroslaw Romanowski - *KGHM*
Werner Traa – *WIELAND-WERKE AG*

Ex-Officio

Francis Kane – *ICA President*

European Copper Institute
Avenue de Tervueren 168, b 10 - B-1150 Brussels, Belgium
Phone: (32-2) 777-7070 – Fax: (32-2) 777-7079 – eci@eurocopper.org – www.eurocopper.org

GHOSH+NAYLOR