



International Copper  
Association  
Copper Alliance

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# ICA – Sustainable Energy Programs

Pierre Cazelles

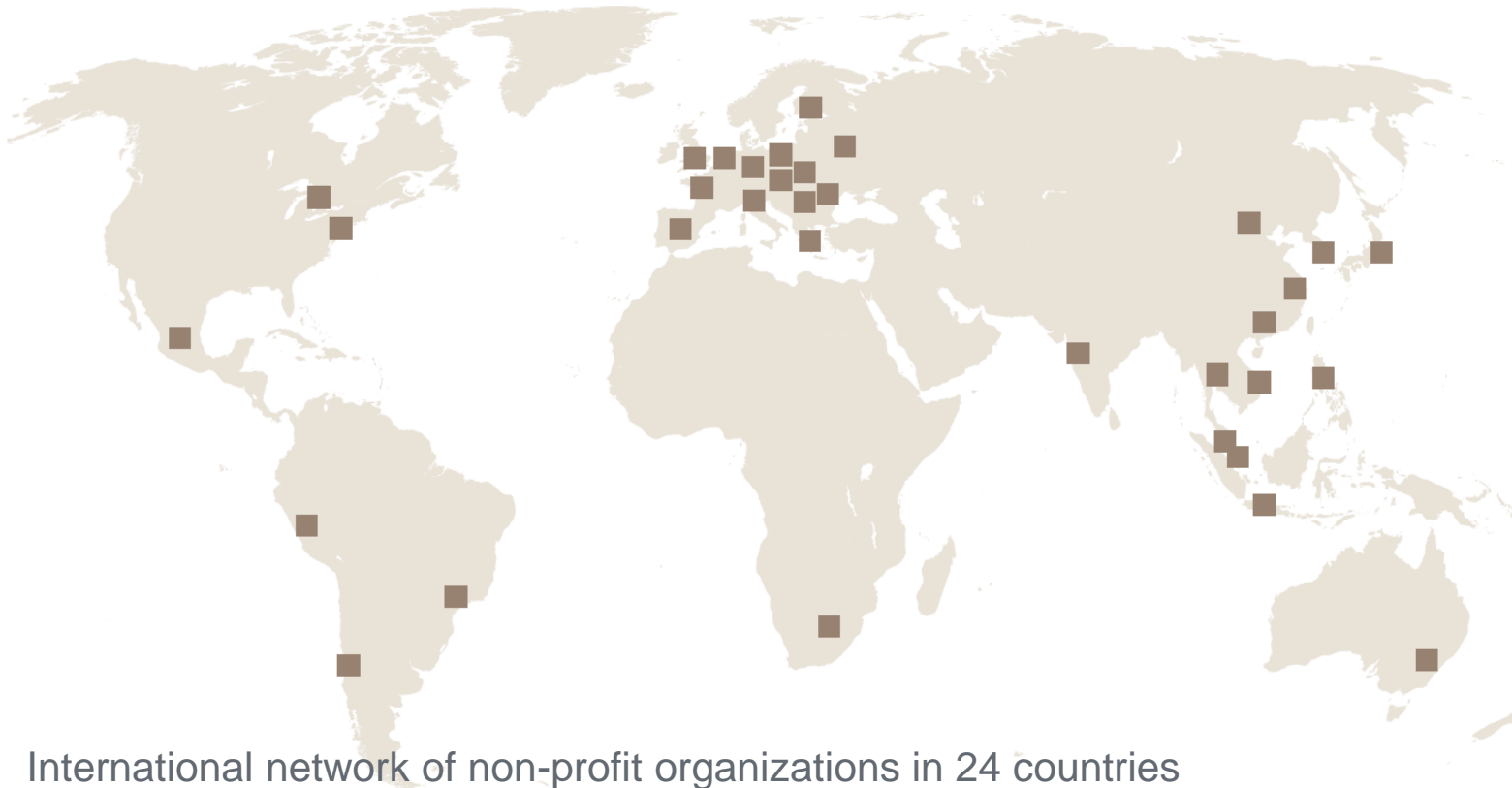
Director – Partnerships Asia



# The Copper Alliance Network

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World Presence

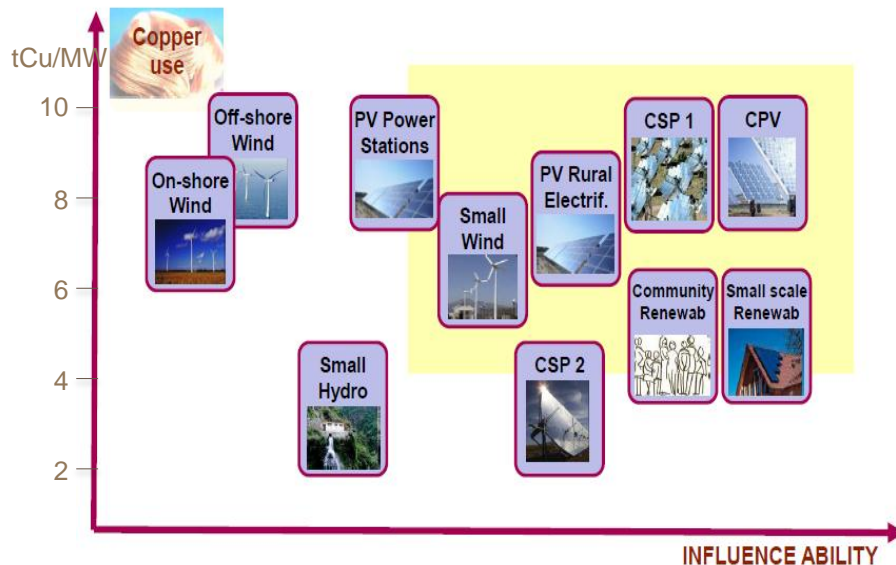


- International network of non-profit organizations in 24 countries
- Headquarters in New-York
- In Asia: offices in China (40 staff), Bangkok (4), Jakarta (2), Hanoi (2), Singapore (8), Taiwan (1), Seoul (3), Tokyo (2), Kuala Lumpur (1), Mumbai-Dehli (12)

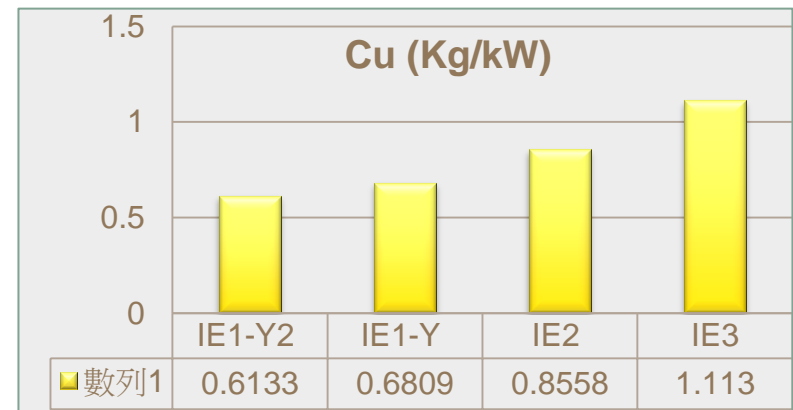
# Copper and Sustainable Energy

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- Copper is the most efficient thermal and electrical conductor (40% more efficient than aluminum)
- Energy efficiency and renewable energy systems imply more copper



Industrial electric motors



- **Increasing the uptake of High Efficiency Motors (HEMs) and Drive systems in Philippine Industries: European Commission** – 1.7 million Euro (starting 1<sup>st</sup> Jan 2014 – 4 years)
- **China Heat Pump Water Heater Challenge Program: European Commission** – 1.6 million Euro (starting 1<sup>st</sup> Feb 2013 – 4 years)
- **Promotion and deployment of energy efficient air conditioners in ASEAN: European Commission** – 1.7 million Euro (1 Jan 2013 – 4 years)
- **With APEC:** Harmonization of EE standards for AC in ASEAN; Distribution transformers MEPS survey; **Develop training program for installers and designers in solar PV rooftop** (under US lead); **Establishment of the APEC Network of MV&E authorities** (under Australia lead)
- **With SEAD:** HPWH international standards review; Motor repair practices international review

- **Sustainable energy = 60% of ICA's programs**
- **Renewable energy:**
  - Decentralized energy
  - Distributed generation
- **Energy efficient appliances:**
  - Air conditioners
  - Heat pump water heaters
- **Industrial energy efficiency:**
  - Motors
  - Transformers
- **Power distribution**
  - Transformers
  - Underground power cabling
  - Utilities efficiency program

- **Air conditioners (EU funding: 500K, ICA funding: 300K):**
  - In ASEAN, harmonization of MEPS, capacity building for manufacturers and labs, consumer awareness (EU funding)
  - In China: support standard making for inverters and central AC systems (increasing MEPS); support top runner program in Shanghai; organize round Robin test between China major labs and labs in SEA; support CNIS with training programs for manufacturers and labs on new EE standards for inverters and central AC systems; consumer awareness programs
- **Heat Pump Water Heaters in China (EU funding: 500K, ICA funding: 250K):**
  - Support government policy to categorize HPWH as RE tech (to be eligible to RE subsidies)
  - Support CNIS to making one single EE standard for all water heaters
  - Establish industry alliance
  - Capacity building for HPWH manufacturers
  - Consumer awareness campaigns

- **Electric motors (ICA funding for SEA: 175K; for China: 550K; for India: 200K):**
  - In the **Philippines**, pilot projects in sugar mills, support establishment of ESCOs and financing instruments (with EU funding)
  - In **Indonesia**, develop MEPS (MOU signed with DG Energy)
  - In **Vietnam**, finalize MEPS (with VSQI)
  - In VN, MAL, TH conduct market survey
  - Establish **ASEAN Alliance for HEMs**; organize regional HEMs forum
  - In **China**:
    - Persuade government to strengthen enforcement of MEPS through compliance study reports
    - Support AQSIQ and CNIS on market enforcement
    - Support MIIT with preparation of IE1 motor phasing out roadmap
    - Support technology analysis on IE4 options (CMR, PM, SM)
  - In **India**:
    - Work with BIS and BEE to increase mandatory MEPS to IE2
    - Training of end-users (industry) and development of pilot projects with TERI
    - Training on motor repair practices
    - Training of small motor manufacturers to meet IE2 specs.

- **Distribution transformers (ICA funding: for China: 380K; for India: 80K):**
  - In China:
    - Develop govt. DSM program to support replacement of old DT by grade1 DT; organize DSM forum with NDRC
    - Disseminate TOC/LCC software and organize training workshops with utilities and industries
  - In India:
    - Work with BIS to upgrade EE standard
    - Implement one pilot project (Higher EE transformers)
    - Capacity building for utilities and industries
  
- **Power Distribution System EE with utilities (12 electric utilities from Thailand, Laos, Cambodia, Vietnam, Philippines, Indonesia) (ICA funding: 410K):**
  - Introduced Low Loss Transformer Specifications & Benefits to Utilities (procurement policies)
  - Capacity building in Underground & Submarine Cabling
  - Capacity building on smart grid: System reliability and power quality
  - Regional Technical Working Group (TWG) for the conversion of OH power lines to UG, harmonization of standards



- **In China (ICA funding: 440K):**

- Assist relevant government departments for renewable energy (RE) and distributed generation (DG) policy-making by submitting proposals or research reports, white papers
- Join/support the drafting or revision of standards and codes on RE & DG
- Build strong industry alliances to promote RE technologies
- Develop training/education programs for installers, designers and end-users

- **In SEA (ICA funding: 295K):**

- Malaysia: Partnership with SEDA for the development of net metering rules
- Philippines: Continue dissemination of new net metering rules and opportunities for rooftop solar PV; Publication and dissemination of performance of Meralco demonstration project
- Vietnam: Complete grid impact studies and draft wind grid code; support pilot projects for the Danang Solar City Roadmap
- Regional: Development of regional training and certification program for installers (of rooftop solar PV)

- **In India (ICA funding: 150K):**

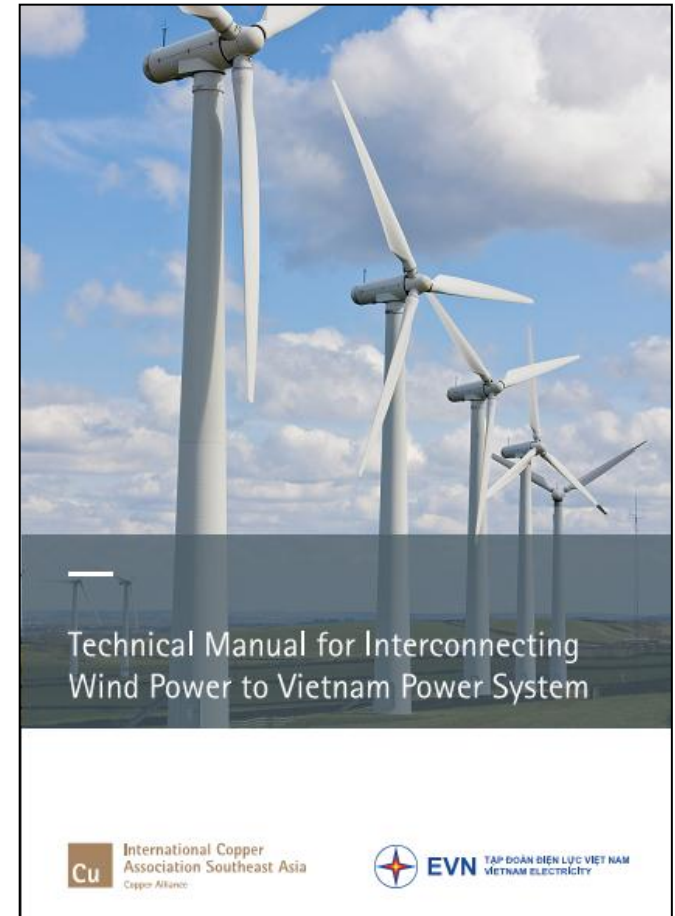
- Support BEE on RPO compliance, training of auditors, conduct of performance audits
- Conduct training for solar PV installers

## Wind interconnection to the grid

- Based on ongoing work with Vietnam on Vietnam grid interconnection code for wind power systems
- Follow-up to or synergies with:
  - Japan's EWG 02/2009: Addressing grid-interconnection issues to maximize NRE
  - Vietnam's EWG 07/2012: Small hydro and Renewables Grid Interconnection Workshop
  - Smart grid initiatives

## Background:

- **Technical Manual for Interconnecting Wind Power to Vietnam Power System** developed in 2012-13 by ICA and EVN (Vietnamese and English versions)
- **Objective:** Bring wind power projects in Vietnam to higher standards of development, implementation and operation
- **Follow-up work (ongoing 2013-2014):** development of Vietnam grid interconnection code for wind power systems (MOU signed by EVN and ICA in Hanoi in September 2013)



**Objective:** Accelerate the development of wind power in APEC economies through appropriate grid interconnection codes

**By:**

- **Sharing experience** accumulated in the preparation of the technical manual for Vietnam and development of the code among APEC economies:
  - Methodology
  - Outputs
  - Benefits
- **Building capacity** of relevant stakeholders in APEC economies to develop such technical guidelines and code: power utilities, ministries of energy, academia

# Activities and outputs

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1

- Analyze status of wind power development, wind grid interconnection codes, wind potential in APEC developing economies; conduct gap analysis

2

- Review Vietnam experience in light of above-mentioned analysis; formulate roadmap

3

- Develop guidelines for the conduct of studies and development of codes in APEC developing economies based on outputs 1 and 2

4

- Prepare training materials and publish guidelines

5

- Conduct dissemination and capacity building workshop for selected stakeholders among APEC developing economies

# Timing – Work – Budget (estimate)

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Activity	Description	Est. cost (USD)
1. Analyze status; conduct gap analysis	Done by external consultant	30,000
2. Review Vietnam experience in light of output 1; formulate roadmap	Done by ICA and external consultant	-
3. Develop guidelines based on outputs 1 and 2	Done by external consultant under ICA guidance	30,000
4. Prepare training materials and publish guidelines	Done by external consultant under ICA guidance	20,000
5. Conduct dissemination and capacity building workshop for selected stakeholders among APEC developing economies	Logistics, travel cost for participants and speakers	30,000

Duration: 1.5 years

APEC funding sought: 110,000 USD; ICA co-funding: 50,000 USD

# Thank you

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