

Accelerating the Growth of Renewable Energy

Masaomi Koyama
Senior Programme Officer - Innovation and Technology

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International Renewable Energy Agency (IRENA)

Established:	April 2011 (Innovation and Technology Centre: October 2011)
Mission:	Accelerate deployment of renewable energy
Mid-term strategy:	Hub, voice and objective information source for renewable energy
Members:	131 members (130 States and European Union) 37 Signatories / States in Accession, 1 Applicant for membership *As of 3. May 2014 **States and regional intergovernmental economic integration organisations
Mandate:	Sustainable deployment of the six RE resources (Biomass, Geothermal, Hydro, Ocean, Solar, Wind)
Location:	Headquarters in Abu Dhabi, United Arab Emirates Innovation and Technology Centre – IITC in Bonn, Germany
Director-General:	Adnan Z. Amin

IRENA Activity Highlights



I. Planning for the global energy transition

Water, Energy and Land Nexus

REmap 2030

A Renewable Energy Roadmap

II. Gateway to knowledge on renewable energy

GlobalAtlas
FOR RENEWABLE ENERGY

irelp IRENA
Renewable Energy
Learning Partnership

Your Renewable Energy Future is just one Click away

COSTS
Renewable Energy Costs, Technologies and Markets

IRENA Renewable
COSTING ALLIANCE

Coalition for Public Support

III. Enabling investment and growth

irevalue
A knowledge building platform on the socio-economic value of renewable energy

IRENA ADFD
Supporting Energy Transition

IV. Renewable energy access for sustainable livelihoods

IOREC
International Off-Grid Renewable
Energy Conference & Exhibition

Mini Grids / Off Grid

V. Islands: lighthouses for renewable energy deployment

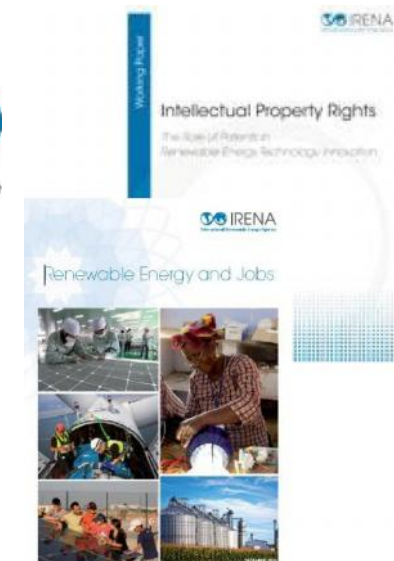
GREIN

Partnerships for Action in SIDS

VI. Regional action agenda

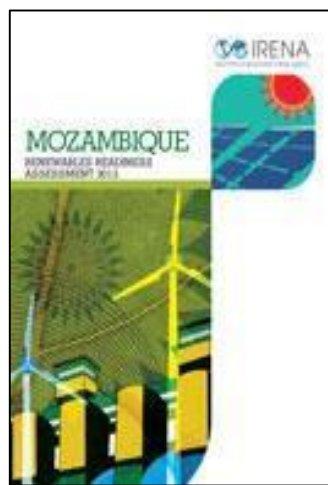
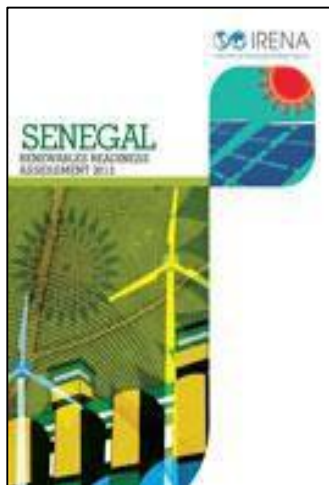
Africa Clean
Energy Corridor

Central America Clean Energy Corridor



Renewable Readiness Assessment and Advisory Services (1)

- **Renewable Readiness Assessment (RRA):**
 - Country driven process
 - Assess key policies, potentials and technologies for renewable energy deployment
 - Identify actions necessary to create an enabling policy and decision-making framework



□ Renewable Energy Resources:

- Capacity and Knowledge Building: A strategic plan covering the technical skills and human capacity required for renewable energy resource development is lacking
- Cross-institutional Cooperation: Cross-institutional cooperation, particularly renewable energy data sharing, is not sufficiently developed in a formal sense both domestically and internationally
- R&D Funding: Specific plans have yet to be developed in relation to the sources of financial support needed to undertake research into the application of renewables in Mongolia's environmental conditions

□ Trans-boundary Grid Infrastructure Development for RE and Potential of Super Grid for Northeast Asia:

- Regional Energy Cooperation Strategy: unclear about how to develop an implementable cooperation
- Resources and Technologies: unclear what an improved assessment of renewable energy resources and technologies that can be developed for trans-boundary power exchange
- Northeast Asian Super Grid: unclear about the achievable target that would deserve further investigation that would help make it a reality

Renewable Readiness Assessment and Advisory Services (2)

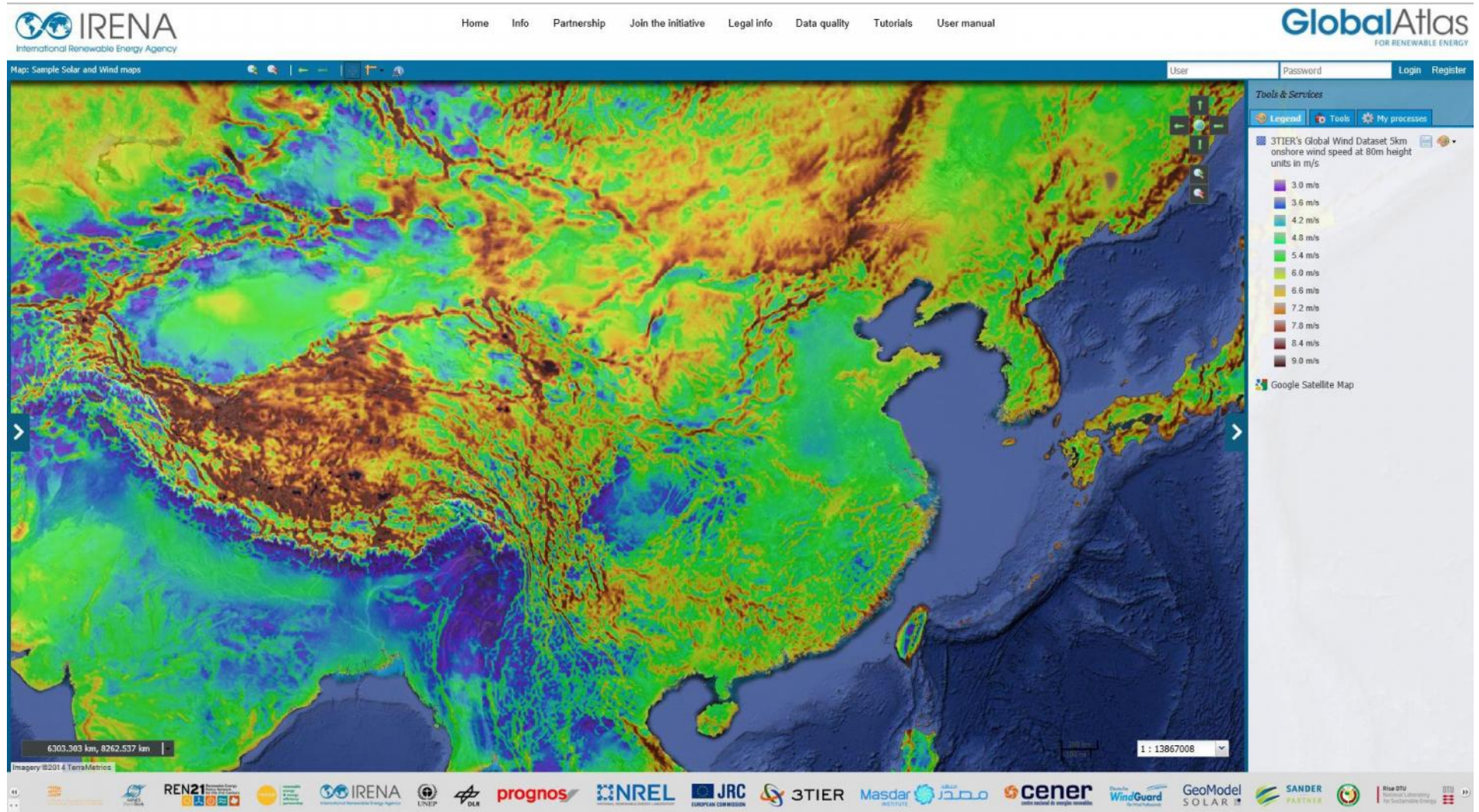


➤ Advisory Services:

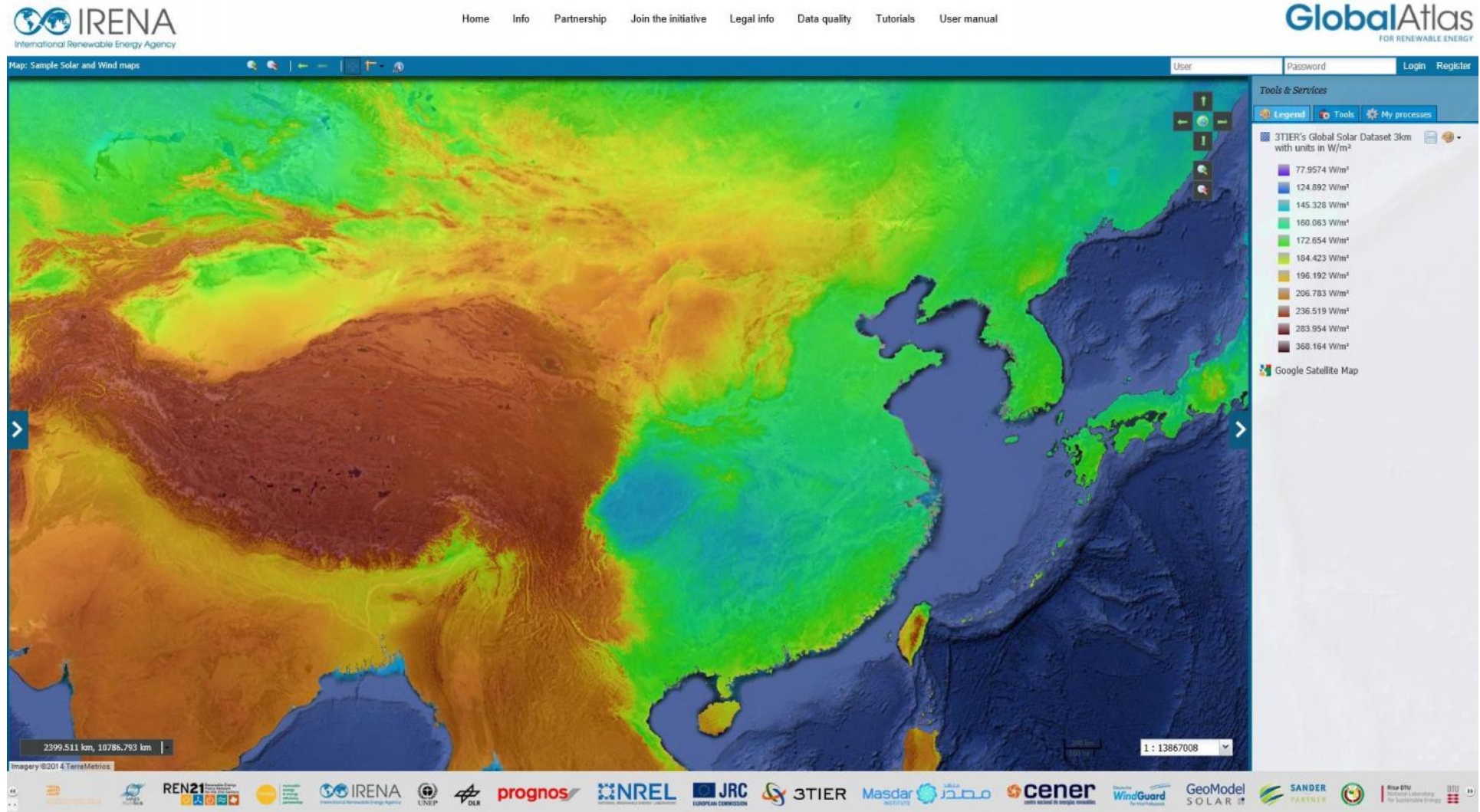
Advisory services on

- Resource assessments
- Legal and regulatory frameworks
- Implementation of standards and quality assurance mechanisms
- Structuring public-private partnerships
- RE technology deployment frameworks such as small hydro development in Latin America, biomass co-generation, solar and wind in Caribbean and Africa

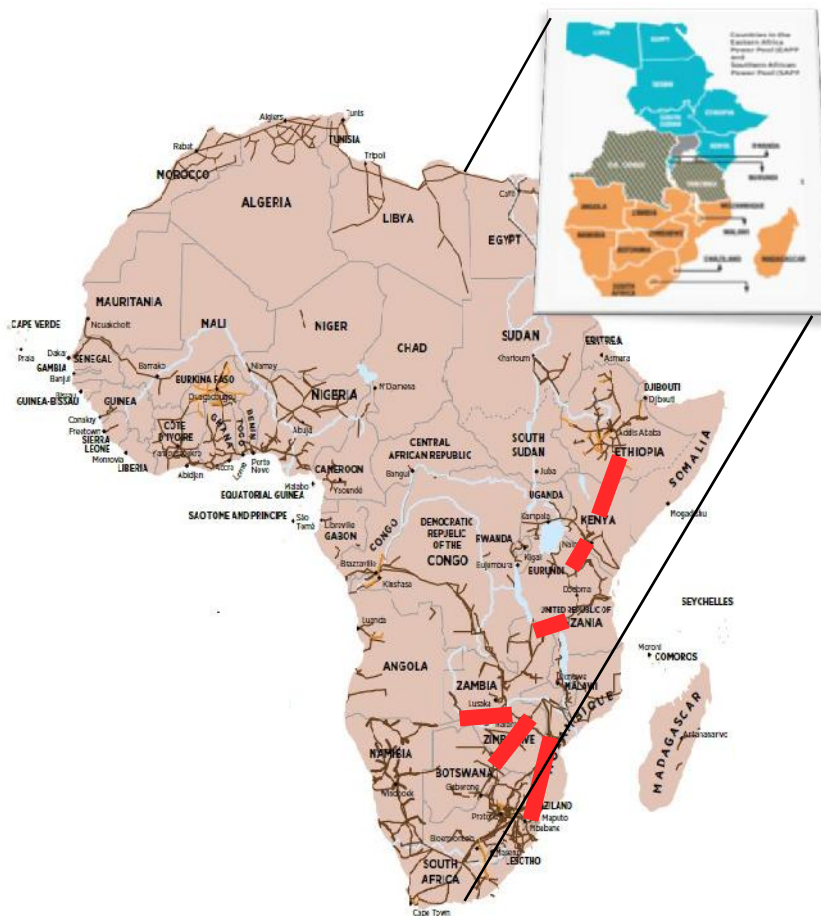
Global Atlas (Wind Resources)



Global Atlas (Solar Resources)



Africa Clean Energy Corridor



Transmission links between Eastern and Southern African Power Pools are expanding

Major opportunity for harnessing the renewable energy (RE) potential in the two sub-regions – complementarity of different RE resources at different locations

Renewable power can provide a large share of electricity in an Africa CEC from Egypt to South Africa

Affordable, clean and secure electric power supply for Africa

Forthcoming CEC: Central America, ASEAN, MENA

Regional Clean Energy Corridors (Process Concepts)



Zoning: renewable power development zones to cluster development and plan cost-effective transmission links to load centres

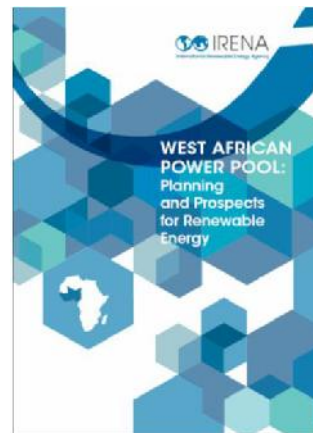
Planning: integrated resource planning at country and regional level to incorporate a greater share of cost-effective renewables

Enabling: open markets, reduce financial risks to boost renewable power investment.

Capacity Building: to plan and operate power grids with higher share of renewables

IRENA Africa Energy Planning Programme

- Inventory of existing power plant
- Projections of electricity demand and supply for 2030
- Pan-Africa power trade model
- Power pool models with country detail

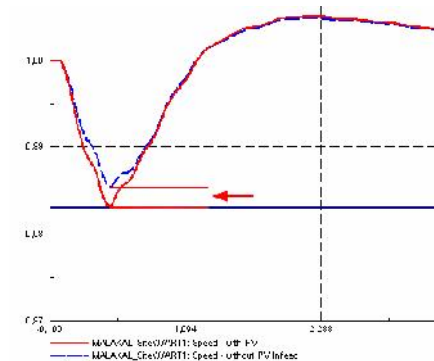


- In cooperation with University of Cape Town and Technical University Stockholm (KTH)
- Goal: provide planning tools, assist in capacity building, provide investment advice

IRENA
International Renewable Energy Agency

Aims of IRENA studies:

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Source: *PowerFactory*

IRENA Grids & Storage

- Support Studies

1. Technology brief on electricity storage

- Pumped hydro dominant with 95% of storage capacity (150 GW compared to 5500 GW power generation cap)
- New battery developments promising, but high cost

2. Storage for Islands: Guide for Decision Makers

- Storage can increase efficiency of diesel generators even in absence of renewable
- System integration is key factor
- Transport costs of equipment, maintenance and operation can be complex

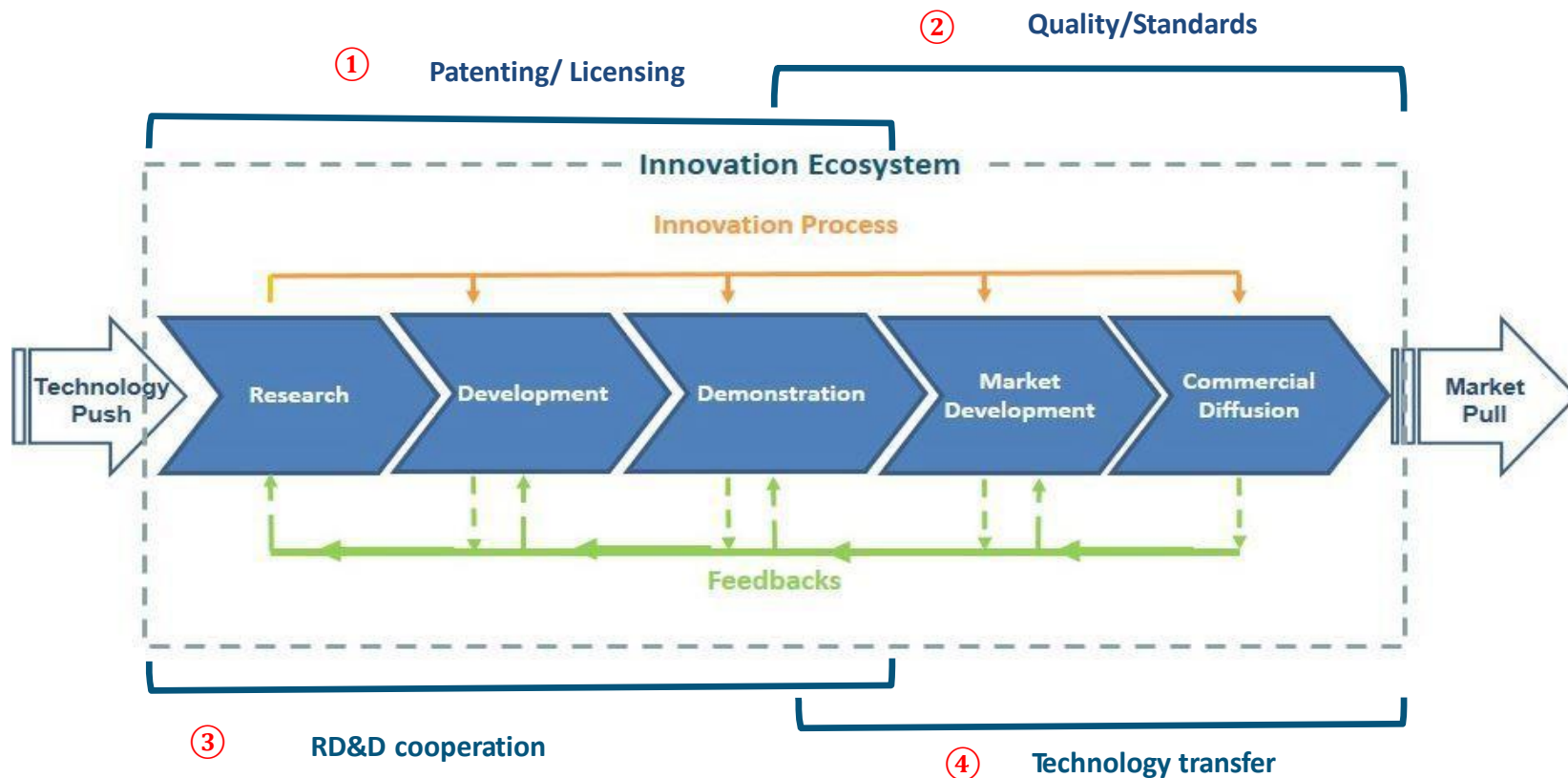
3. Smart grids and renewables

- Important new technology solutions are emerging
- Distributed storage is one of them
- Complementary policies and regulations needed
- Standards and grid codes
- Set rules for ownership/control of distributed storage



Innovation Activities

IRENA initiated an assessment of various instruments for renewable energy technology innovation

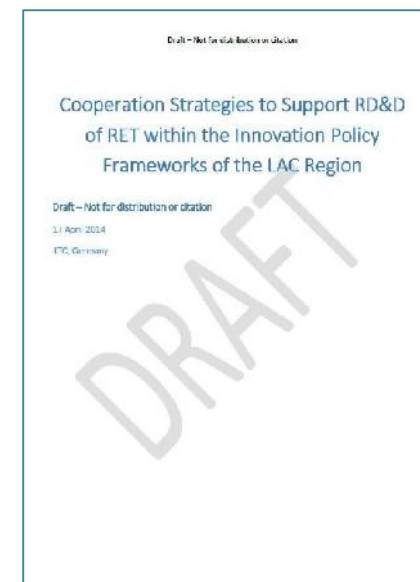
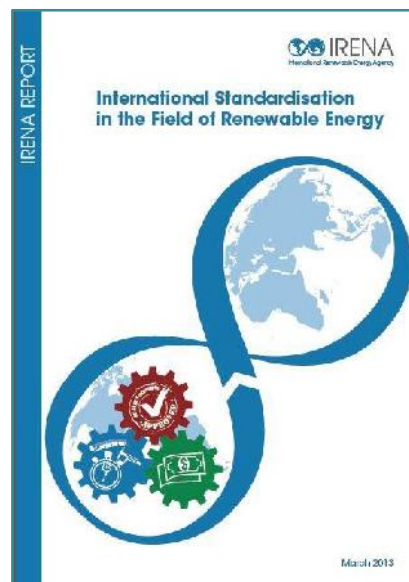
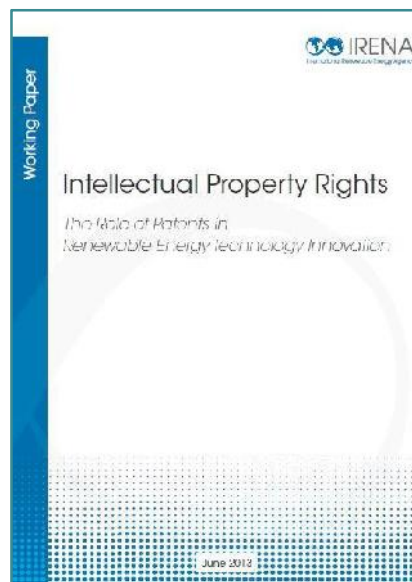


Quality Assurance and Standardisation

- **Industry-based certification of installers and technicians in RE technologies**
 - ASU, PPA, SEIAPI
- **Harmonization of national standards with international standards of RE equipment**
 - Pacific Islands: Regional technical guidelines for PV systems (IRENA, SEIAPI, PPA)
 - Planning for similar work in other regions
- **Access to information**
 - Web-based platform to facilitate access to accurate and up-to-date information on RE related standards
- **Testing and certification of equipment**
 - Study on affordable quality assurance for RE equipment in emerging economies (solar water heaters and small wind turbines)

Engagement in Innovation Activities

- Technology Executive Committee of United Nations Framework Convention on Climate Change
- Example in Latin America Region: Dialogue with Trinidad and Tobago and Ecuadorian governments on the application of the recommendations to strengthen cooperation in RD&D



- Diffusing research opportunities
- Promoting initiatives
- Communicating stakeholders
- Informing of funding opportunities
- Increasing players visibility
- Enabling assimilation of RET
- Sharing best practices
- Spreading socio-political awareness

Capacity building

- Knowledge, skills and attitudes
- Small initiatives with big impact
- Cross cutting
- Demand led
- Leverage key partnerships
- Create impact

**Capacity needs
assessments**

**Policy and
regulatory
frameworks**

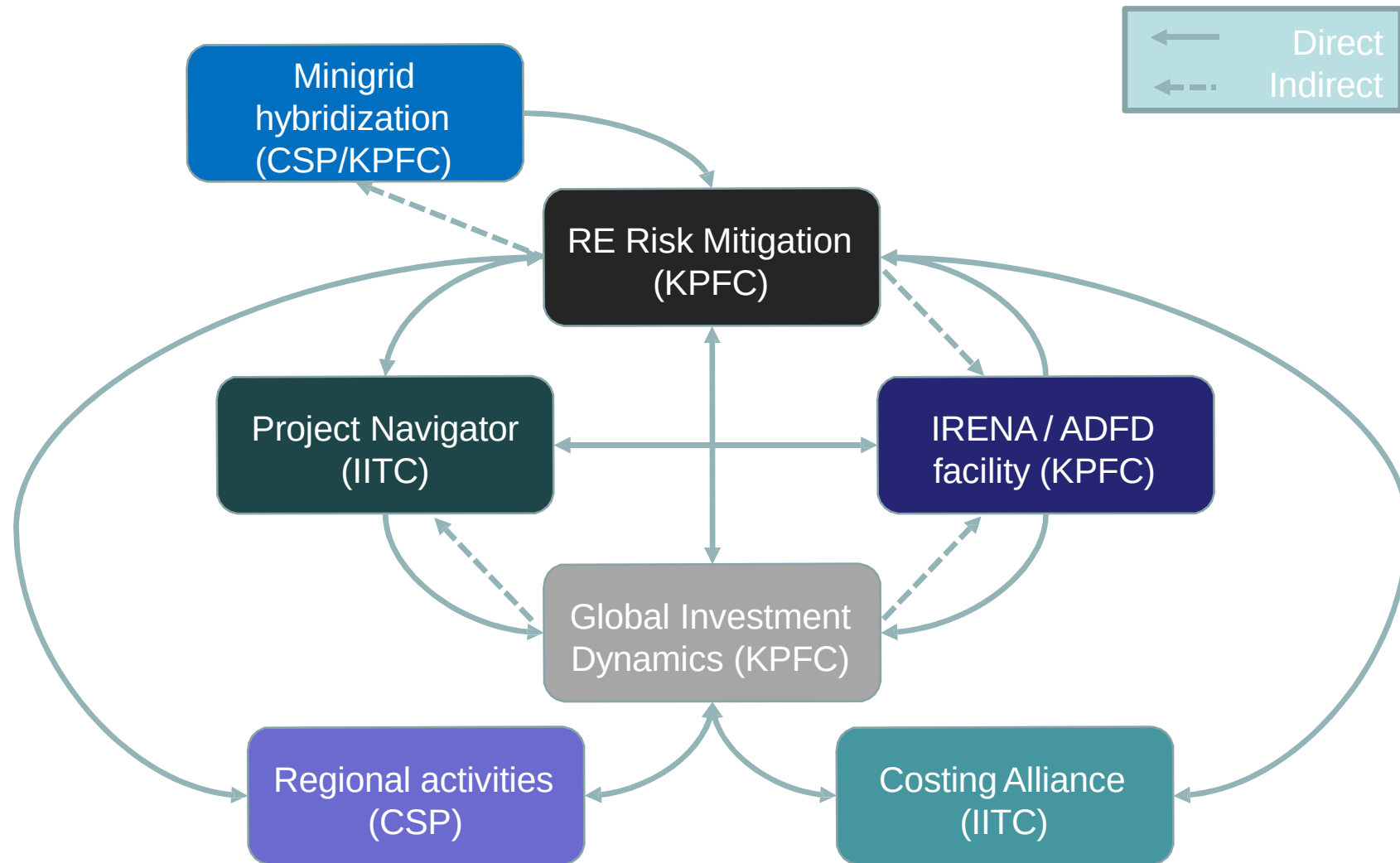
**Financial
institutions and
entrepreneurs**

**Technical
capacity building**

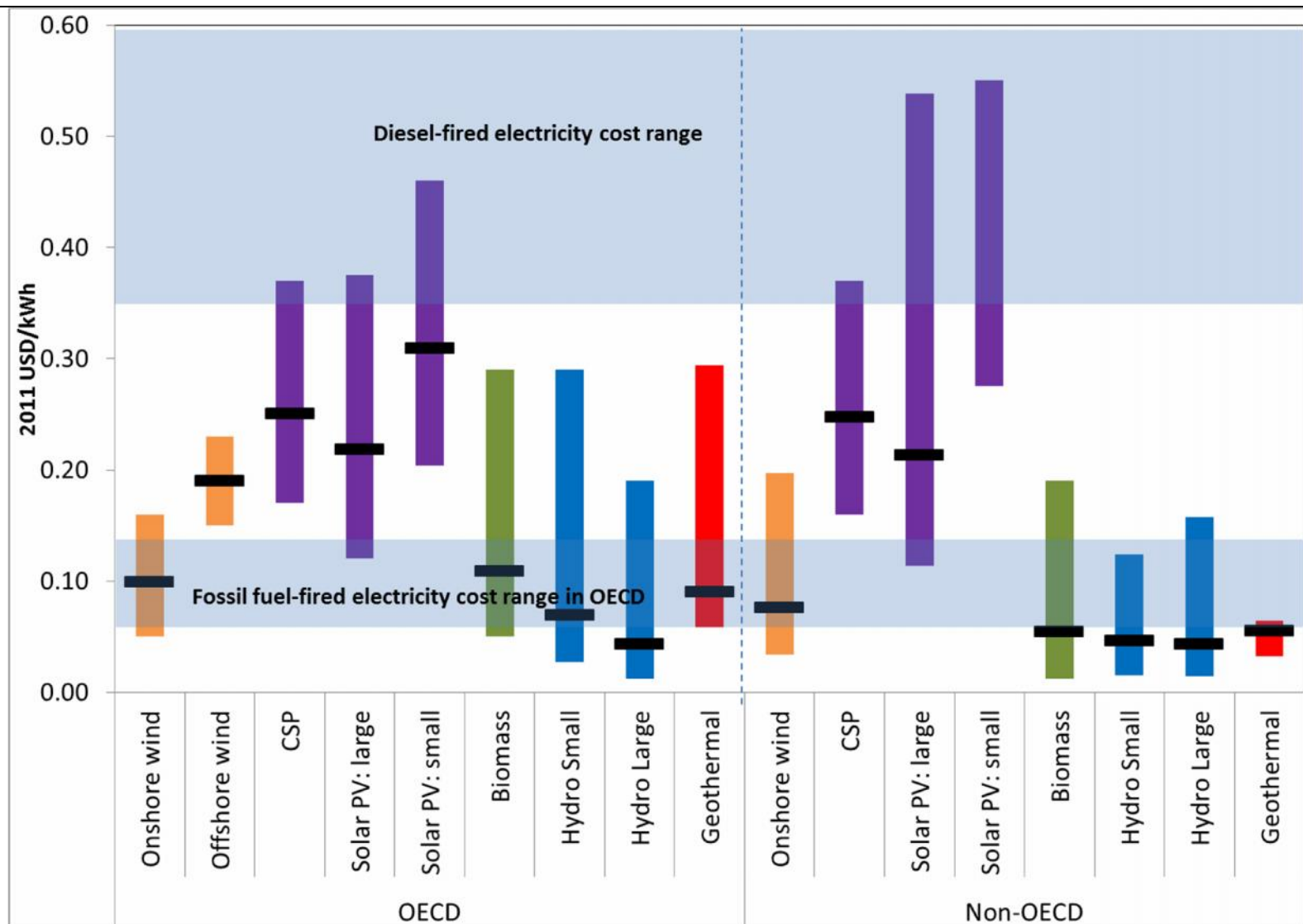
**Empowering
through
partnerships**



IRENA finance activities



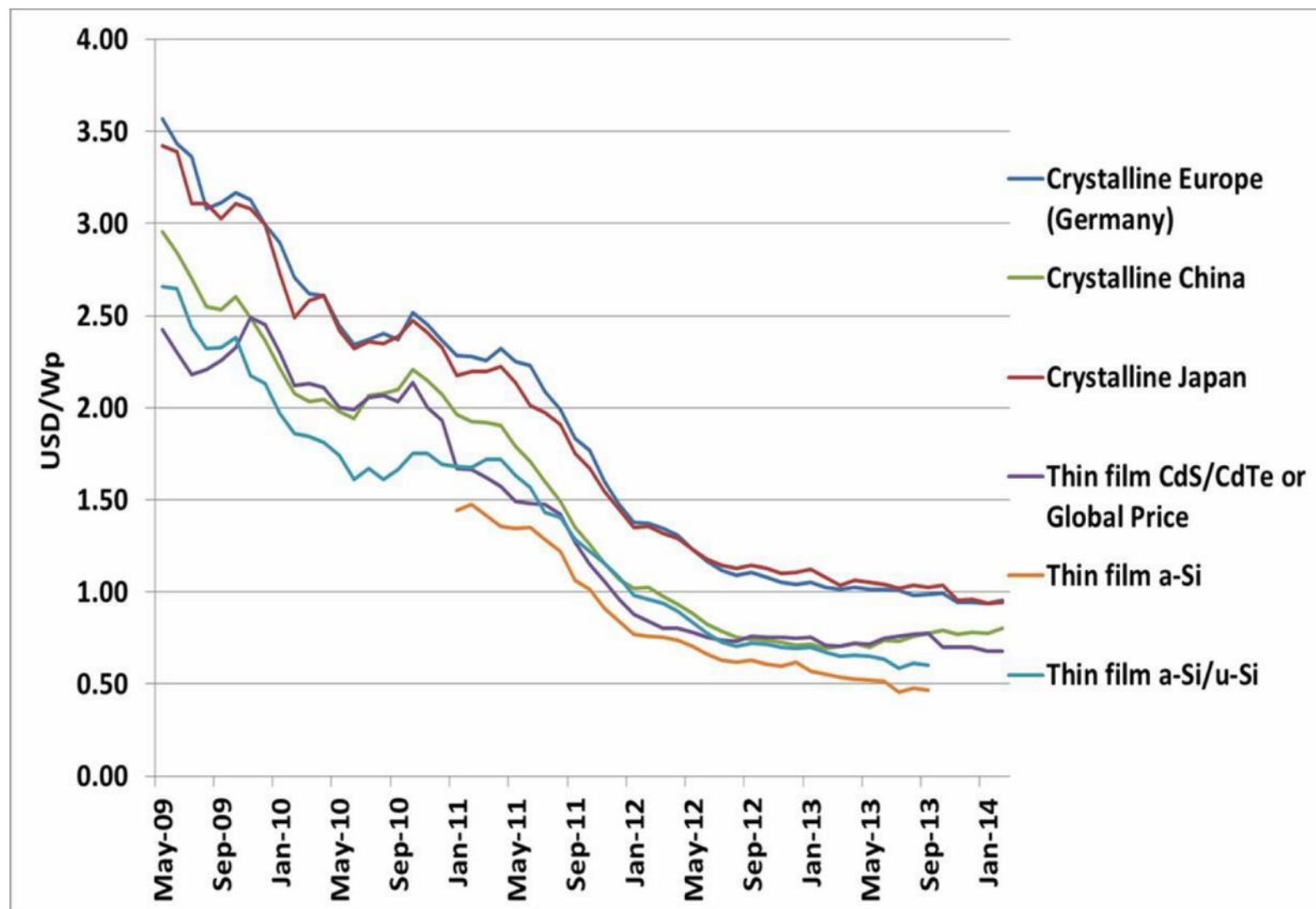
IRENA Costing Alliance: Renewable Power Competing



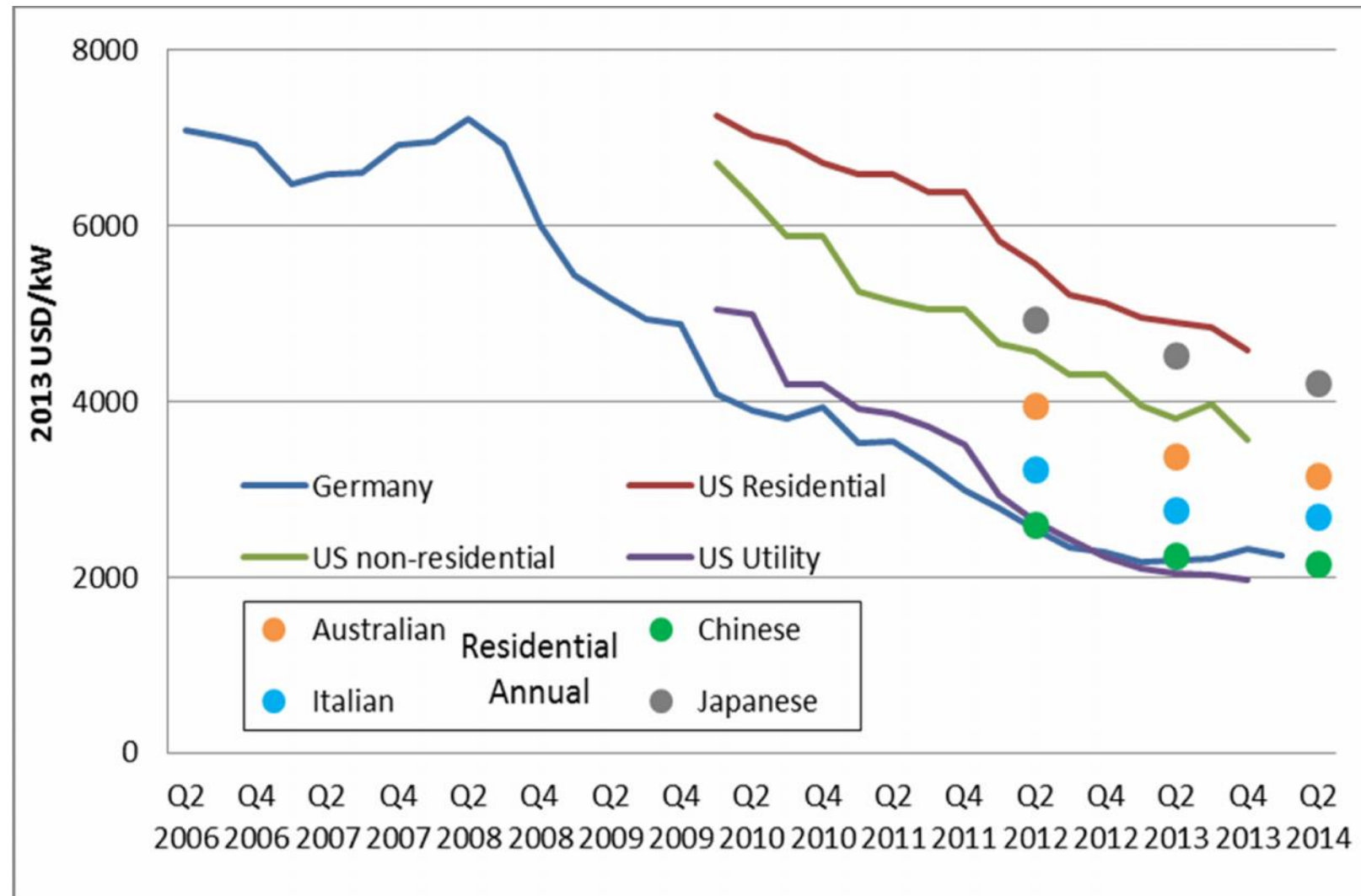
Note: assumes a 10% cost of capital

Source: IRENA

Average monthly solar PV module prices by technology



Solar PV system price trends by sector and country



THANK YOU !

WWW.IRENA.ORG