



Needs and Gaps in Standardisation for Renewable Energy: Actions to facilitate the best use of standardisation for renewables

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Issues addressed here

- Trade in goods associated with solar PV and wind technologies: recent trends and possible implications for standardization issues.
- The role of standards in facilitating trade in products and services associated with the redeployment of RE technologies.
- Standards-related measures that may create potential barriers to trade, taking into account the vary nature of the development and deployment of RE technologies.

**Markets for RE technologies and
international trade in RE products,
components and services**

Focus on solar PV and wind

Markets for RE technologies (USD billions)

	2004	2008	2009	2010	2011
Solar PV (modules, system components, and installation)	7.2	29.6	36.1	71.2	91.6
Wind (new installation capital costs)	8.0	51.4	63.5	60.5	71.5
Biofuels (global production and wholesale pricing of ethanol and biodiesel)	n/a	34.8	44.9	56.4	83.0

Source: Clean Edge, Clean Energy Trends 2012, March 2012

RE markets and international trade

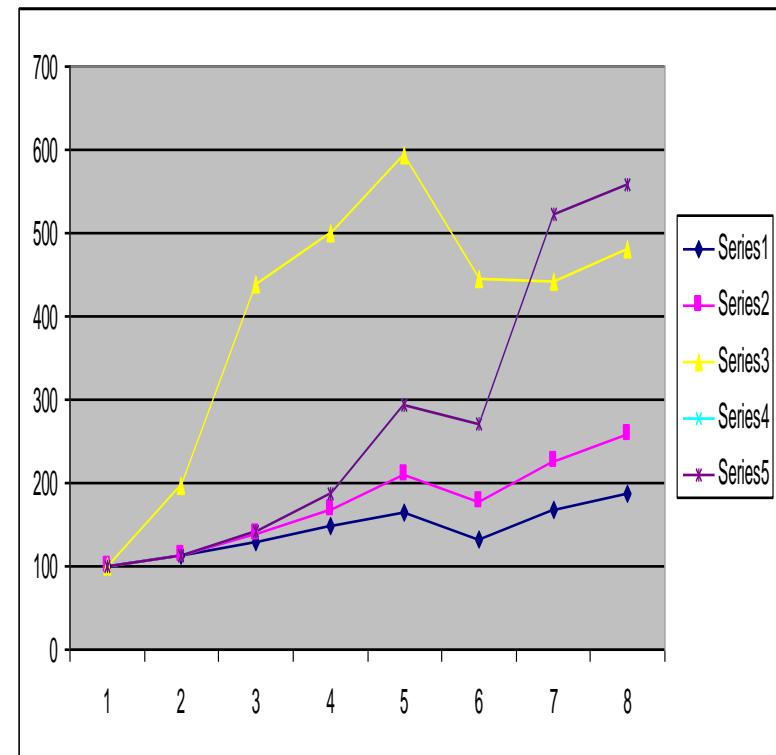
The trade intensity of RE markets varies widely.

- The solar PV market generated around USD 70b of world trade (of solar PV modules, HS 854140) or USD 60b if intra-EU trade is excluded.
- The wind market generated around USD 4.5b of world exports (of wind turbines, HS 850231) and less than USD 4b if intra-EU trade is excluded.
- Trade in other RE products and components is rather small (e.g. SWH and hydraulic turbines) and/or difficult to assess (e.g. trade in CSP).

World exports (excluding intra-EU trade) of RE technologies, 2004-2011

- Exports of PV panels at USD 57.6b in 2011, increased from USD 10.3b in 2004.
- Exports of wind turbines increased very rapidly until 2008, driven largely by US imports. Exports in 2011 (USD 2.7b) 20% below 2008 peak.
- Exports of larger range of climate-related products defined by ICTSD grew faster than all manufactured products as a group.

- Graph (index 2004=100)



The wind-turbine industry

- Traditionally dominated by Europe.
- EU27 accounts for 80% of world exports (including intra-EU trade), half of which is intra-EU trade.
- The EU accounted for 95% of world exports (excluding intra-EU trade in 2004 (more recently around 75%))
- Five of the world's 10 largest wind turbine manufacturers are now from China (Goldwind, Sinovel, United Power and Mingyang) and India (Suzlon Group). Chinese companies largely manufacture for the domestic market, but are recently getting involved in exports.
- US largest and fastest-growing import market until 2008, but imports have since declined.
- EU imports almost entirely consist of intra-EU trade. Chinese imports have declined since 2007, despite strong market growth.

Trade and the deployment of RE technologies across countries

- International trade can play a key role in promoting the availability of cost-effective products, components and services associated with the deployment of RE technologies in many countries.
- Standardization is necessary to allow trade to play this role
- In some cases, standard-related measures may create unnecessary restrictions to trade.

Role of standards

- Disseminating knowledge and innovative advances in technology.
- Sharing good management and conformity assessment practices.
- Ensuring product quality.
 - Most countries moving towards increased use of RE will have to rely on imports of associated products and components which are not (yet) produced or used domestically. They may have no standards and conformity assessment in place. Standardization must ensure the quality and robustness of imported equipment to ensure that equipment functions well and avoid costly replacements.

Nature of RE technologies

- The very nature of RE renewable energy technologies means that standardization requires to keep pace with developments in the various fields.
- Governments may use standards and regulations to protect the early market development of strategically desirable RE technologies.

Standards: increasing prominence in international trade

- Trading RE technology products
 - Increasing buyer-seller confidence.
 - Standards as trade and marketing tools.
- Complex supply chains (e.g. solar PV)
 - Connectivity and compatibility of inputs sourced in global markets.
 - Flow of product-related information.
 - Assess cost effectiveness and the technical and manufacturing expertise of various suppliers.
 - May assist small and medium-sized enterprises (SMEs) to participate in global supply chains.

Roles in RE technologies standardization

- **Industry:** develop voluntary standards.
- **International standards organizations**
- **Trade community** (principally WTO)
- **National governments**

Examples of international standards for RE technologies

International Electro-technical Commission (IEC)

- Technical Committee 4: Hydraulic turbines.
- Technical Committee 82: Solar photovoltaic energy systems.
- Technical Committee 88: Wind turbines.
- Technical Committee 114: Marine energy – Wave and tidal energy converters.
- Technical Committee 105: Fuel cell technologies

Examples:

- PV standards for thin-film solar panels, balance-of-system components, battery storage systems and guidelines for Decentralized Rural Electrification (DRE) projects in developing countries
- Standards for wind turbines and gearboxes used in wind turbines

Potential barriers to trade

(given the vary nature of RE technologies)

- Lack of national standards for testing and certification.
 - Lack of national implementation of IEC and/or ISO RE international standards
- Lack of harmonization efforts
- Slow progress in acceptance of equivalence and/or mutual recognition
 - Lack of recognition of foreign certification
- Small scale of imports.
 - Importers or exporters may not yet have made efforts to get standard-related trade barriers resolved.
- Issues of connection to grid.
- New barriers to trade implemented by sub-national bodies.
- Standards-related measures as a condition to access Government support programmes (of fundamental importance in RE markets, e.g. biofuels).

WTO TBT Agreement: some principles

- Non-discrimination.
- Avoidance of unnecessary obstacles to trade (not more trade-restrictive than necessary to fulfil objectives).
- Use relevant international standards as a basis for technical regulations.
- Preference for performance-based criteria (rather than design).
- International systems of conformity assessment
- Acceptance of equivalence of technical regulation and mutual recognition of conformity assessment.
- Transparency
 - Publication, Notification and possibility to comment, national enquiry points
- Technical assistance.
- “Code of Good Practice” for preparing, adopting, and applying voluntary standards.

Barriers for International Trade in Plug-in Electrical Vehicles (PEV)

- Conductive Recharging – lack of harmonization
- Inductive Recharging and battery exchange – lack of recognition
- Inductive and battery exchange – lack of standardization
- Grid configuration – lack of harmonization
- Electric Vehicle Supply Equipment (EVSE) network regulations – lack thereof
- PEV-smart grid integration – lack of architecture/interface definitions
- PEV-smart grid integration – incomplete standards
- PEV-smart grid integration – unknown treatment across APEC
- Electrical safety – classification of PEV (vehicle vs. appliance)
- Electrical safety – lack of harmonization of appliance standards
- Electrical safety - market lockouts from installation standards
- Energy market arrangements – market lockouts for certain PEV/EVSE
- Vehicle homologation – lack of harmonization
- Local PEV market factors

Source: Dr Andrew Simpson. Managing Director, Verdant Vision

Biofuels certification

- EU's Renewable Energy Directive (RED): biofuels must qualify for a sustainability certificate to be counted against national targets and benefit from support measures.
 - Specific sustainability criteria related to GHG savings, land with high biodiversity value, land with high carbon stock and agro-environmental practices.
 - Issue of use of non-product related process and production methods (npr-PPMs)
- Certificates can be issued through private voluntary schemes or bilateral agreements (with individual Member States or with the EC)
- Sustainability criteria and different approaches may create confusion
- Biofuels can still be imported without a certificate but these biofuels cannot receive national public support such as tax relief.

Thank you!

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