

Cooperation and Conflict in US-China Clean Energy Relations



Joanna Lewis

Assistant Professor of Science, Technology and International Affairs
Edmund. A Walsh School of Foreign Service
Georgetown University

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Catalysts for Cooperation

- The United States and China:
 - are the world's two largest **economies** and largest producers and consumers of **energy**, as well as the largest **GHG emitters**
 - are highly dependent on **coal** for electricity, and on imported oil, making **energy security** a major concern, and **diversification of supply** a high priority
 - have leaders that see **clean energy innovation** as a means to inspire **economic competitiveness**
 - are in the process of expanding 21st Century **energy infrastructure** that can be significantly influenced by advanced technology.

Catalysts for Conflict

- Complications with promoting renewable energy technologies while following the rules of the global trade system
- Imbalances in renewable energy technology development and deployment
- Global economic downturn and current domestic policy environments for clean energy
- Sino-US politics (leadership transitions)

US-China Clean Energy Cooperation



1979-1987: Focus Primarily on Basic Research

- U.S.-China Agreement on Cooperation in Science and Technology (S&T Agreement) (1979)
- MOU for Bilateral Energy Agreements (1979)
- U.S.-China Protocol for Cooperation in Atmospheric Science and Technology (1979)
- U.S.-China Agreement on High Energy Physics (1979)
- U.S.-China Protocol on Nuclear Physics and Magnetic Fusion (1983)
- U.S.-China Protocol on Cooperation in the Field of Fossil Energy Research and Development (The Fossil Energy Protocol) (1985)
- Annex III to the U.S.-China Fossil Energy Protocol Cooperation in the Field of Atmospheric Trace Gases (1987)

1988–2000: Start of Policy Discussions

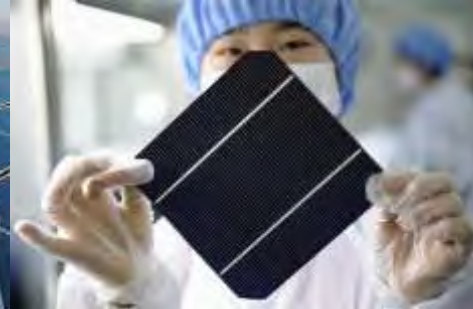
- Sino-American Conference on Energy Demand, Markets and Policy in Nanjing (1988)
- Joint Commission on Commerce and Trade (JCCT) (1992)
- U.S. Commercial Mission to China (1993)
- Establishment of the Beijing Energy Efficiency Center (BECon)
- China' Agenda 21 Document Released (1994)
- U.S.-China Protocol for Cooperation in the Fields of Energy Efficiency and Renewable Energy Technology Development and Utilization(1995) & Annexes (1996)
- U.S.-China Forum on Environment and Development (1997)
- U.S.-China Oil and Gas Industry Forum (1998)
- U.S.-China Agreement of Intent on Cooperation Concerning Peaceful Uses of Nuclear Technology (PUNT) (1998)

2001–2008: Enhanced Bilateral (& Multilateral) Cooperation

- U.S.-China Fusion Bilateral Program (2002)
- U.S.-China Statement of Intent on Nuclear Non-Proliferation (2003)
- Carbon Sequestration Leadership Forum (2003) & ITER (2003)
- FutureGEN Near Zero Emissions Coal Project (2003)
- U.S.-China Green Olympic Cooperation Working Group (2004)
- DOE China Office Opened (2005)
- U.S.-China Energy Policy Dialogue (2005)
- Asia-Pacific Partnership on Clean Development and Climate (2006)
- U.S.-China Strategic Economic Dialogue (SED) (2006)
- Global Nuclear Energy Partnership (2007)
- U.S.-China MOU on Cooperation on the Development of Biofuels (2007)
- U.S.-China Bilateral Civil Nuclear Energy Cooperative Action Plan (2007)
- U.S.-China Westinghouse Nuclear Reactor Agreement (2007)
- U.S.-China Ten-Year Energy and Environment Cooperation Framework (Ten-Year Framework) (2008)

2009: New Focus on Clean Energy

- U.S.-China Memorandum of Understanding to Enhance Cooperation on Climate Change, Energy and the Environment
- U.S.-China Climate Change Policy Dialogue
- U.S.-China Electric Vehicles Initiative
- U.S.-China Energy Efficiency Action Plan
- U.S.-China Renewable Energy Partnership
- U.S.-China 21st Century Coal Partnership
- U.S.-China Shale Gas Resource Initiative
- U.S.-China Energy Cooperation Program
- U.S.-China Clean Energy Research Center



US-China Clean Energy Conflict



Cases to Date

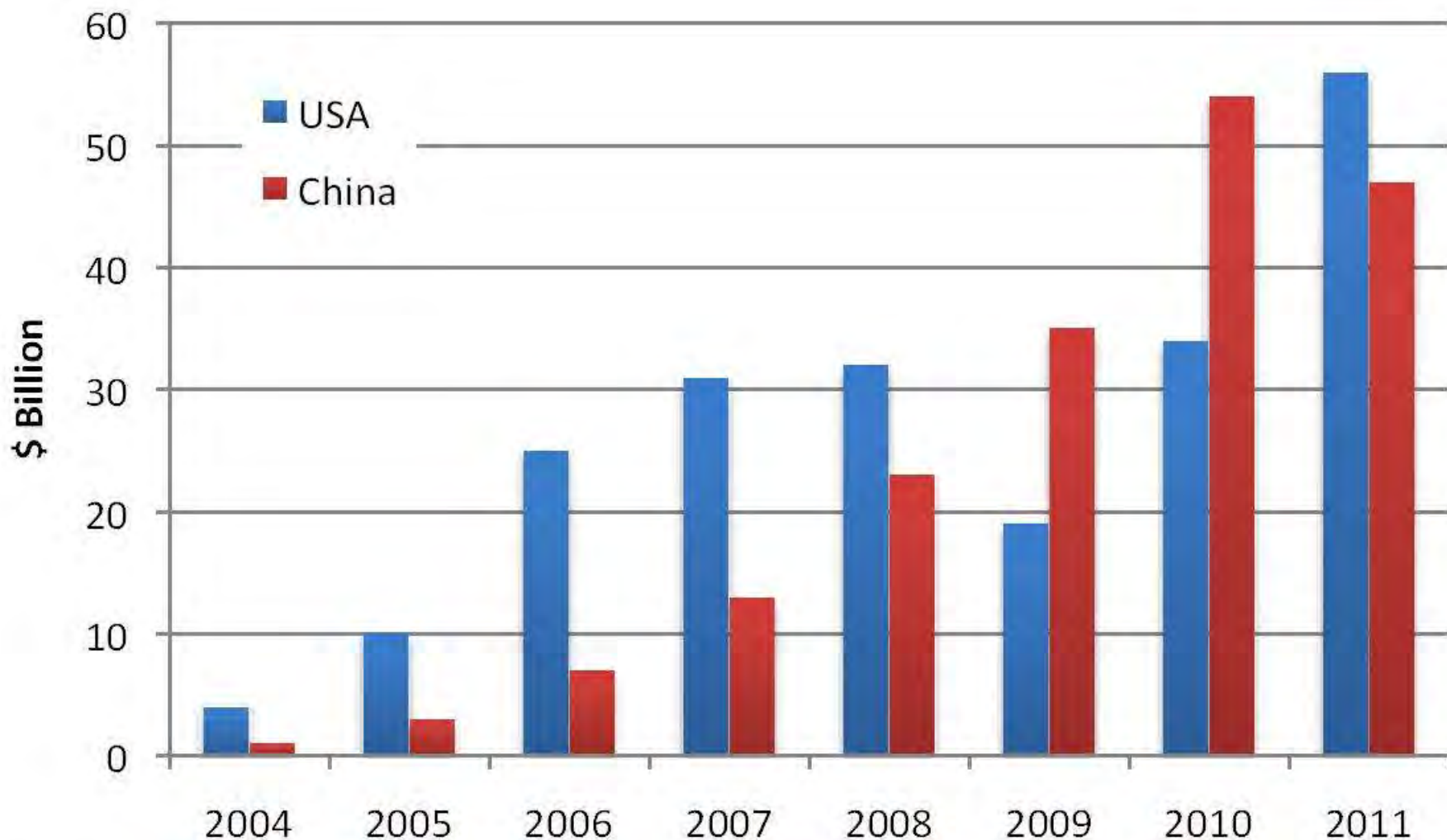
- **China's solar industry**
 - Started with German complaints to EU in August 2009
 - USW petition in September 2010 raised profile in US
 - US subsidy and anti-dumping investigations initiated in late 2011, action taken in 2012
- **China's wind industry**
 - Wind subsidy with local content - only investigation resulting directly from USW petition
 - China removed it before duties imposed
 - Separate case, on wind components, initiated late 2011, investigation underway
- **Ontario, Canada's Feed-in Tariff**
 - Began with Japanese complaint, later joined by EU
 - Consultations failed, WTO dispute settlement underway
- **Chinese investigation of US RE policies**
 - MOFCOM investigation of state-level RE incentives in Washington State, Ohio, New Jersey, Massachusetts, and California that include local content incentives and federal procurements under the Buy-American Provision of the ARRA



Wind and Solar Markets in the US and China



Clean Energy Investment: US & China

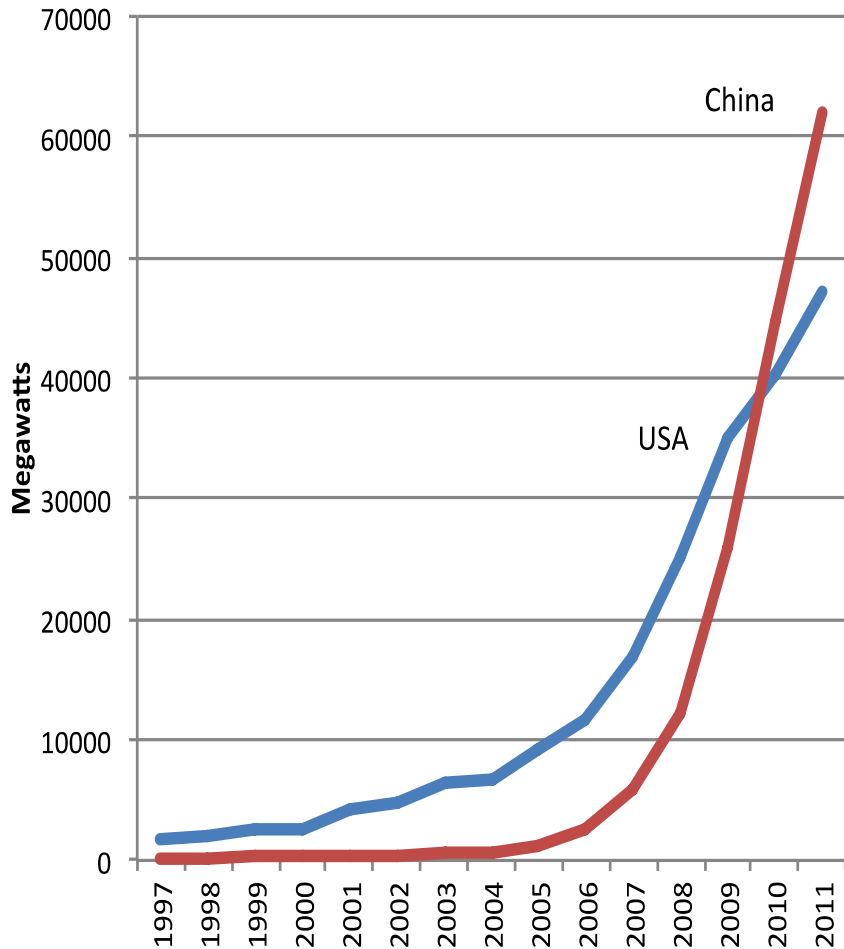


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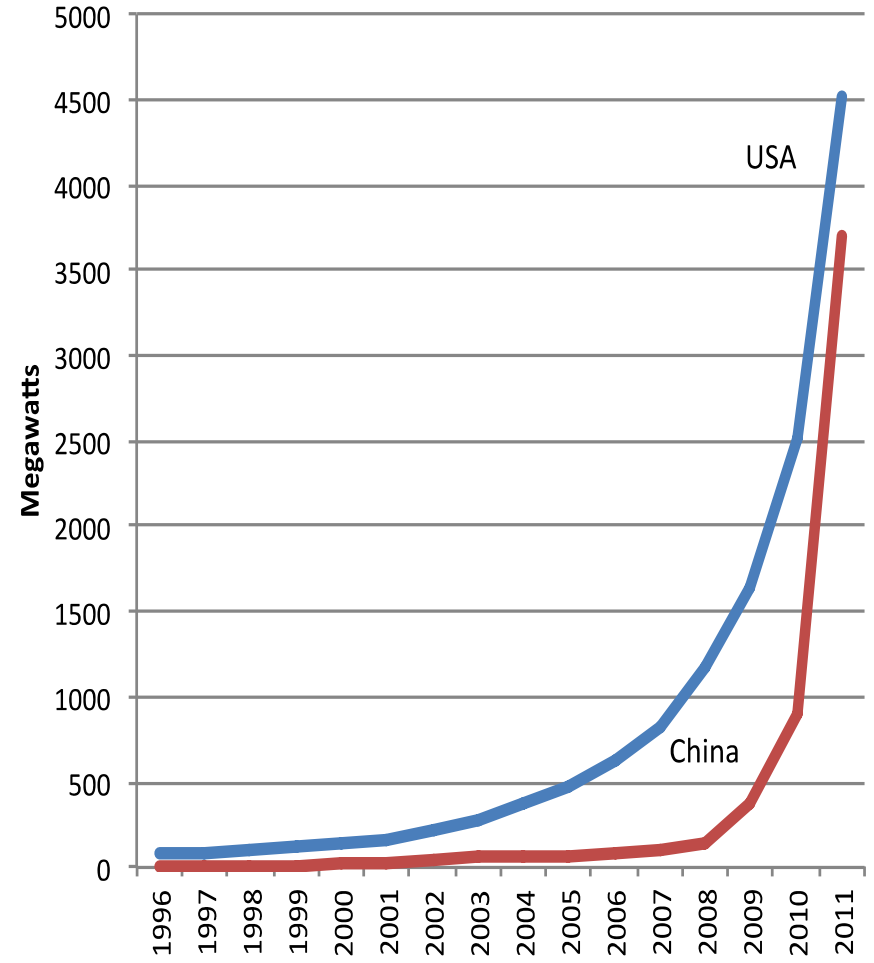


Wind and Solar Power Installations, USA & China

Wind Power Capacity

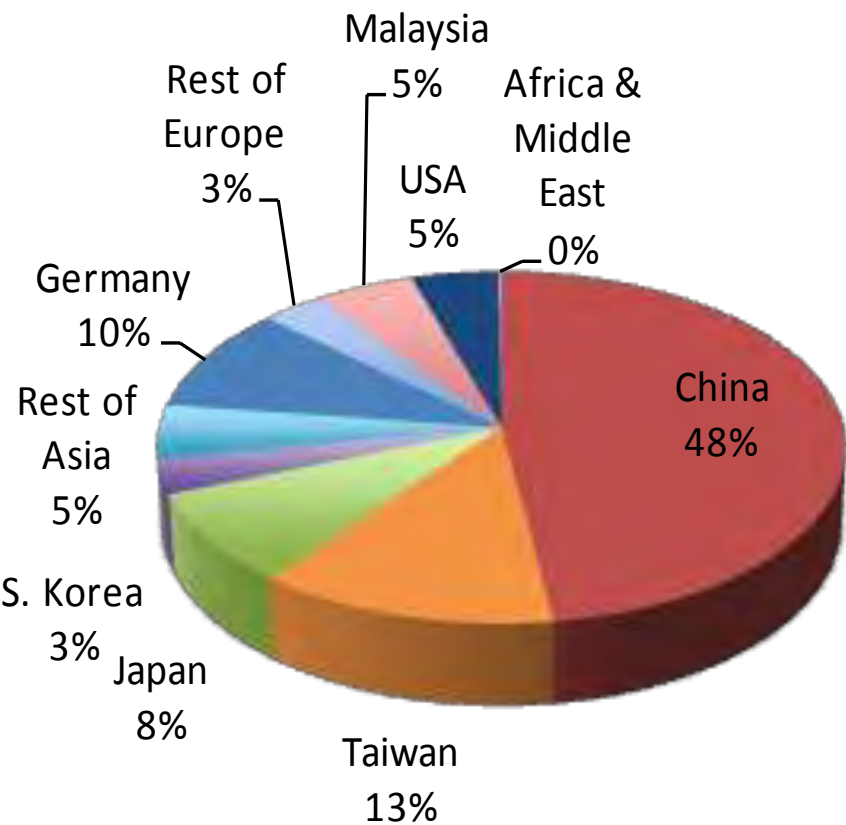


Solar Power Capacity

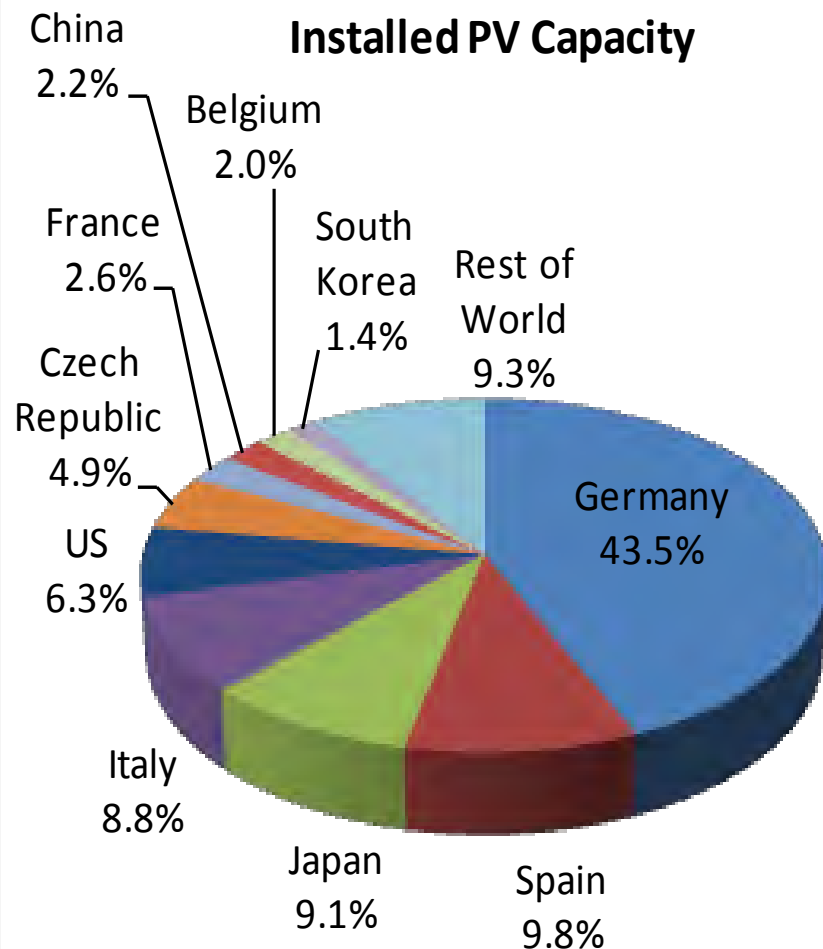


Leading Global Solar Markets

PV Cell Production



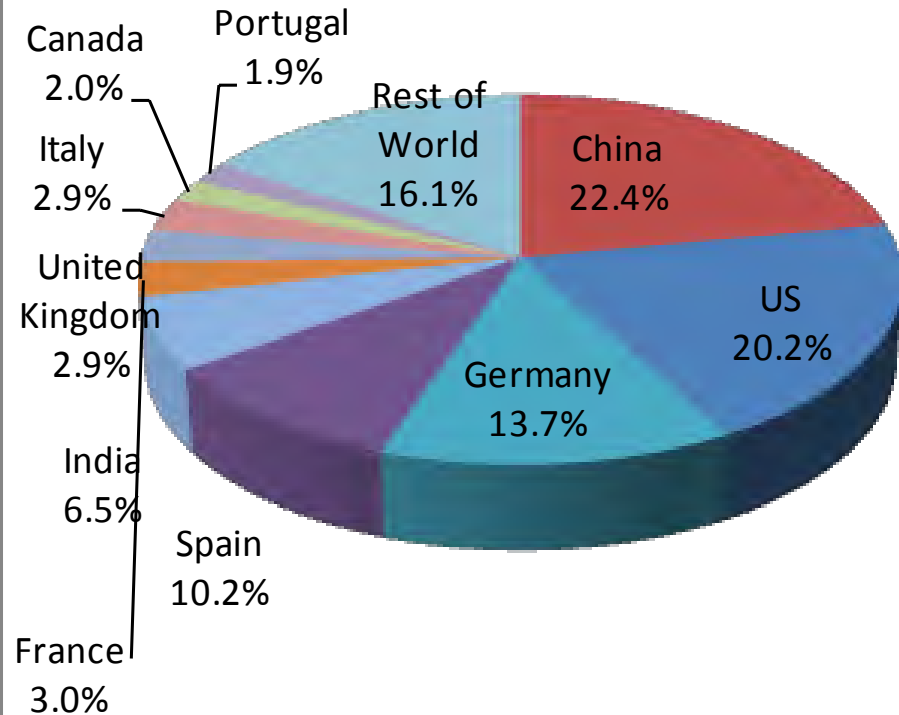
Installed PV Capacity



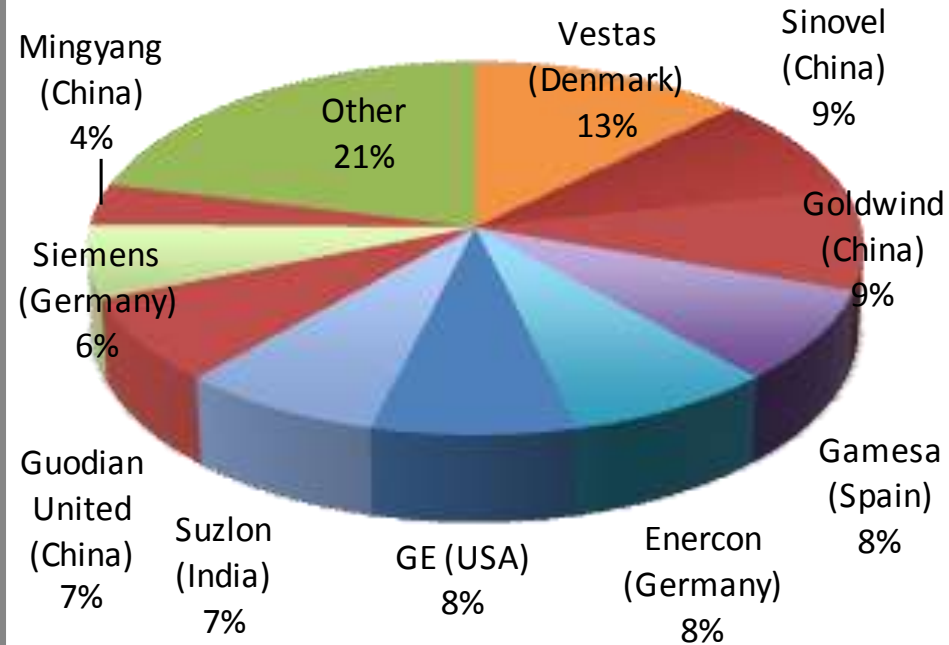
Geographic Distribution of Solar PV Cell Production and Installed PV Capacity, 2010

Leading Global Wind Markets

Installed Wind Capacity

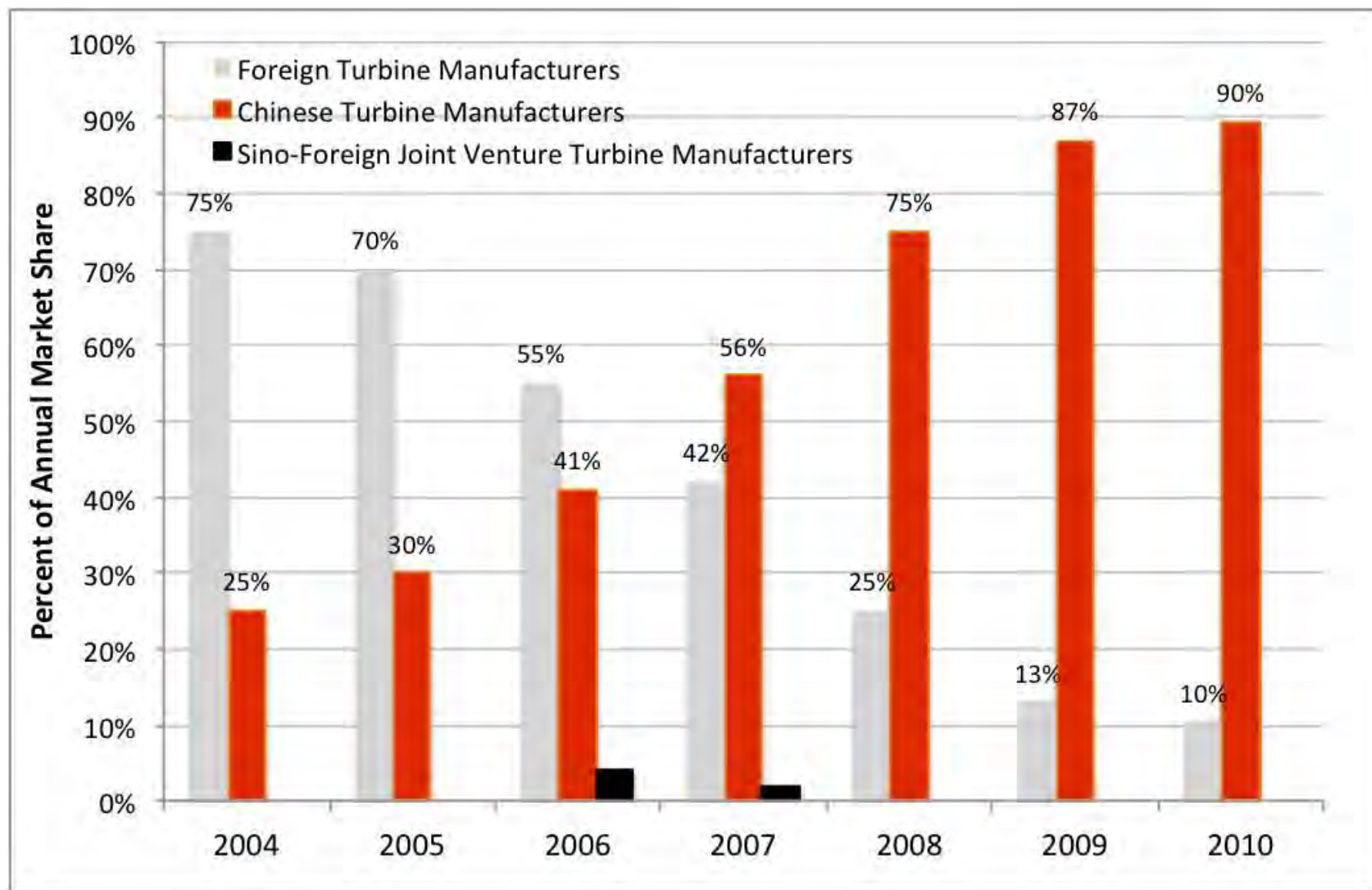


Wind Turbine Production

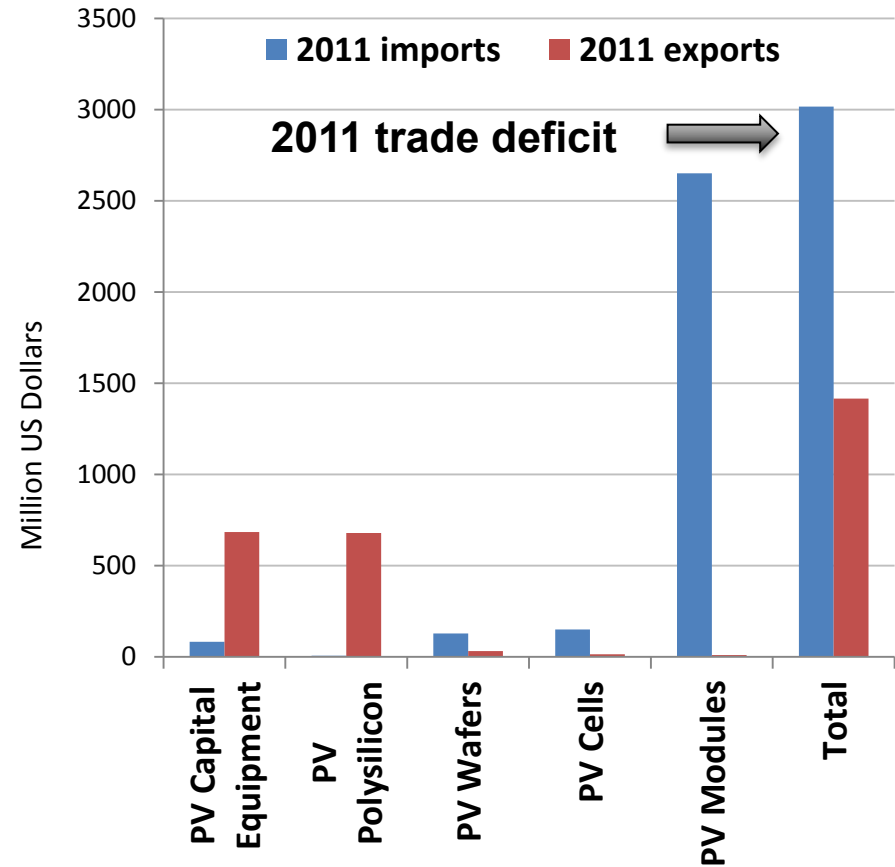
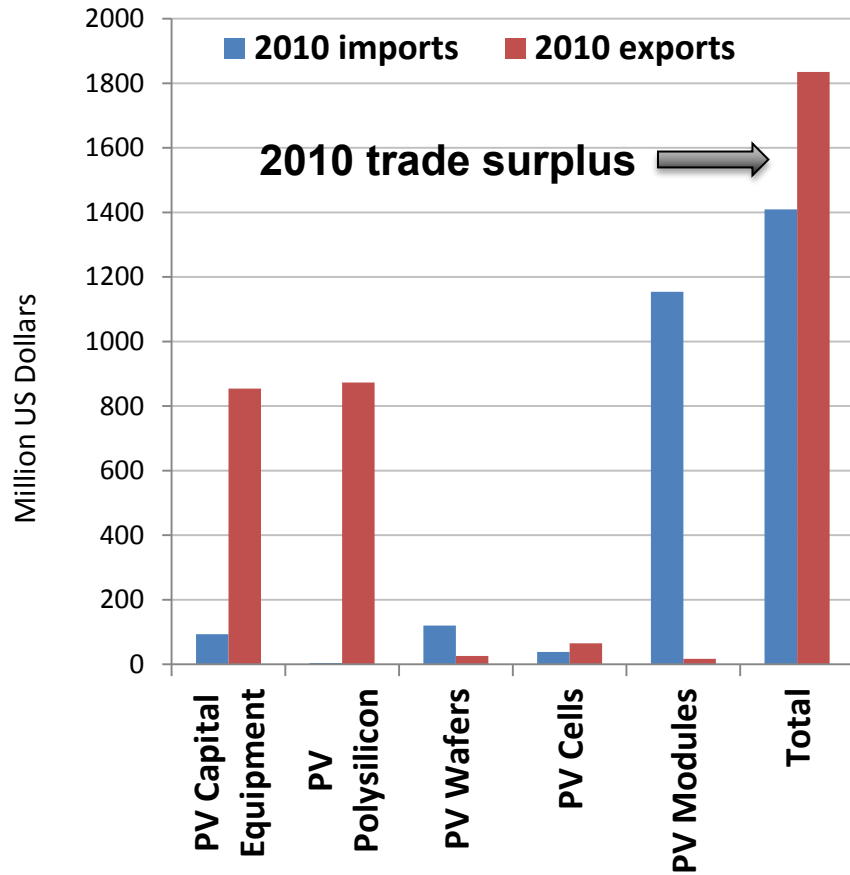


Leading Wind Turbine Manufacturers by National Ownership, 2011

Chinese-Owned Turbine Manufacturers Increasingly Dominate Chinese Market



US Solar Imports and Exports to China



Renewable Energy Support Measures and Potential Trade Conflicts

- **Renewable energy support measures**
 - Prohibited subsidies
 - Actionable subsidies
- **Industrial policy measures**
 - Promoting domestic manufacturing
 - Government procurement
- **WTO Conflicts?**
 - SCM agreement; TRIMS/TRIPS
- **Complications?**
 - Government procurement (&GPA)
 - Non-market economies and trade remedies
 - Environmental exemptions (GATT)?

Renewables & Trade: A Special Case?

- **Subsidies are widely granted across the world to the energy sector for a variety of reasons**
 - Both the traditional and renewable energy sectors have benefited from these subsidies
 - The vast majority of subsidies are provided to the fossil energy sector, although the magnitude of subsidies available for renewable energy is growing worldwide
- **Renewable energy subsidies could be argued to level the playing field with fossil fuels**
 - not provide an advantage or distortion
- **Green industrial policy can be considered a global public good**
 - promotes green technology access and cost reductions
 - Industrial policy that has been previously used in industrialized countries would now be considered prohibited under various WTO agreements, raising issues of equity and technology access (non-actionable subsidies?)
- **Major conflicts emerging between international trade law and global climate mitigation**
 - Leading some to suggest a WTO exception (GATT Article XX(b)&(g)) may permit otherwise discriminatory measures for environmental protection)
 - or even a Sustainable Energy Trade Agreement

Implications

- There is no overarching regulation in international law addressing energy which leads to a fragmented approach, and conflicts between trade law and MEAs
- As more countries promote renewable energy to address climate change and energy security, and technology markets are increasingly competitive, disputes likely to increase
- Disputes are creating spillovers into other areas of bilateral relations, e.g. threatening the more positive aspects of US-China clean energy cooperation