US-China Renewable Energy Cooperation:
Status, Challenges and Opportunities


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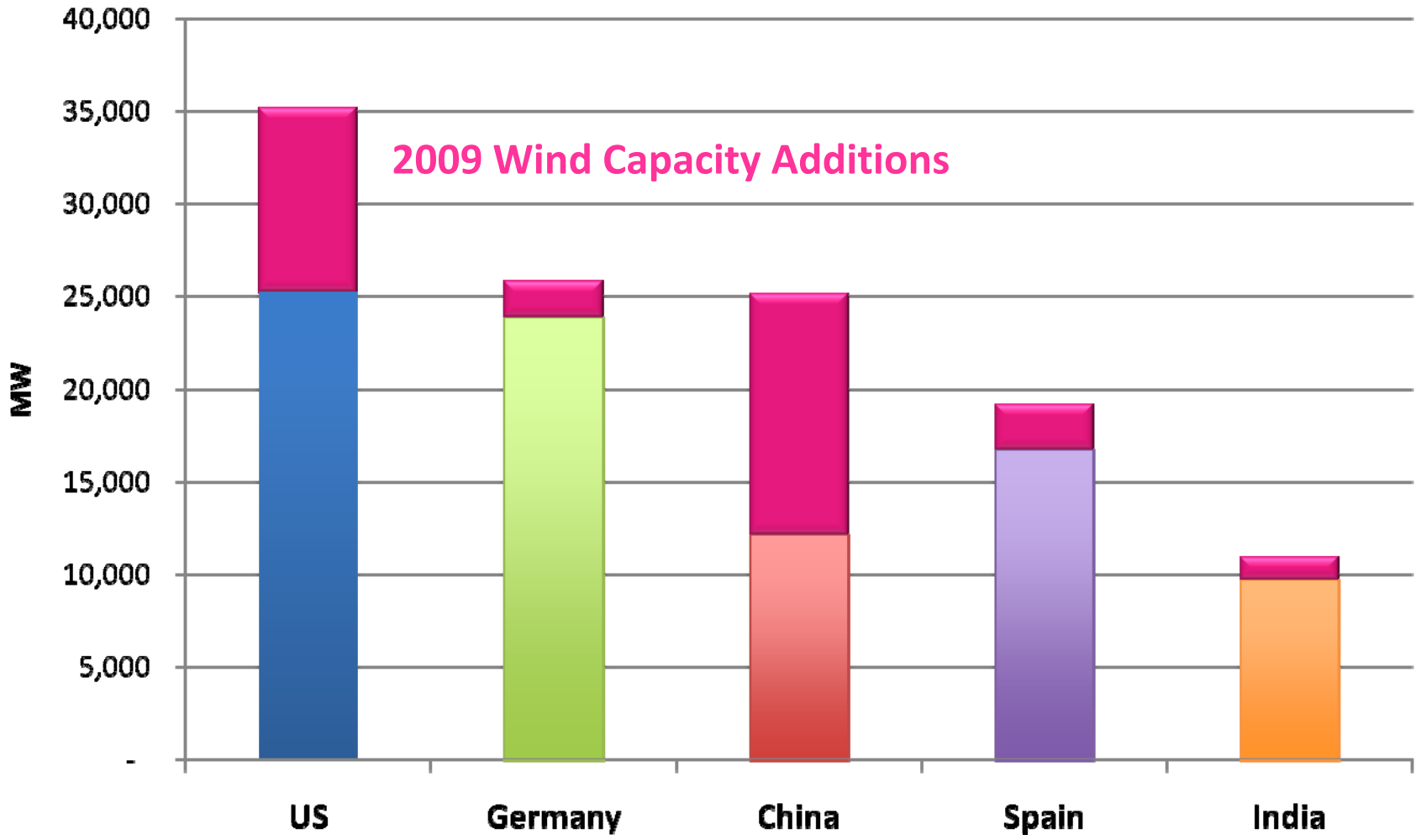
Overview

1. China's renewable energy achievements
2. The escalating trade tensions between the United States and China
3. The rationale for clean energy cooperation with China

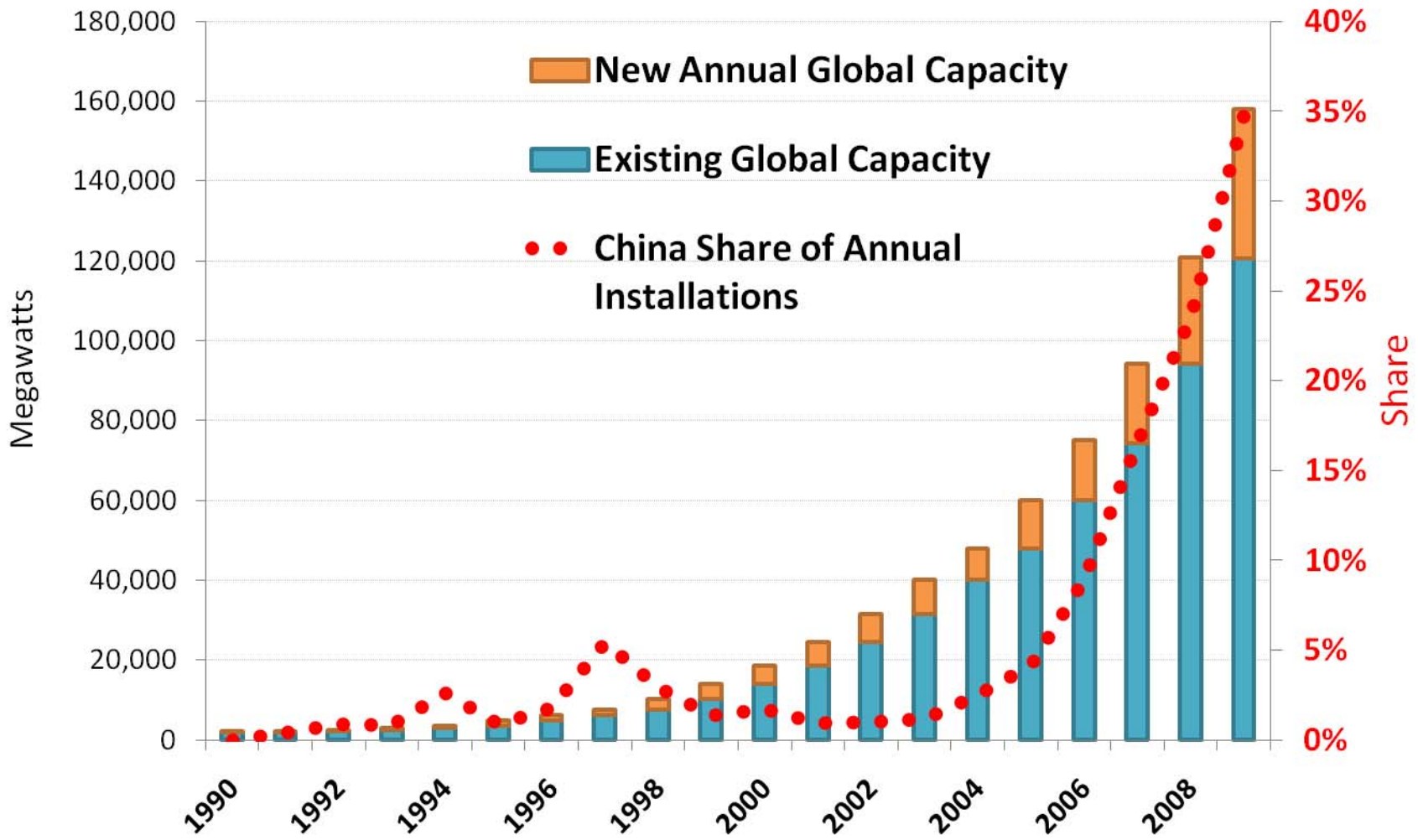
China's Achievements and Plans

- Invested $34.6 billion in clean energy last year – more than any other country
- Leading manufacturer of most renewable energy technologies (small and large wind, solar PV, small and large hydro, solar hot water)
- Second in installed renewable energy capacity last year, behind the United States, but with much faster growth rates
- First country to undertake GW-scale wind and solar projects (and the transmission/integration challenges that come with it)
- National targets for 15% of primary energy from non-fossil sources by 2020; technology targets mostly far exceeded; new carbon policies in place

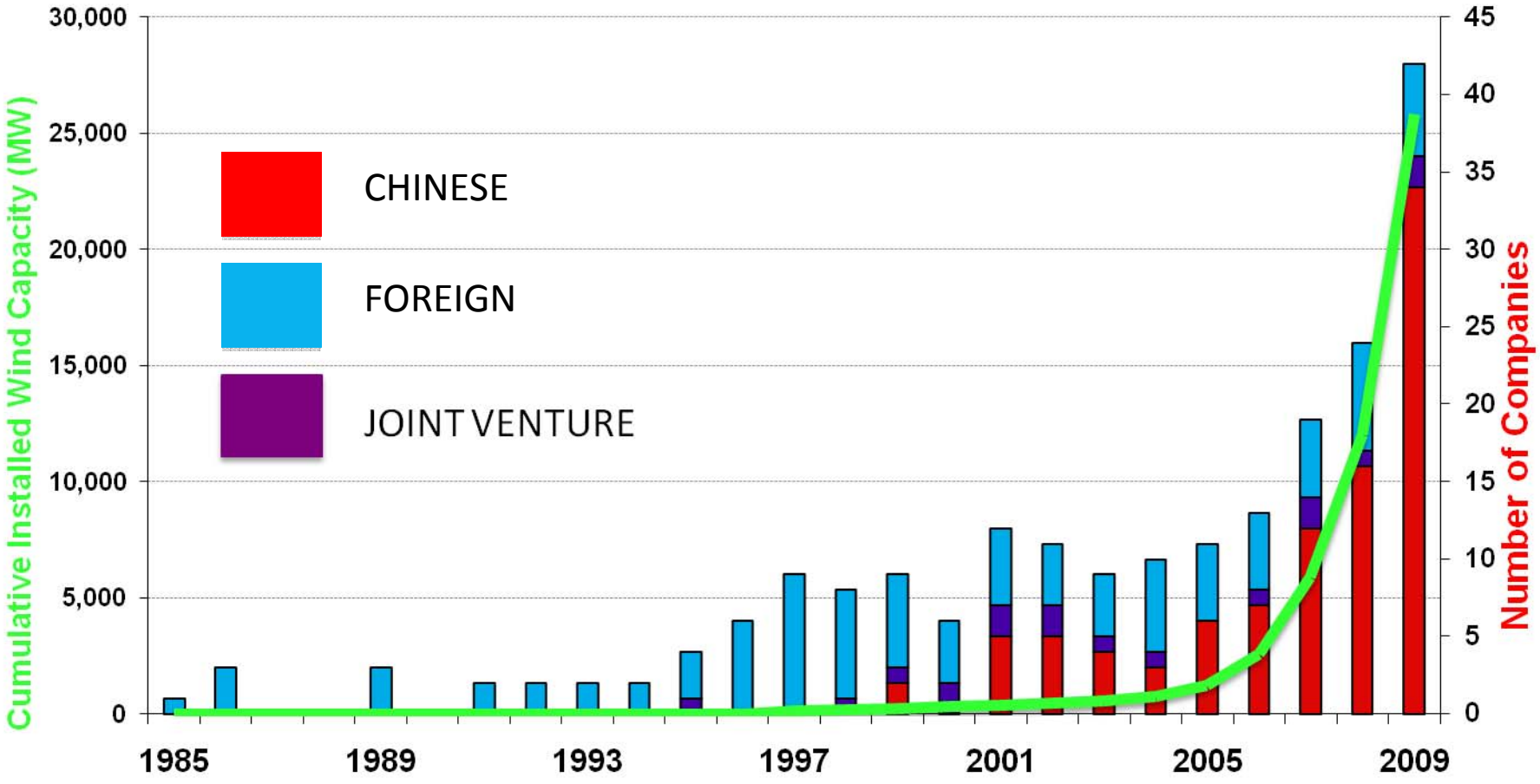
Top 5 Countries for Wind Power Capacity



China's Role in Global Wind Power Additions



Companies in the Chinese Wind Market

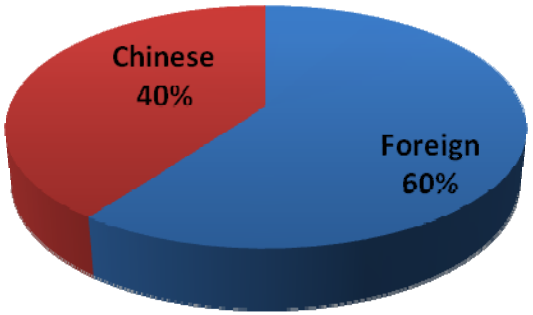


Note: Number of companies refers to turbine manufacturers that installed at least 1 wind turbine in China that year.

Wind Turbine Sales by Manufacturer in China

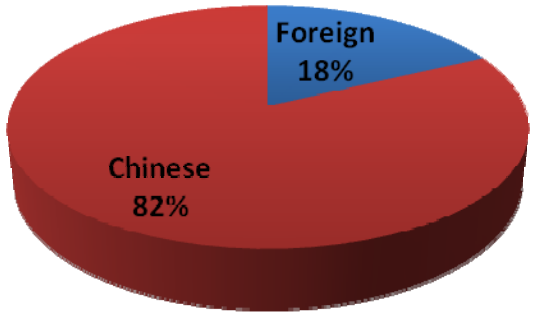
Chinese Market Shares 2006

1,337 MW total

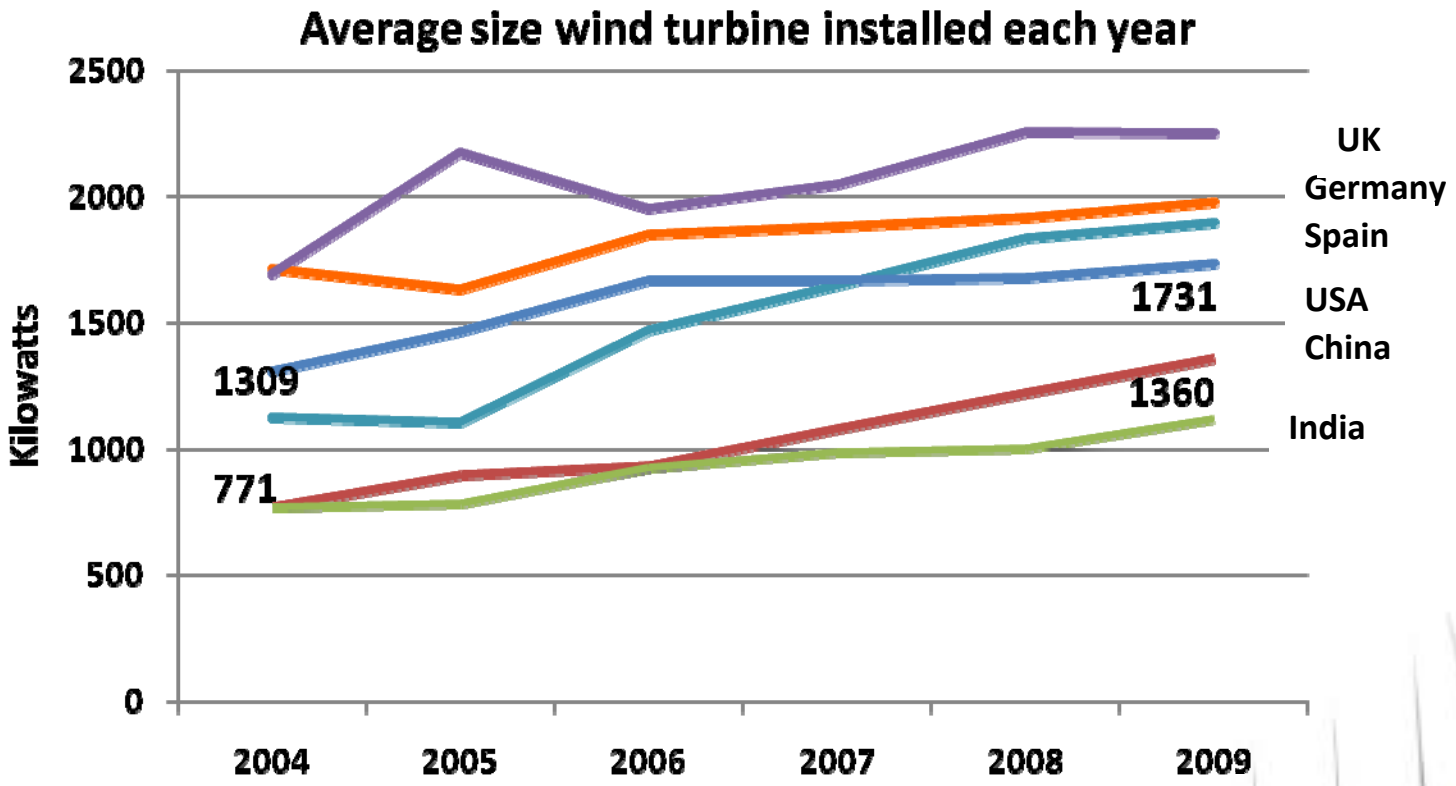


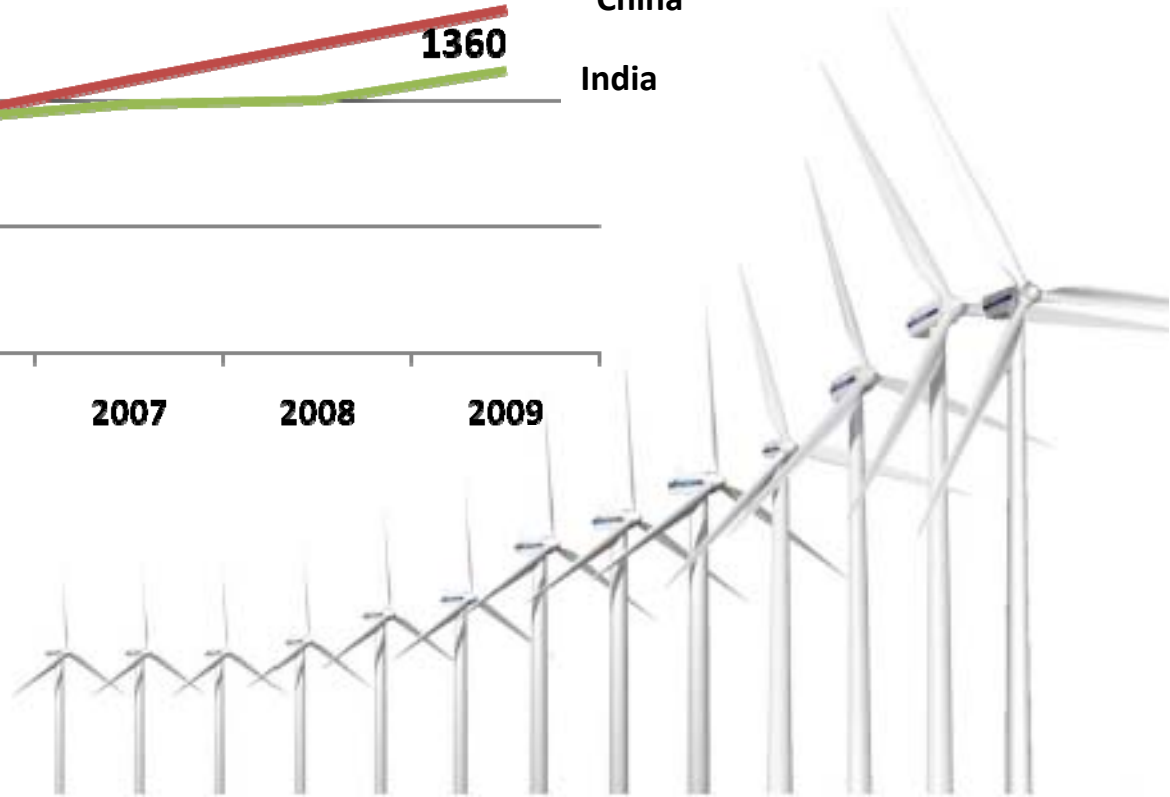
Chinese Market Shares 2009

13,800 MW total



Wind Technology Leaders and Followers





Source: BTM, 2010

Policy Timeline for Wind Development

1994: Provisions for On-Grid Wind Farm Mgt

1996: RE Fund, start of local content requirements

1997: Ride the Wind Program, Double-Increase Program

1999: Low interest loan program for wind farm development

2001: 863 High Tech Program for Wind Energy R&D

2002: VAT reductions on wind electricity

2003: Wind Concession Program begins

2006: National Renewable Energy Law; R&D support for 2-3 MW turbines

2007: Mid and Long Term RE Implementation Plan

2008: MOF subsidy to turbine manufacturers

2009: Feed-in tariffs for wind established; six 10 GW+ wind bases announced

Recent Headlines Highlighting Tensions

- 7/20/10
  - IEA pronounces China world's largest energy consumer
  - China rejects claims; calls IEA data unreliable
- 7/22/10
  - U.S. Senate pronounces climate bill dead
  - China announces plan to begin domestic carbon trading
- 8/15/10
  - China passes Japan to become second largest economy
- 9/4/10
  - U.S. unemployment worse than similar industrial nations
- 9/8/10
  - China named most attractive place to invest in renewable energy by Ernst & Young
- 9/9/10
  - United Steelworkers file Section 301 Petition against China's Green Technology Practices

Clean Energy Competition

- International trade
  - Chinese imports to the US
- US market access in China
  - Preference for Chinese manufacturers
  - Unfair subsidies

- International trade
  - Competing with US/EU manufacturers in other markets
- Market access in the US
  - Preference for US manufacturers
  - Concerns about technology performance

Clean Energy & WTO

- September 2010: USW filed a section 301 petition with USTR requesting that it investigate China's violation of its WTO commitments in clean energy
  - Oct 2010: USTR decided to proceed with investigation
  - Decision due in mid-January (right before President Hu's visit to the United States)
- Five areas:
  - Domestic subsidies contingent on local content or export performance
  - Other domestic subsidies (e.g. stimulus)
  - Discrimination against foreign goods/firms
  - Technology transfer requirements
  - Restrictions on access to rare earth materials

What will USTR find?

- Domestic subsidies contingent on local content or export performance
  - Yes… has been happening for years (though China is not alone)
- Other domestic subsidies (e.g. FITs, stimulus)
  - Yes… though all countries do this – and it is the only way to create a market for renewable energy (and a market for US companies to access in China)
- Discrimination against foreign goods/firms
  - Likely, but very difficult to prove
- Technology transfer requirements
  - Widely practiced, but part of the business arrangement rather than official policy
- Restrictions on access to rare earth materials
  - Will likely be part of an ongoing discussion, larger than the US & China

The Rationale for Cooperation

1. In a carbon-constrained world, the U.S. and China will have no alternative but to transition to **low-carbon economies**, expanding the role for renewable energy technologies.
2. Both countries are motivated by a set of related goals, namely **ensuring economic growth and job creation, energy security, and pollution reduction**, making renewables development an optimal strategy.
3. We are entering a challenging time in U.S.-China relations, and **climate and energy cooperation may be one key area where we can broaden and deepen mutually beneficial cooperation and build strategic trust**.
4. Given the size of their energy markets, any substantial progress the two countries make in deploying renewables will **advance technological understanding and further reduce costs, increasing access and bringing immediate benefits** to the global community.

Perceived Challenges to Cooperation

- ***We are competing with China to become a renewable energy technology leader***
  - They lead in production, but not in R&D or deployment
- ***If US companies cooperate with Chinese companies they will steal our technology and intellectual property***
  - Are many US companies already benefiting from cooperation with Chinese partners
- ***They cannot learn anything from us***
  - Serious challenges even in wind deployment in China
    - Very low capacity factors as a result of poor siting practices, O&M and lack of technology testing and certification facilities
- ***We have nothing to learn from them***
  - China is the only country pursing GW-scale wind farm development
  - Similar transmission and integration issues as the US means they provide a valuable laboratory for learning

Implementation of Clean Energy Cooperation

Obama Administration New or Continued Bilateral Clean Energy Cooperation Initiatives

- U.S.-China Strategic and Economic Dialogue
- Memorandum of Understanding to Enhance Cooperation on Climate Change, Energy and the Environment
- Climate Change Policy Dialogue
- Memorandum of Cooperation to Build Capacity to Address Climate Change
- U.S.-China Joint Commission on Commerce and Trade
- **U.S.-China Clean Energy Research Centers**
- U.S.-China Electric Vehicles Initiative
- U.S.-China Energy Efficiency Action Plan
- U.S.-China Renewable Energy Partnership
- 21st Century Coal Cooperation
- Shale Gas Resource Initiative
- U.S.-China Energy Cooperation Program (ECP)
- U.S.-China Energy Efficiency Forum
- U.S.-China Renewable Energy Forum
- U.S.-China Advanced Biofuels Forum

Non-official cooperation (private, academic, NGO) is already extensive

→ A "new paradigm" for cooperation?

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