

Long-Term Competitiveness in the U.S. vs. China: The Push into New Energy Technology

Edward S. Steinfeld
Massachusetts Institute of Technology
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China as Competitor in Energy Technology?

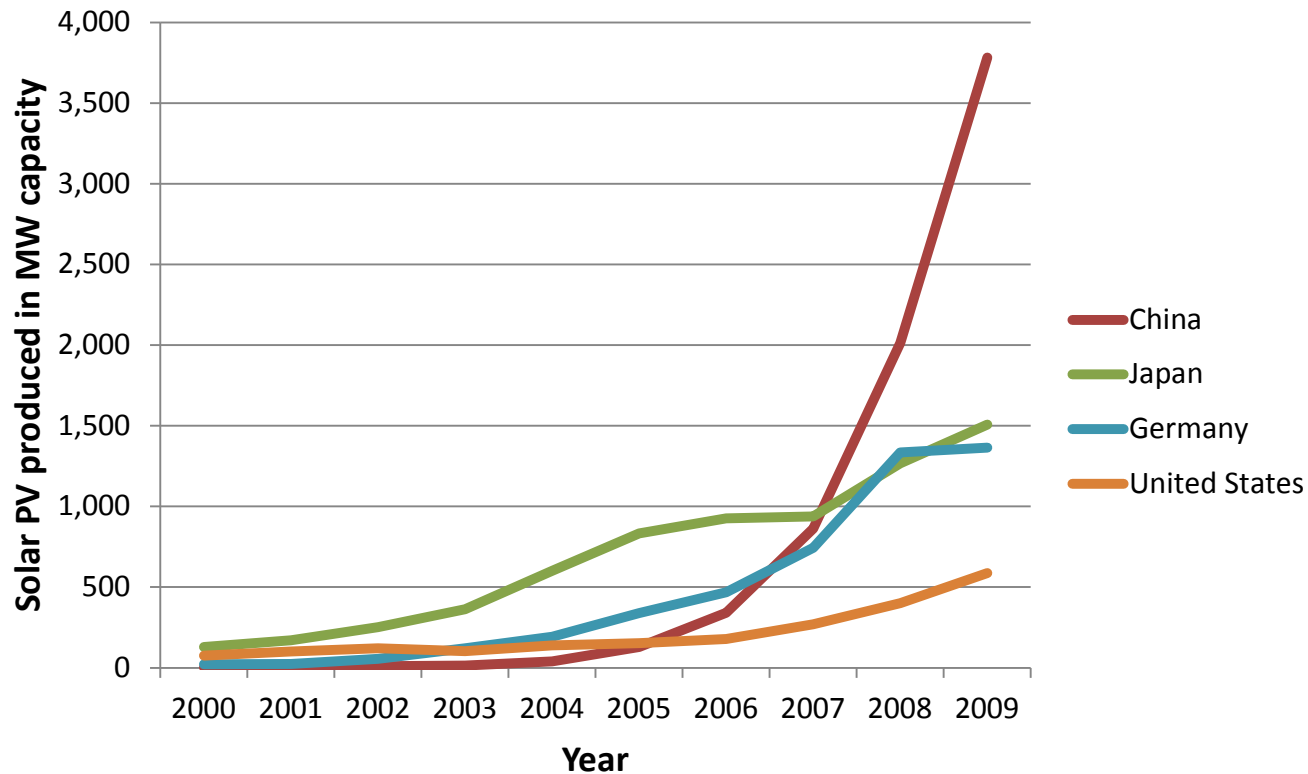
“China’s clean energy successes represent a new ‘Sputnik’ moment for America.”

-- U.S. Secretary of Energy Steven Chu, 11/29/2010

- China now global leader in energy technology expenditures
- China has deployed world’s first ultra-high voltage transmission lines
- China has built the world’s largest high speed rail network
- China widely deploying (and beginning to export) advanced coal technologies, including ultra-supercritical power plants
- China currently building 30 nuclear power plants (of 60 now under construction globally)
- China is in process of unrolling US\$17 billion investment in alternative-fuel vehicles
- China is deploying wind power faster than any other nation
- China is the largest producer and exporter of solar (PV) panels

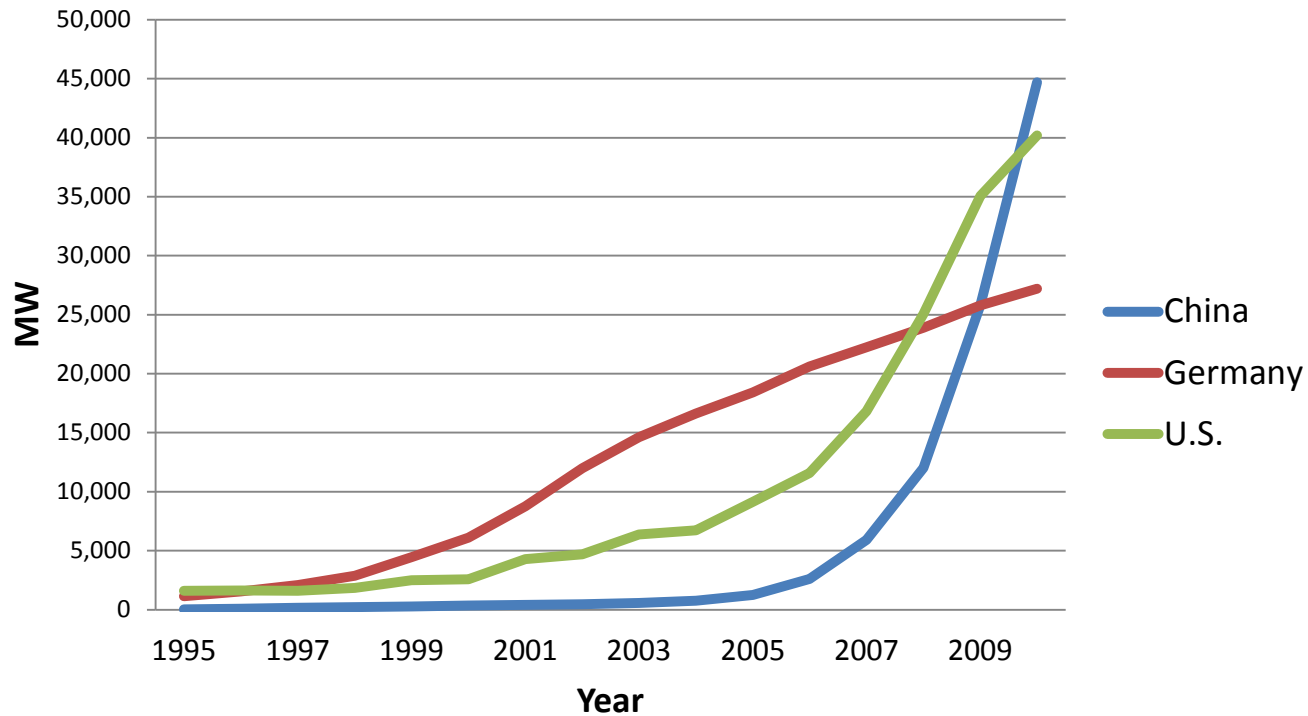
China surpasses competitors in solar PV production

Annual Solar PV Production by Country, 1995-2009



China largest wind market in the world

Cumulative Installed Wind Power Capacity, 1980-2010



China hosts full wind turbine supply chain

Domestic Firms



Domestic Firms

Foreign Firms



Foreign Firms

Reactors under construction:	CNP-600	CPR-1000 & EPR	AP1000	HTR-PM
Investor/Umbrella				
Detailed Design	<p>Beijing Institute of Nuclear Engineering (BINE)</p>	<p>China Nuclear Power Technology Research Institute (CNPRI)</p>	<p>Shanghai Nuclear Engineering Research & Design Institute (SNERDI)</p>	<p>Institute of New and Nuclear Energy Technology (INET)</p>
A/E & EPC	<p>China Nuclear Power Engineering Co. (CNPE)</p>	<p>China Nuclear Power Engineering Co. (CNPEC) + EDF</p>	<p>State Nuclear Power Engineering Co. (SNPEC) + Shaw</p>	<p>Chinergy Co.</p>

Reactors under construction:

CNP-600

CPR-1000 & EPR

AP1000

HTR-PM

Investor/Umbrella



Design
(foreign partners)



A/E & EPC
(foreign partners)



Construction



Heavy Equipment



Complex Equipment



Construction

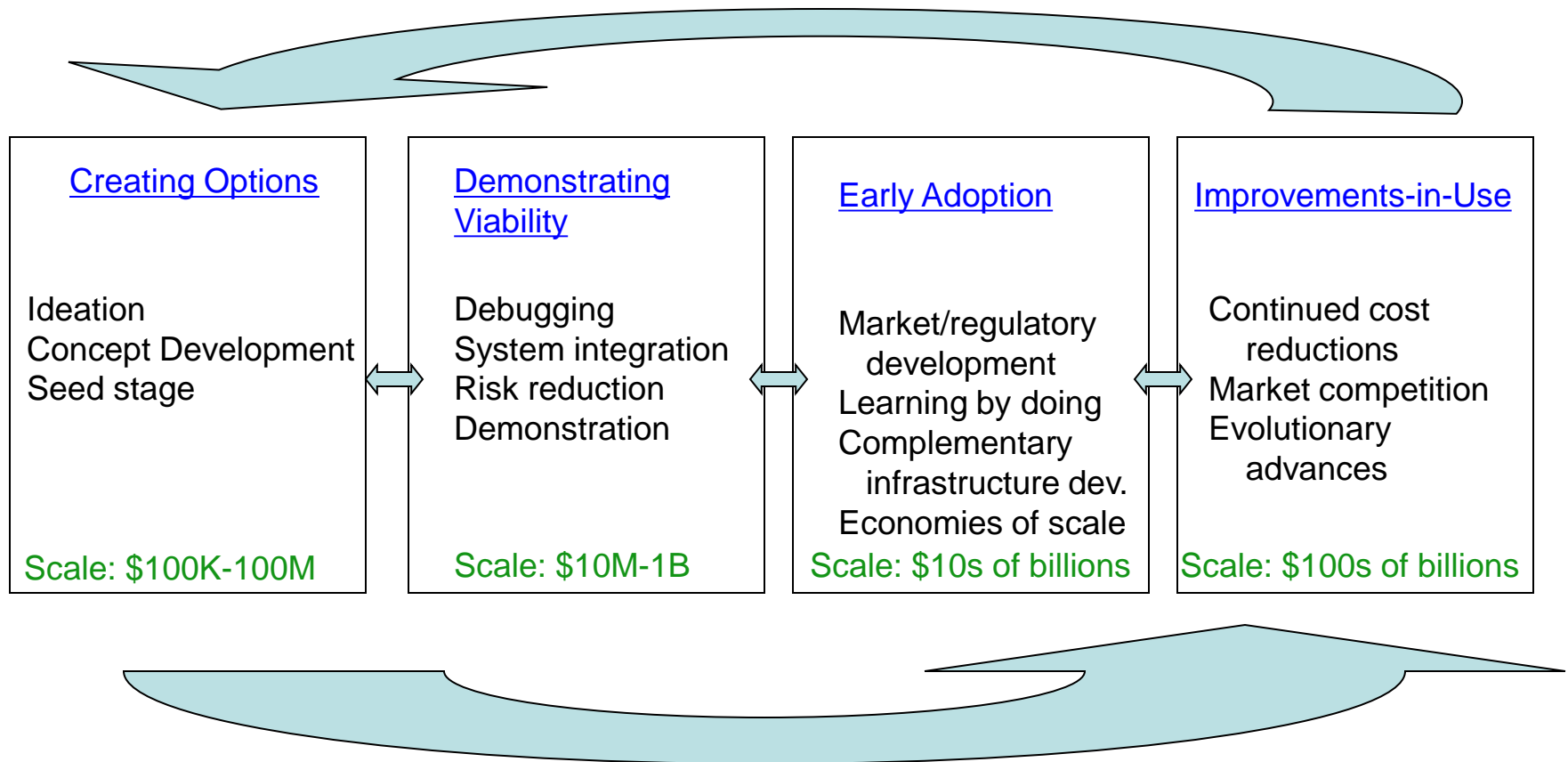
Heavy Equipment
(foreign suppliers)



Complex Equipment
(foreign suppliers)



The MIT Industrial Performance Center View of Energy Innovation



China's Approach to Governing Innovation

- Principles

- Tomorrow must be better than today, and will be better than today
- Government sets overall direction, society determines the details
- Promotion based on performance
- Promote the best, regardless of who they are or where they're from
- Old organizations can continue, but only if they renew themselves
- New organizations will be welcomed as need arises
- Indigenous, but open innovation
- Government finances, but increasingly via market actors
- Principles follow practice
- No principle is sacred; nothing can be allowed to stand in the way of national development and modernization

- Practices

- Escalating targets in five-year planning process
- 小康社会
- Annual performance contracts
- Integration of 海龟 into government, business, academia
- New personnel and promotion processes in SOEs, academia, etc.
- Growth of SMEs, TVEs, Technology start-ups, etc.
- New cross-border technologies
- Emergence of publicly funded, locally governed private equity funds
- Legitimation of entrepreneurship