

China's Role in Managing Greenhouse Gas Emissions: Introduction to Issues

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laboratory on
INTERNATIONAL LAW AND REGULATION

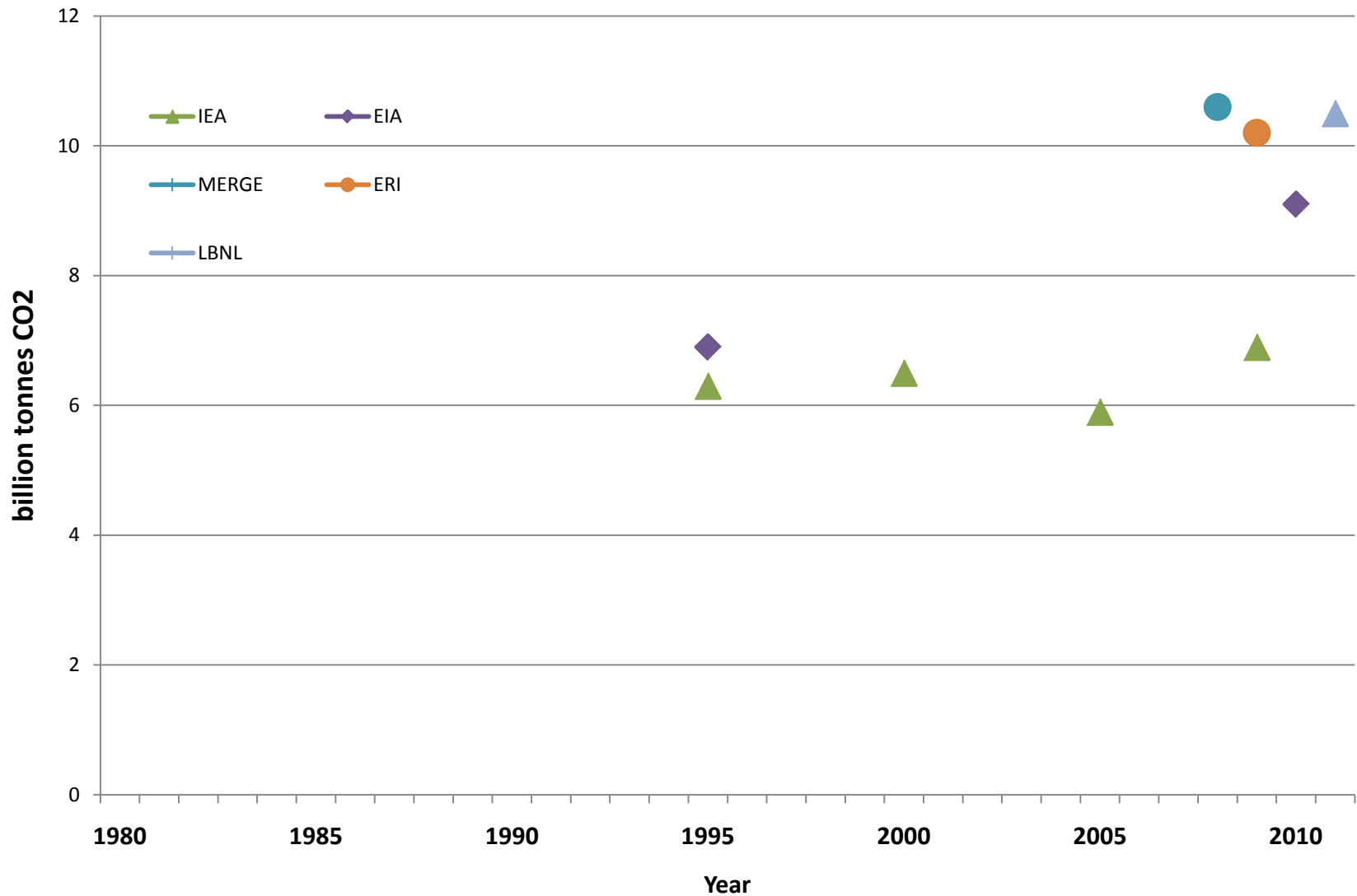
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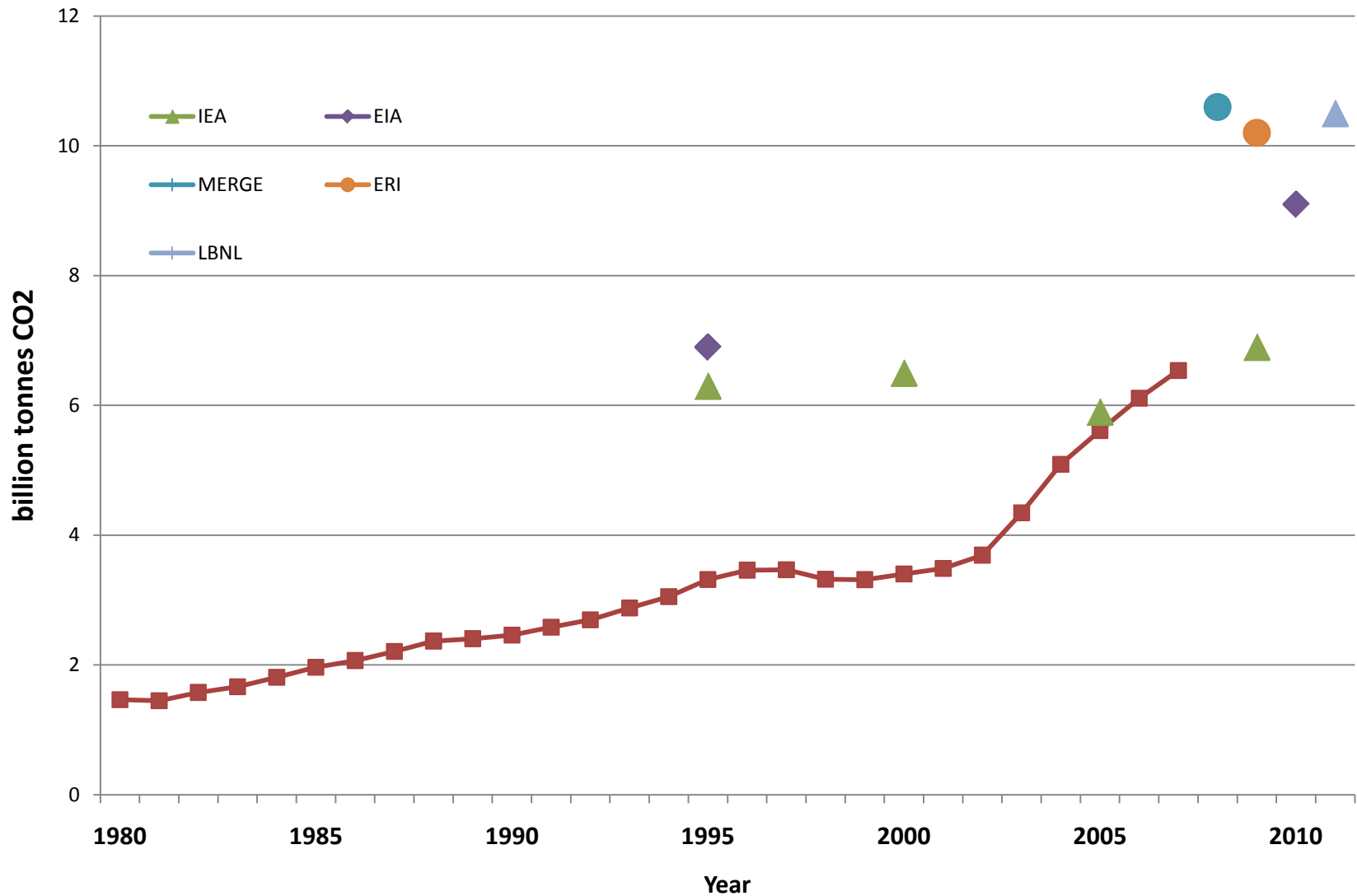
Outline

- I. What do we really know about growth of China's GHG emissions?
- II. What has China done to control emissions?
- III. Changes in national innovation system in China
- IV. How can the United States better "engage" China?

Chinese CO2 projections

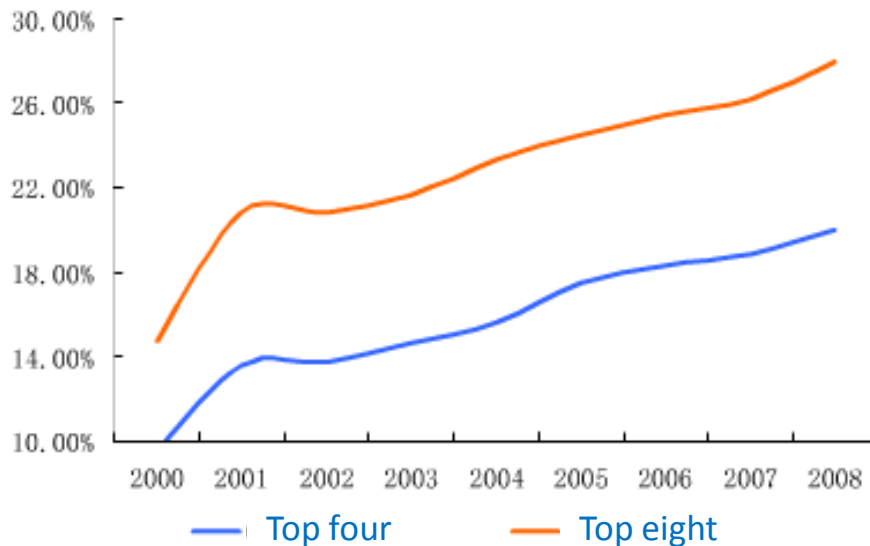


Chinese CO2 projections



Consolidation of China's coal industry

Consolidation change in China's coal industry



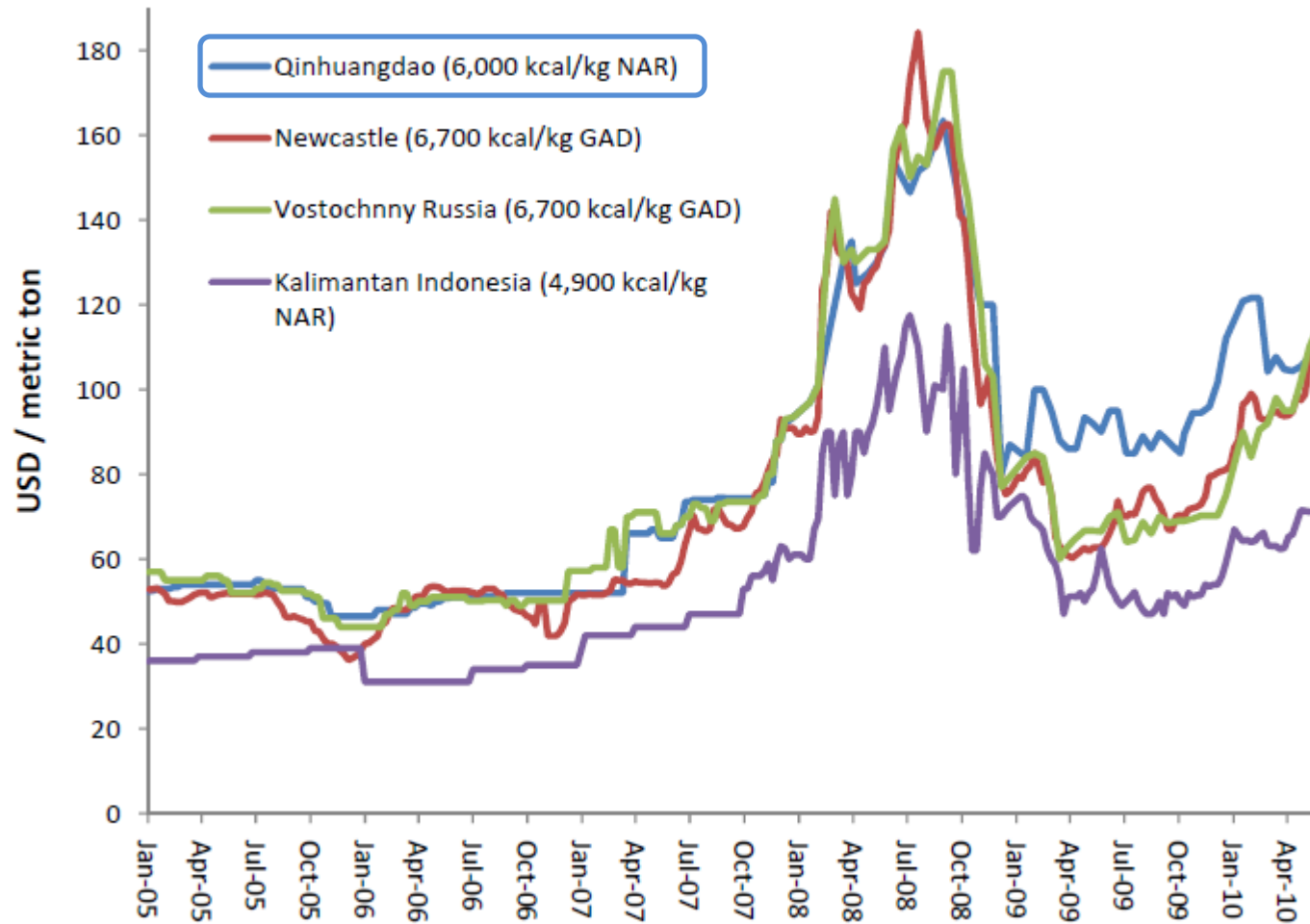
Production of top coal mining groups, 2008

Ranking	Enterprise	Production (million tons)	Share (%)
1	Shenhua	282	10.4%
2	China Coal	114	4.2%
3	Shanxi Coking	80	2.9%
4	Datong Coal	69	2.5%
total		545	20%

Data source: China Coal Industry Association

- Government believes more consolidation is needed
- 12th Five-Year Plan: reduce number of coal enterprises from currently 11,000 to 4,000 by 2015

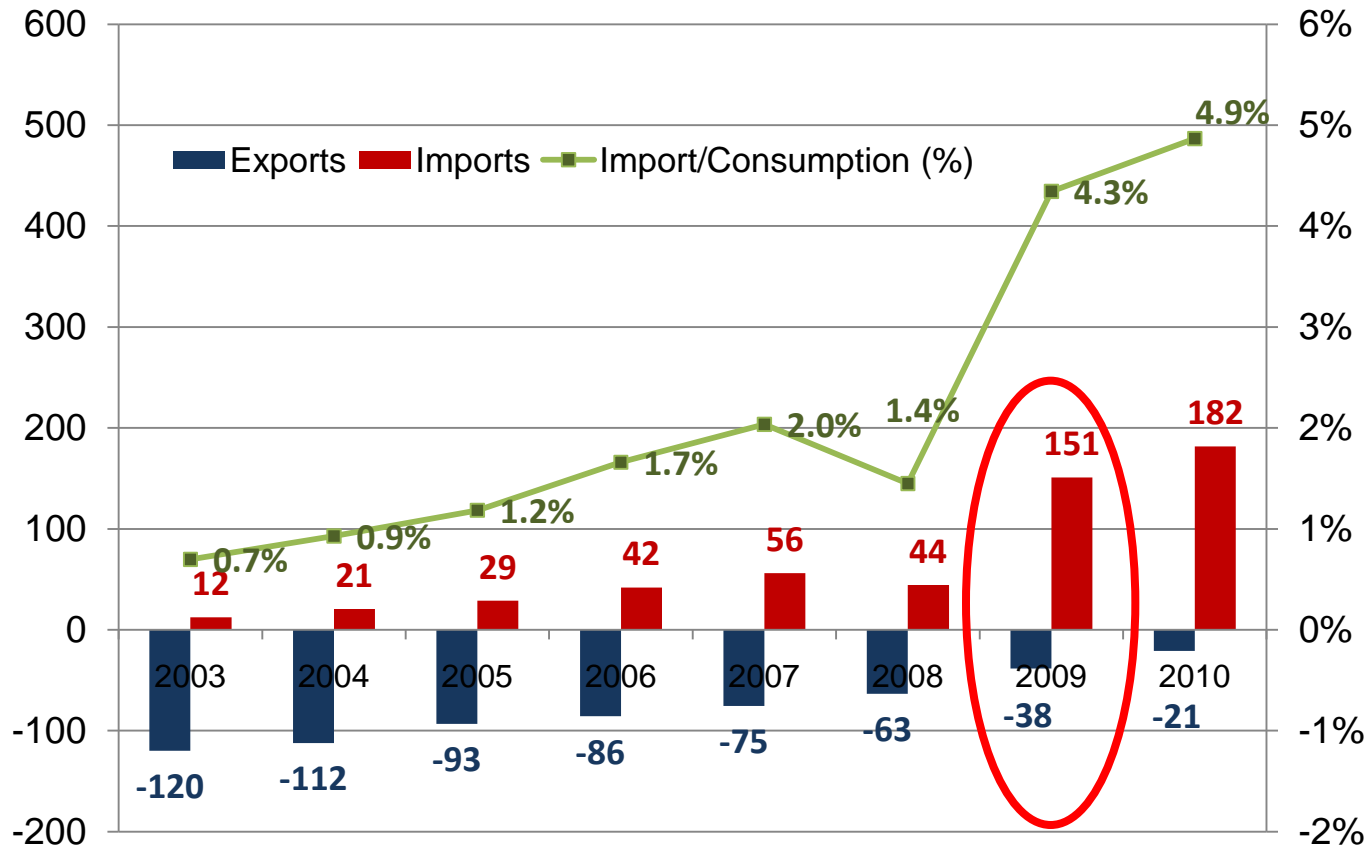
Domestic coal prices have risen sharply above pre-2005 levels



Source: adapted from Morse and He (2010)

China became a net coal importer in 2009

China's Export/Import of Coal in Million Short Tons



Data source: 2003 to 2009 data from EIA (2010) and 2010 data from Xinhua.net

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China's progress on emission control

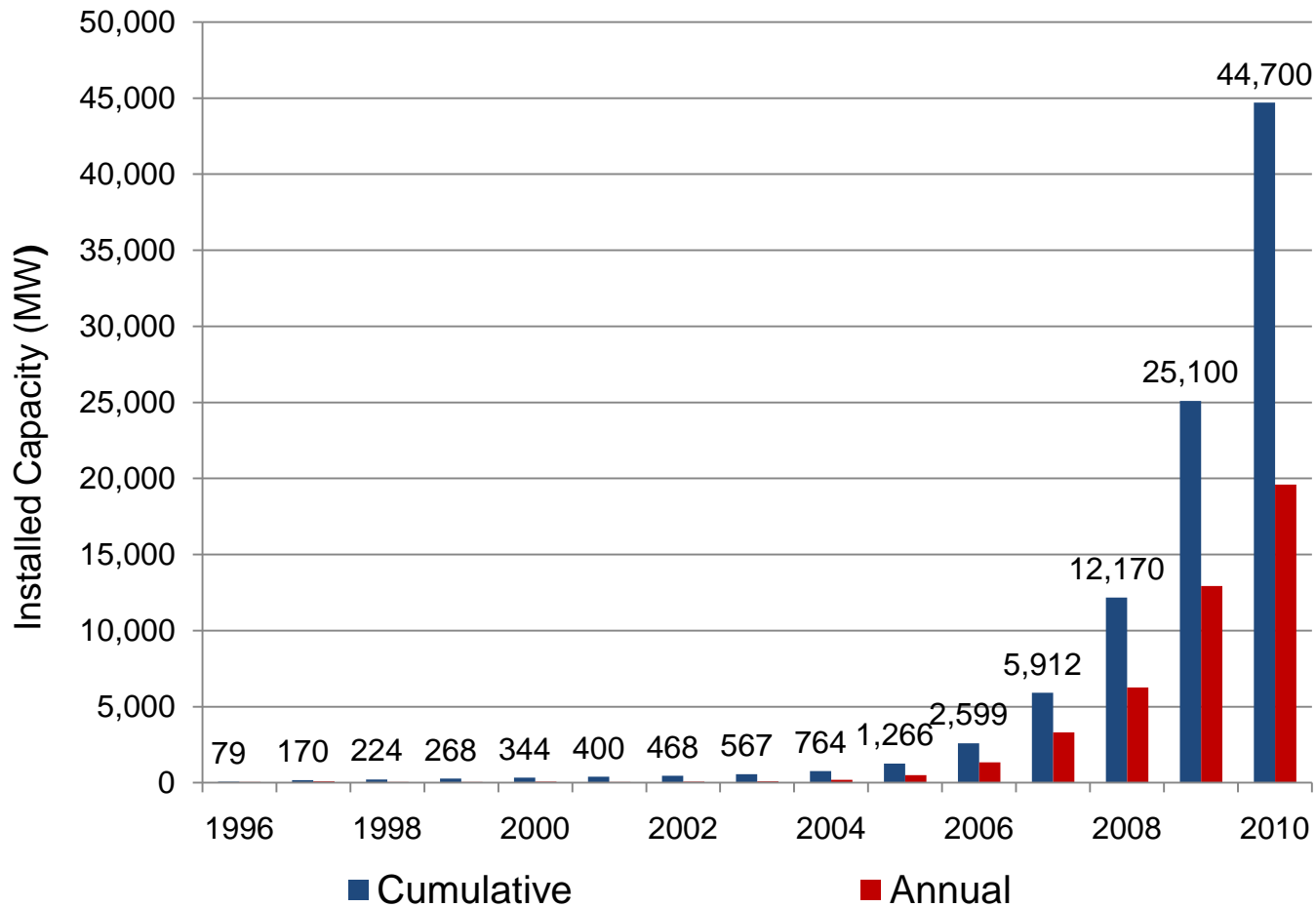
I. Improving energy efficiency

- ❑ 11th Five Year Plan (FYP) (2006-2010): accomplished 19.1% drop in energy intensity, roughly meeting the 20% target
 - Ten Key Projects
 - Buildings Energy Efficiency
 - Top-1000 Program
 - Structural Optimization/Small Plant Closures
 - Appliance Standards
 - Provincial Energy Savings Programs
- ❑ 12th FYP (2011-2015): to achieve 16 to 17% drop in both energy intensity and CO₂ emission intensity

II. Innovation around large, advanced energy projects (e.g. IGCC)

III. Promoting renewables

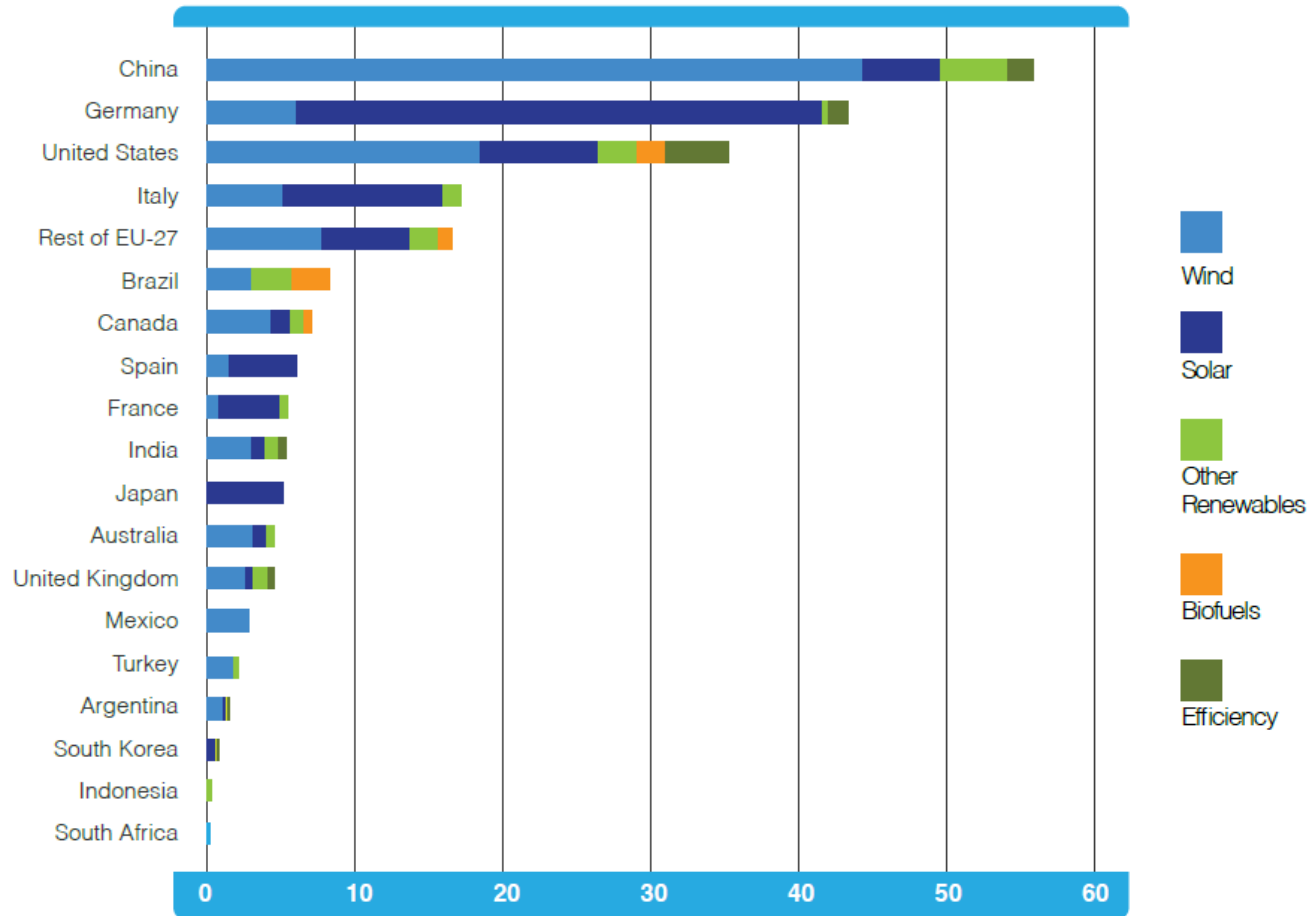
China leads in installed wind power capacity



Data source: Li, et al. (2007), EIA (2010), and GWEC (2011)

China leads in investing in clean power

Investment by country and sector, 2010 (Billions of \$)

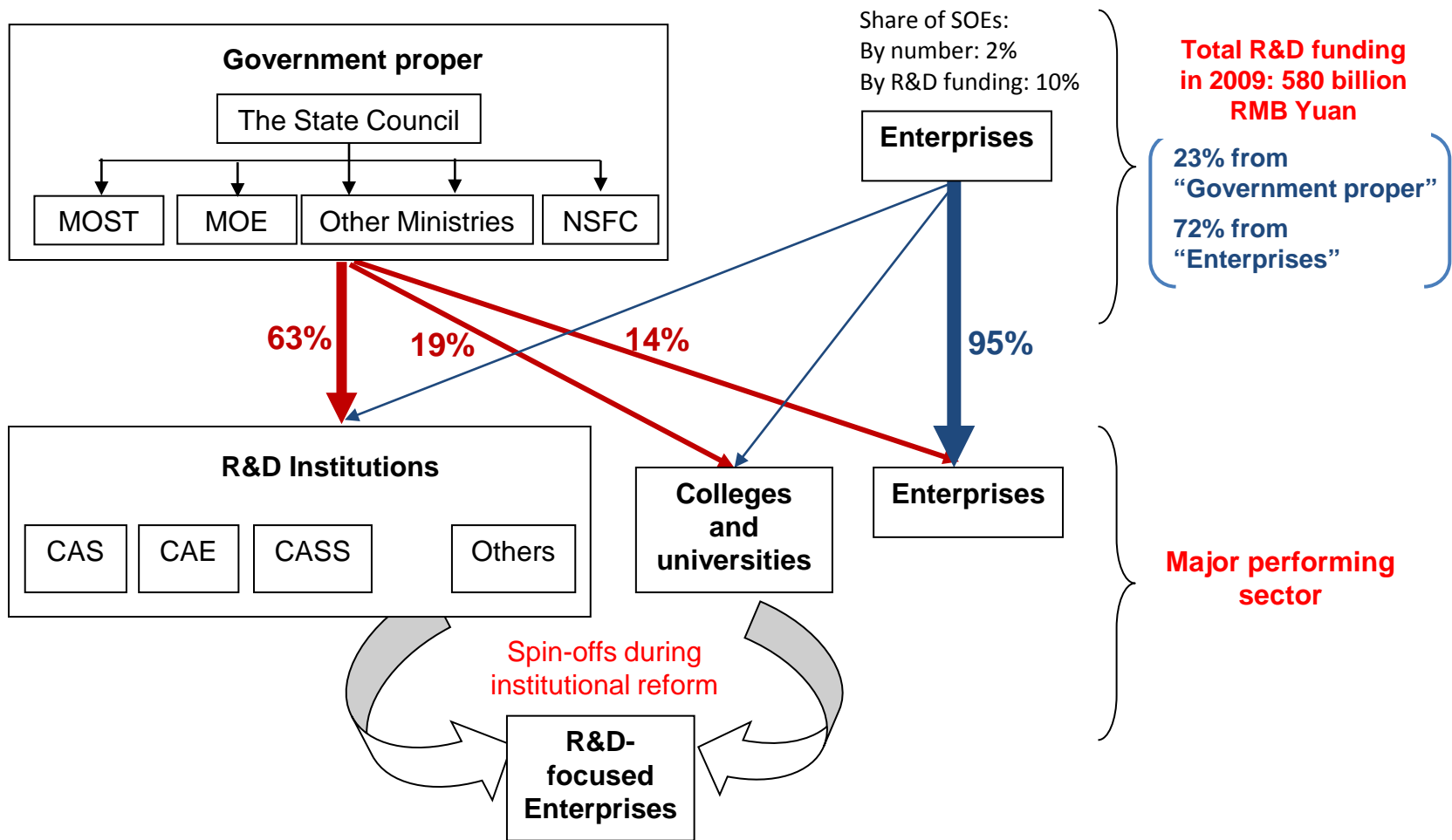


Source: The PEW Charitable Trust (2011) working with BNEF data

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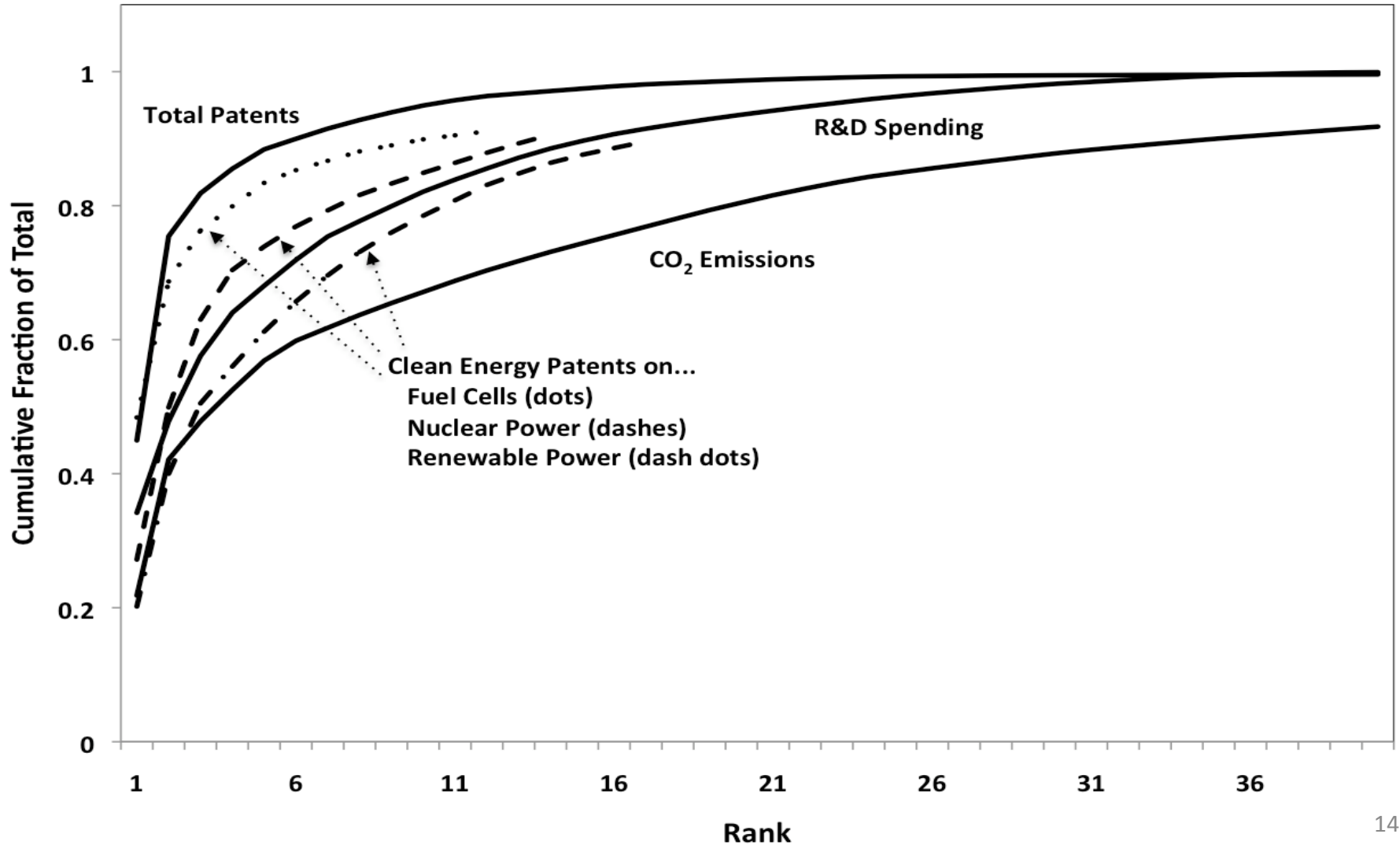
National Innovation System in China



Note: R&D only; Does not include funding for demonstration, which is not available in state statistics.

Who Matters?

R&D Inputs, Outputs and CO2



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How can the United States better “engage” China?

- I. Who’s engaging whom?
- II. Promising directions
 - I. Align with core national interests—energy security, local pollution control
 - II. Government to government partnerships
 - III. Private sector initiatives with dominant Chinese state-owned firms