

CLEAN ENERGY FINANCE AND INNOVATION

Finance and innovation. Two words closely associated with America's economic might. But today China is adopting policies to slowly gain ground against the U.S. in these two areas. And the race we are most at risk of losing may be clean energy finance and innovation.

China Capitalizes Clean Energy Projects

#1 China has the highest public market financing in the clean energy sector.¹

The United States ranks **3rd** in total clean energy investment in 2010, behind China and Germany. In 2008, the United States ranked first.²

China has secured **\$47.3 billion** of asset financing in 2010 for clean energy projects.³ The U.S. attracted \$21 billion in 2010.⁴

60% of all clean energy technology IPOs in the world in 2010 were from Chinese companies.⁵

China is Gaining Ground with the Energy Finance Community

#1 According to Ernst and Young, for the first time, China beat the U.S. in terms of its attractiveness for renewable energy investment.⁶

China received **20%** of total global clean energy investment in 2010, while the U.S. saw **19%**. In 2004, China only had 3% of the total, while the U.S. received 20% of investment.⁷

China attracted **\$54.4 billion** clean energy financing in 2010, a 39% increase over 2009 and equal to the entire amount of clean energy investment worldwide in 2004.⁸ Similar financing in the U.S. stagnated last year at \$34.4 billion, approximately equal to 2007 levels.⁹

China Edges Up on the U.S. Innovation Lead

#1 China is expected to lead the world in overall number of patents filed in 2011, surpassing the United States and Japan for the first time.¹⁰

China ranks **2nd** in estimated number of people engaged in scientific and engineering research and development.¹¹

China has seen the largest increase of any nation in its innovation score over the last decade, up **19.5 points** (compared to a **2.7 point** increase in America's score).¹²

China is creating **16** national energy research and development centers intended specifically to drive innovation in the clean energy sector.¹³

By the end of 2011, national Chinese R&D expenditures are targeted to rise **11%** over levels earlier in the year.¹⁴

Eight of ten companies with the largest R&D budgets have established R&D facilities in China, India, or both.¹⁵

There has been a **600%** increase in the number of college graduates in science fields in China between 1995 and 2005.¹⁶



- 1 "Who's Winning the Clean Energy Race?" Report, The Pew Charitable Trusts, 2011, p. 22. Accessed June 8, 2011. Available at: <http://www.pewenvironment.org/uploadedFiles/PEG/Publications/Report/G-20Report-LOWRes-FINAL.pdf?loc=interstitialskip>.
- 2 Ben Sills, "China Buries Obama's 'Sputnik' Goal for Clean Energy Use," *Bloomberg*, April 4, 2011. Accessed June 28, 2011. Available at: <http://www.bloomberg.com/news/2011-04-03/china-buries-obama-sputnik-aim-for-clean-power-as-kissinger-advises-bank.html>.
- 3 Asset financing is the main source of private debt for clean energy projects and is considered by many to be a barometer of clean energy deployment.
- 4 "Who's Winning the Clean Energy Race?" p. 19.
- 5 Trevor Curwin, "2011 Set to be Even Hotter for Chinese Cleantech IPOs," *CNBC*, January 17, 2011. Accessed June 8, 2011. Available at: http://www.cnbc.com/id/41051922/2011_Set_to_be_Even_Hotter_for_Chinese_Cleantech_IPOs.
- 6 United States, Senate, Committee on Energy and Natural Resources, Testimony by Ray Rothrock, 112th Congress, 1st Session, May 3, 2011, p. 1. Accessed June 28, 2011. Available at: http://www.nvca.org/index.php?option=com_docman&task=doc_download&gid=726&Itemid.
- 7 United States, Senate, Committee on Energy and Natural Resources, Statement by Dan W. Reicher, 112th Congress, 1st Session, May 3, 2011, p. 6. Accessed June 28, 2011. Available at: http://energy.senate.gov/public/_files/ReicherTestimony05032011.pdf.
- 8 "Who's Winning the Clean Energy Race?" pp.13-14.
- 9 Sills.
- 10 Eve Y. Zhou and Bob Stembridge, "Patented in China: The Present and Future State of Innovation in China," Report, *Thomson Reuters*, 2010, p. 9. Accessed June 8, 2011. Available at: http://ip.thomsonreuters.com/chinapatents2010/China_Report_0810.pdf.
- 11 Members of the 2005 "Rising Above the Gathering Storm" Committee, "Rising Above the Gathering Storm, Revisited: Rapidly Approaching Category 5," National Academy of Sciences, National Academy of Engineering, and Institute of Medicine, 2010, p. 10, Print.
- 12 "The Atlantic Century: Benchmarking EU & U.S. Innovation and Competitiveness," The Information Technology and Innovation Foundation and The European-American Business Council, February 2009, p. 2. Accessed June 8, 2011. Available at: <http://www.itif.org/files/2009-atlantic-century.pdf>.
- 13 "First national R&D centers established," *People's Daily Online*, January 7, 2010. Accessed June 8, 2011. Available at: <http://english.people.com.cn/90001/90778/90860/6862287.html>.
- 14 Calculated using figures from Mark Fulton, "12th Five-Year Plan—Chinese Leadership Towards a Low Carbon Economy," Report, *Deutsche Bank Group*, April 4, 2011, p. 10, Print.
- 15 "Rising Above the Gathering Storm, Revisited," p. 7.
- 16 "The China GreenTech Report 2011," *The China GreenTech Initiative*, 2011, p. 51. Print.