



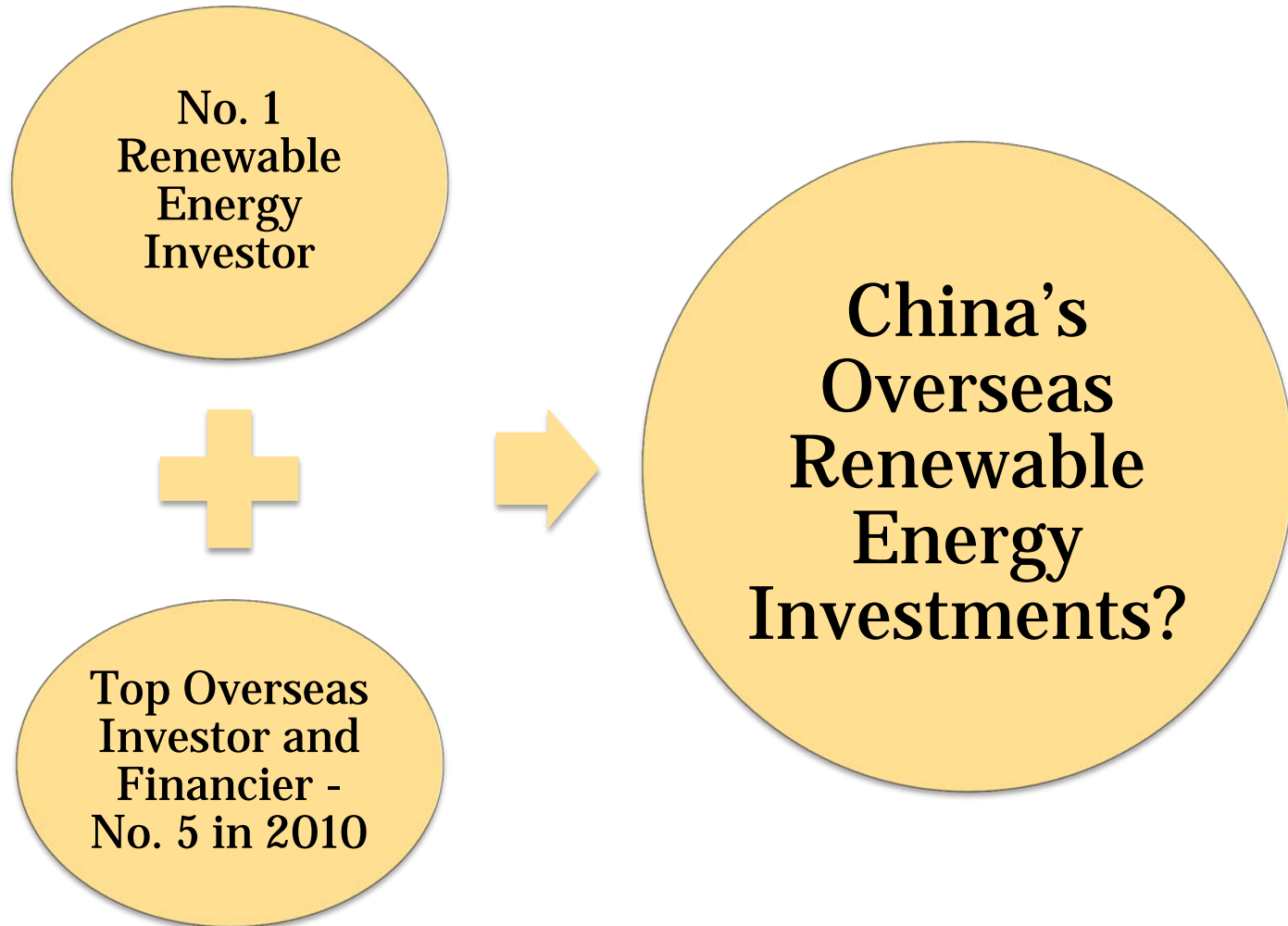
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CHINA'S OVERSEAS INVESTMENTS IN THE WIND AND SOLAR INDUSTRIES:

TRENDS AND DRIVERS

International Financial Flows and Environment Project, World Resources Institute

The research

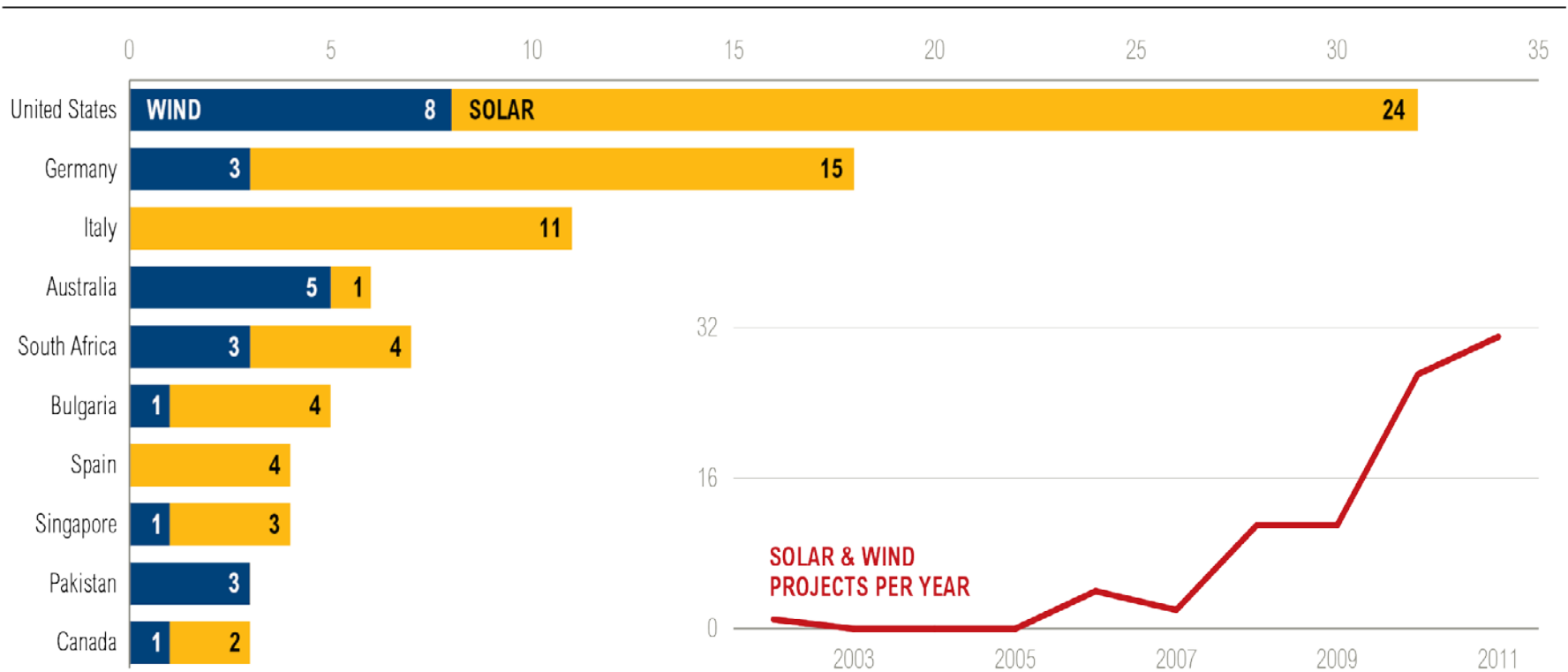


Trends

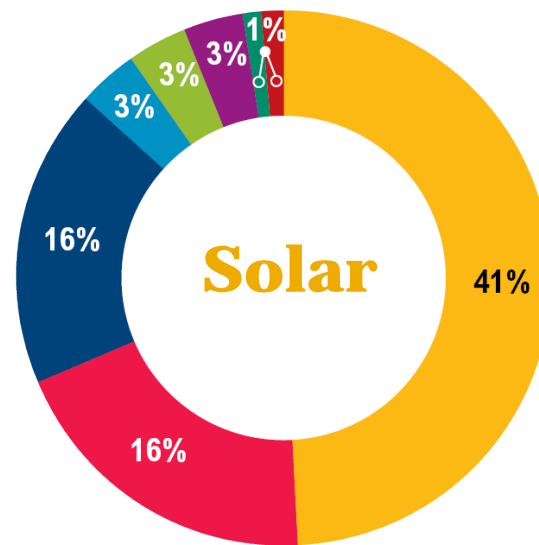
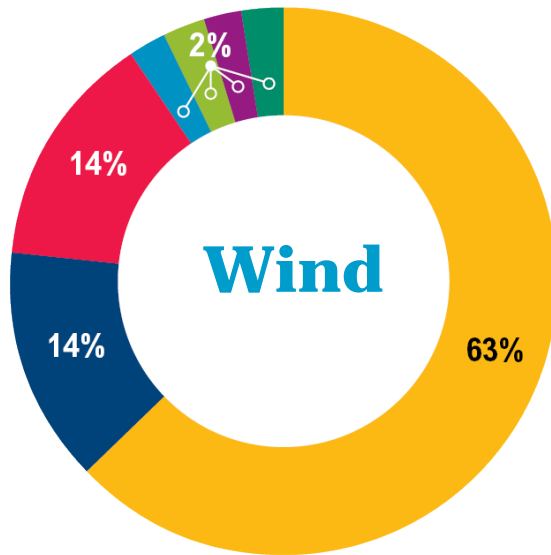
- Geographies
- Functions of investments
- Mode of investments
- Major investors

Trends: Geographies

Figure 1 | Number of China's Overseas Investments in Solar and Wind Industries in the Top 10 Destination Countries, 2002-12

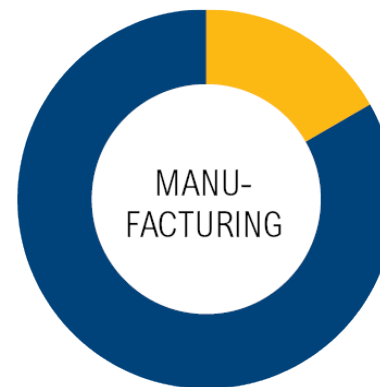
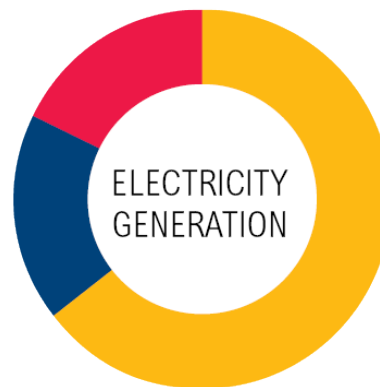


Trends: Functions



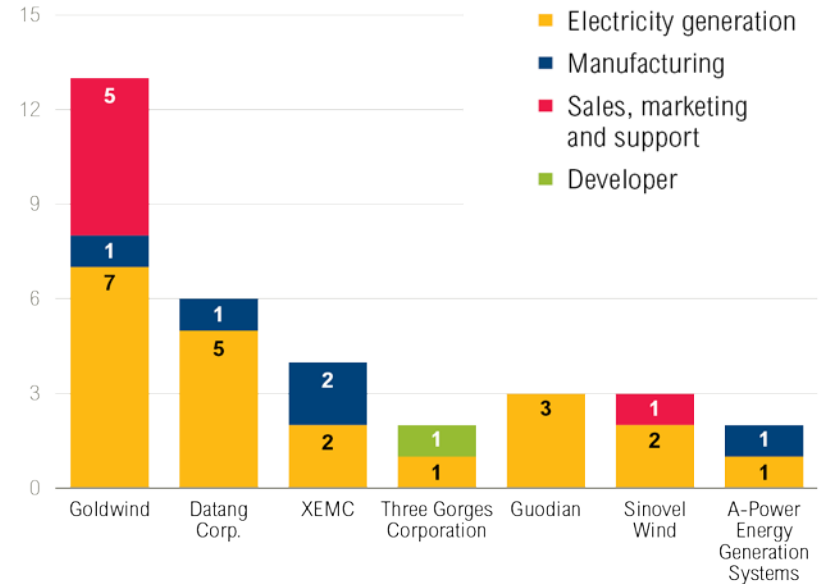
- Electricity generation
- Sales, marketing and support
- Manufacturing
- Design, development & testing
- Headquarters
- Not specified
- Developer
- Investment platform

Matching Functions with Modes of Investments - The Wind Industry

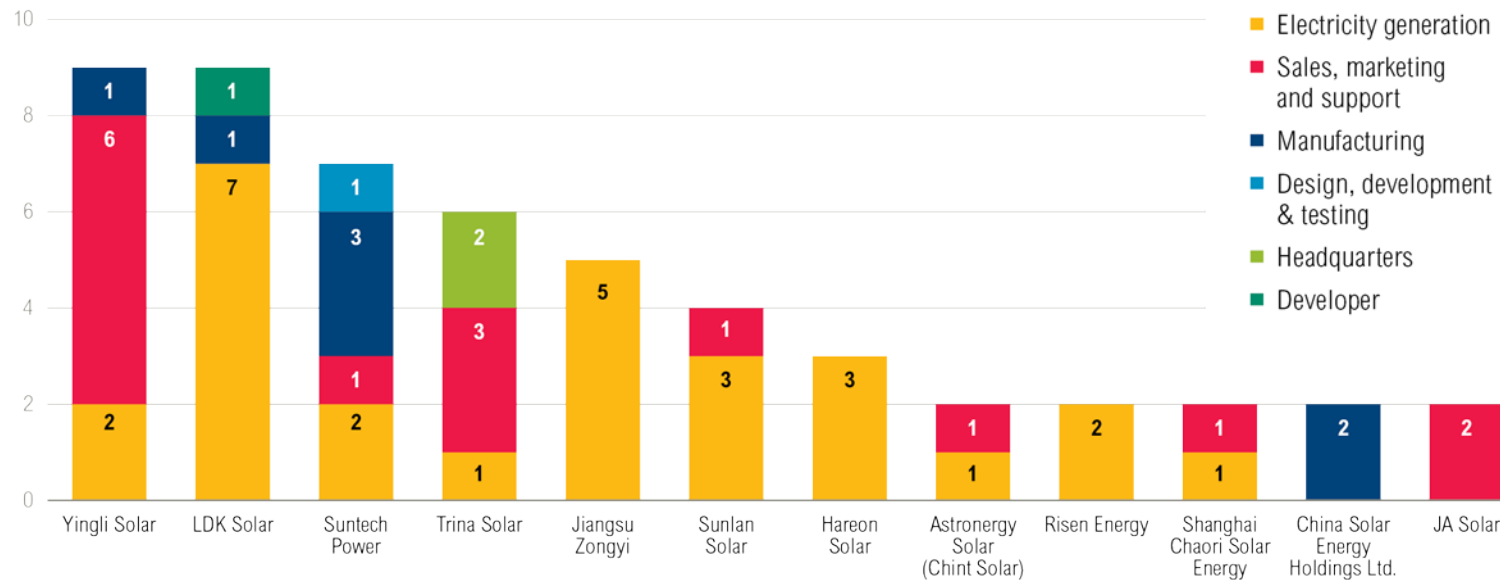


- Joint Venture
- Acquisition
- Greenfield

Trends: Who invested in what?



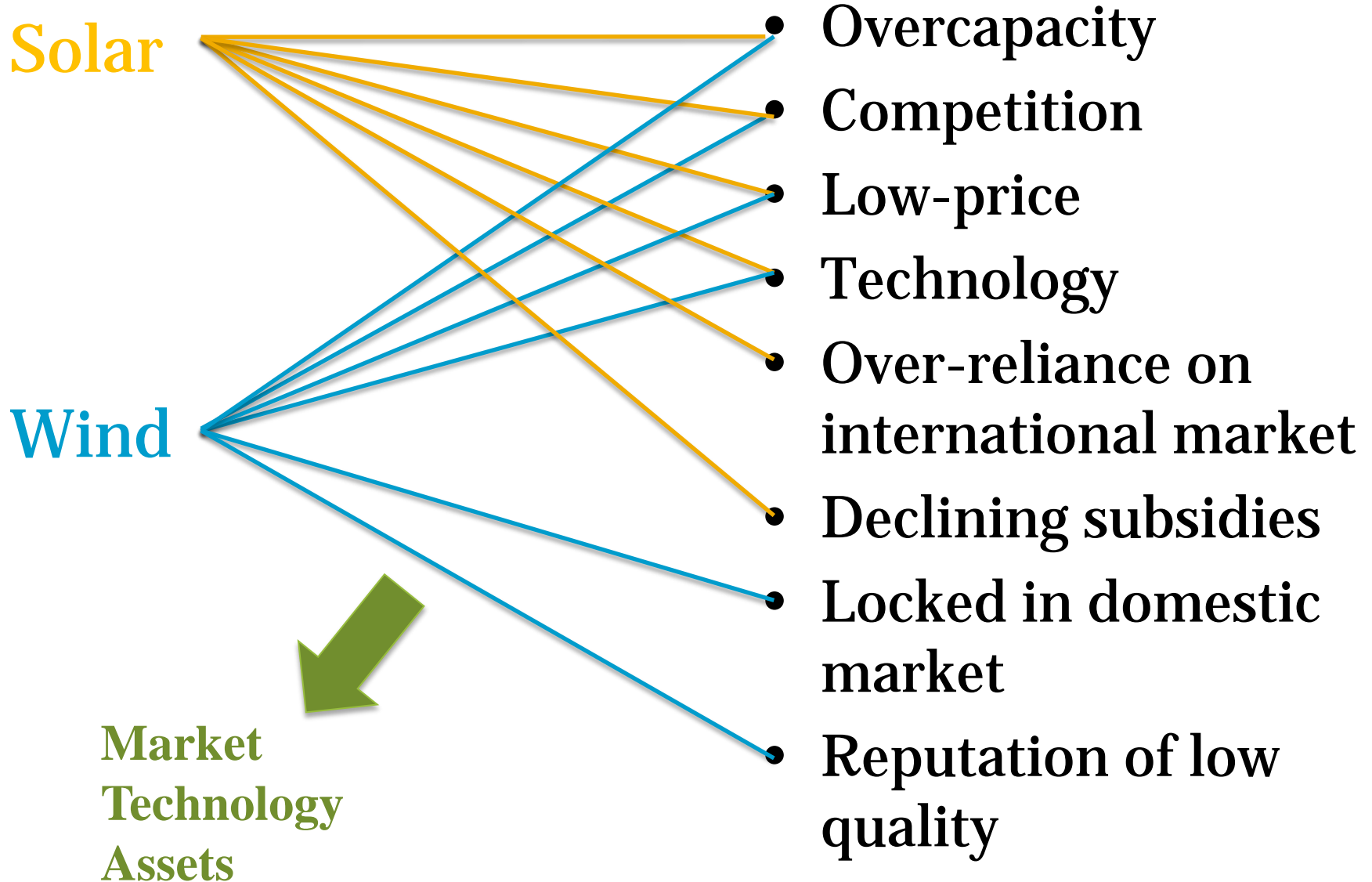
Solar



Drivers

- Industry & Market
- Government policies
- Financing
- Host country drivers

Drivers: the Industry



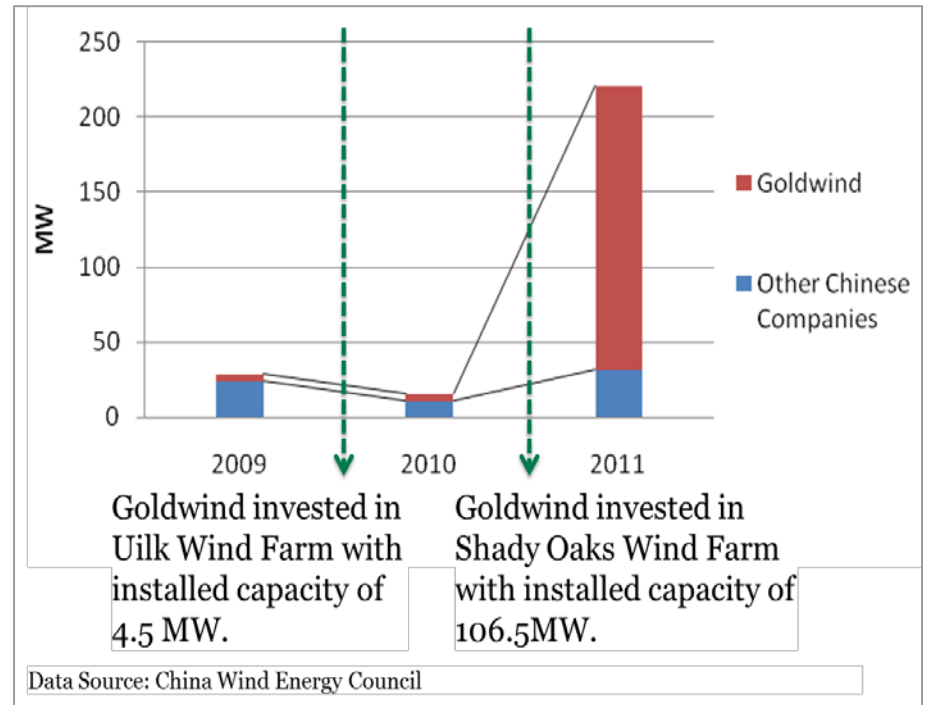
Demand Creation Model - Goldwind

Demonstration project showing good quality of products

- Uilk Wind Farm 4.5MW, Pipestone, Minnesota

Major investment creating demands and building brand

- Shady Oaks Wind Farm, 109.5MW (71 turbines), Illinois



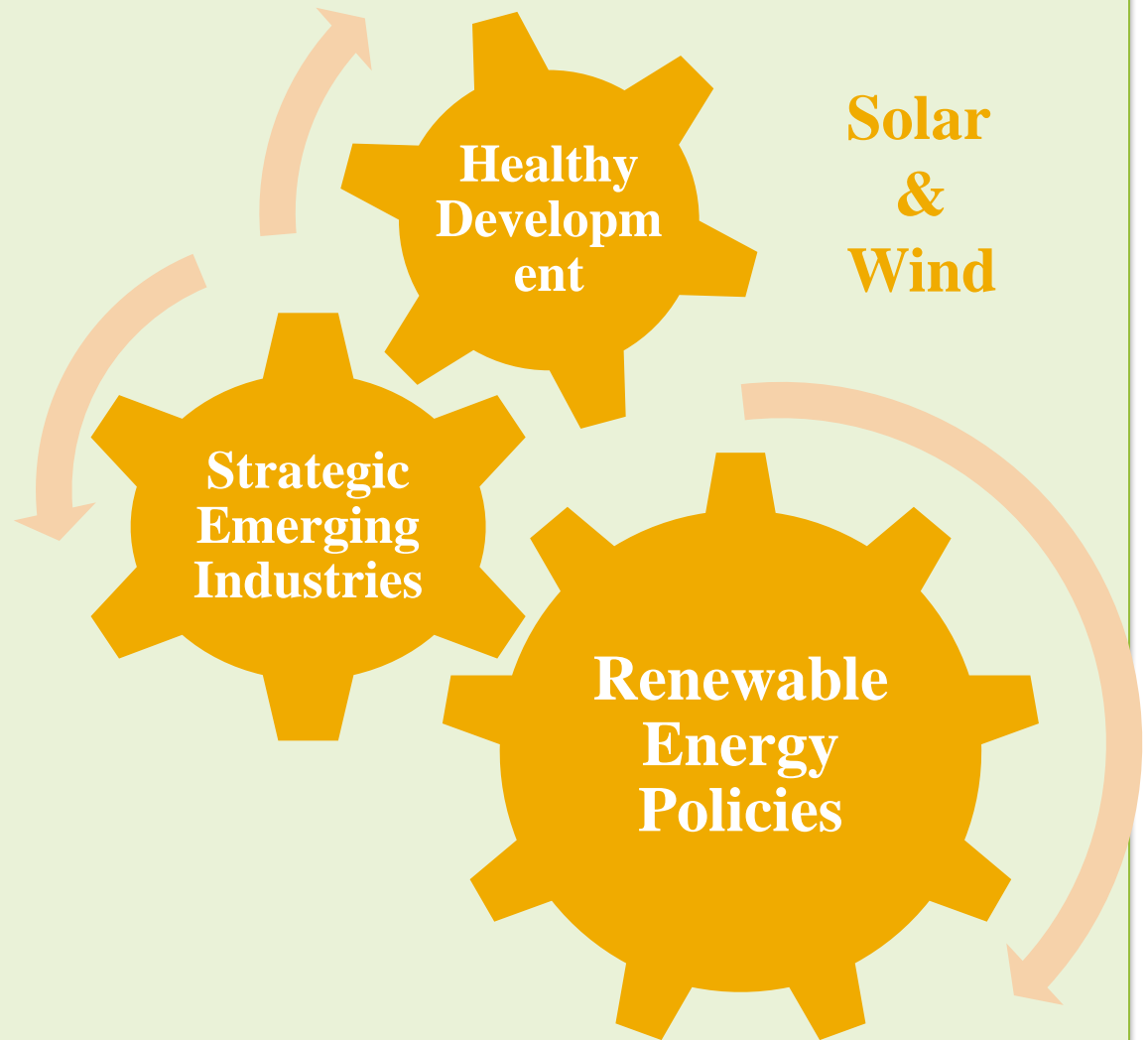
International Expansion

- Export: 15GW of installed capacity across Asia, Australia, Europe, North and South America
- Projects: 271MW of wind power operating or under construction in North and South America (US, Chile, Ecuador, Panama)

Drivers: Government Policies

- BOP Surplus
- Appreciation of RMB
- “Go Global” Strategy
- “Dragon Heads” (national champions)

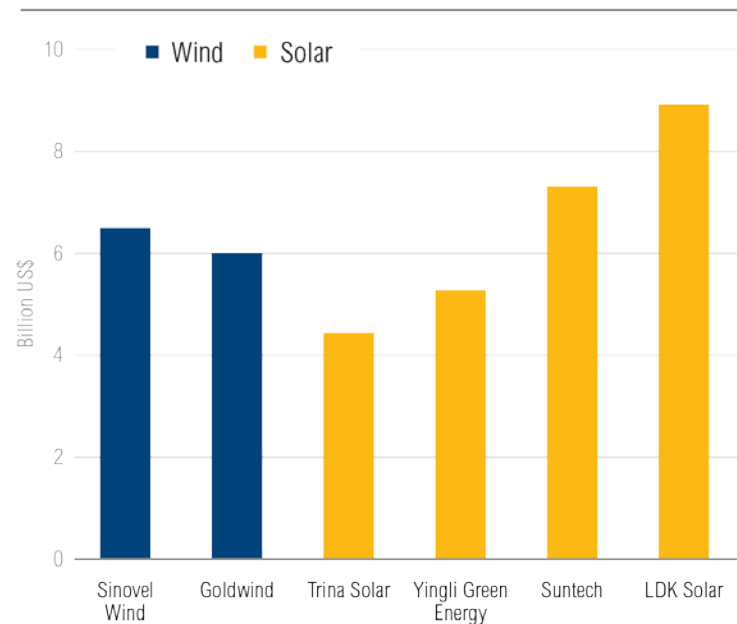
Broad Drivers



Drivers: Financial Institutions

- Credit lines to corporations supports balance sheet financing
- Project financing specifically to acquire and develop overseas power plants
- Export credit
- EPC financing brings export
- Credit lines to foreign partners

Figure 15 | CDB's Credit Lines to Chinese Wind and Solar Companies in 2010



Source: McCrone et al. 2011; Goldwindglobal.com 2011; Sinovel.com 2010.

China Development Bank financed more cross-border clean energy projects than the Inter-American Development Bank.

Drivers: Host Country Conditions

- **Regulatory and price incentives**
 - Preferential taxes (Suntech's Goodyear manufacturing facility)
 - Feed-in tariffs
 - Renewables portfolio standards (Goldwind's Shady Oaks Wind Farm)
 - Bilateral cooperation
- **Import Restrictions as “side effects”**
 - Tariffs
 - Local content requirements
- **Opportunities arising from the financial crisis**

Further Research

- Improve data on China's overseas wind and solar industries
- Expand research analysis of investment in the low-carbon technologies and compare with high-carbon technologies
- Scale up China's overseas investments, particularly in other developing countries, to enhance energy access and reduce emissions

Thank you!

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Working Paper

CHINA'S OVERSEAS INVESTMENTS IN THE WIND AND SOLAR INDUSTRIES: TRENDS AND DRIVERS

XIAOMEI TAN, YINGZHEN ZHAO, CLIFFORD POLYCARP, AND JIANWEN BAI

EXECUTIVE SUMMARY

Shifting to a low-carbon economy will require current emitting countries and projected future emitters to rapidly scale up their investments in renewable energy. In recent years, major emerging economies like China, India, and Brazil have been catching up with leading developed country investors in Europe and the United States. By some estimates, China is already the leading global investor in renewable energy infrastructure, and is increasing its overseas investments in renewable energy, particularly solar and wind. If China achieves its goal of sourcing 15 percent of its energy mix from renewables by 2020 and 30–45 percent by 2050, renewable energy will become closer to a mainstream energy resource within the country. Cost reduction incurred in this process would benefit not only China, but also the rest of the world.

This working paper aims to help policymakers, investors, and researchers better understand the trends in China's overseas investments in the wind and solar industries, and the factors behind those trends. It examines the scale, nature, and types of China's overseas investments in the wind and solar industries, and identifies the policy and market factors that drive these investments.

China has made at least 124 investments in solar and wind industries in 33 countries over the past decade. Of the investments for which data were available, the cumulative value amounted to nearly US\$40 billion in 54 investments, and the cumulative installed capacity added was nearly 6,000 MW in 53 investments. Of the 124 investments, 41 were in the wind industry, 81 in the solar industry, and 2 in both the wind and solar industries.

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