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# Carbon Markets and Financing

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# Overview: carbon offsets can help fund infrastructure development



<http://blogs.ft.com/energy-source/files/2010/08/wind-turbines1.jpg>

# Carbon markets hold promise for the developing world

- Carbon markets can support infrastructure development
  - Technology substitution (e.g. renewable vs. non-renewable power)
  - Create additional incentives for creating new projects
- Global carbon markets have tremendous value
  - Est. \$143.7B (2009)\*, more if U.S. adopts cap and trade with offsets
- Infrastructure investment is more attractive in developing vs. developed economies
  - Larger gains in economic efficiency are possible
  - Existing buildings have large sunk costs (less attractive to replace)
  - Technology leapfrogging
  - Significant co-benefits with economic development

## ...but require political action by developed countries

- Policy levers are required to create carbon markets
  - Set methodologies for defining CO<sub>2</sub>-e emissions (and offsets)
  - Provide value to offsets by assigning caps
- Kyoto protocol
  - Protocol of the UNFCCC
    - Adopted on 11 December 1997
    - Went into effect in 16 February 2005
  - Created “flexible mechanisms” for emissions reductions: Clean Development Mechanism (CDM) is most important
    - Establishes a set of rules and methodologies for creating offsets (e.g. “additionality”)
- U.S. action on carbon markets
  - Signed Kyoto Protocol, but did not ratify (only signatory not to ratify)
  - U.S. has not passed national legislation limiting CO<sub>2</sub> emissions or setting up a carbon market, however, some states have taken action

# Markets can exist in many forms



## Examples of markets

### Voluntary

- Chicago Climate Exchange (CCX)
- Western Climate Initiative (WCI)

### Compliance

- European Union Emissions Trading Scheme (EU ETS)
- Acid Rain Program
- Leaded-gasoline phase-out

# Quick example of carbon trades

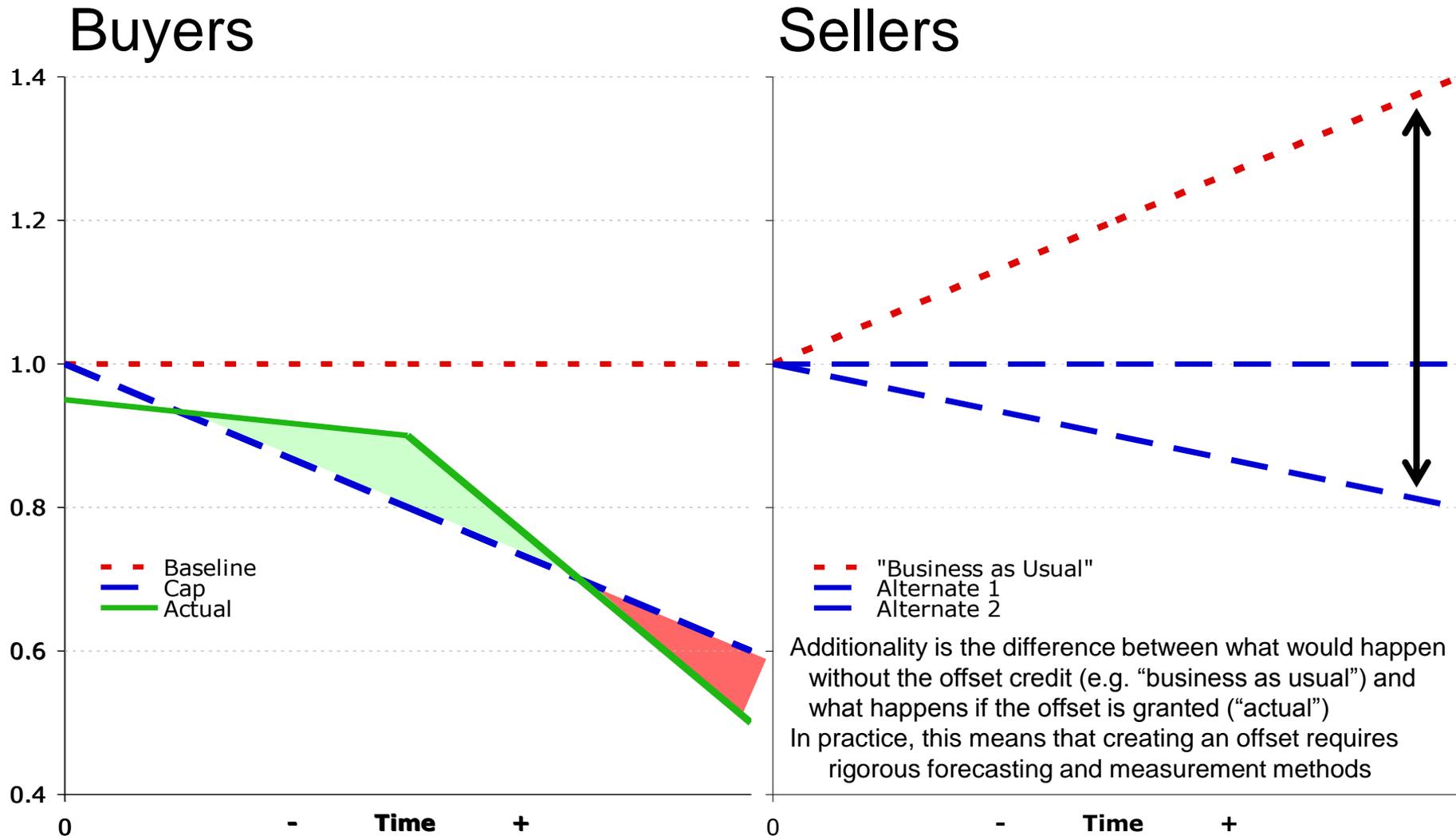
Company	U.S. Power & Co.	Natural Gas-istan	Random Forests Cooperative Inc.
Cap MMTCO <sub>2</sub> e	800	800	
Emissions MMTCO <sub>2</sub> e	1,000	600	
Excess (Need) MMTCO <sub>2</sub> e	(200)	200	

Projects	Replace light bulbs	Reduce gas flaring	Plant more trees
Mitigation MMTCO <sub>2</sub> e	100	100	100
Cost \$\$	100	75	50

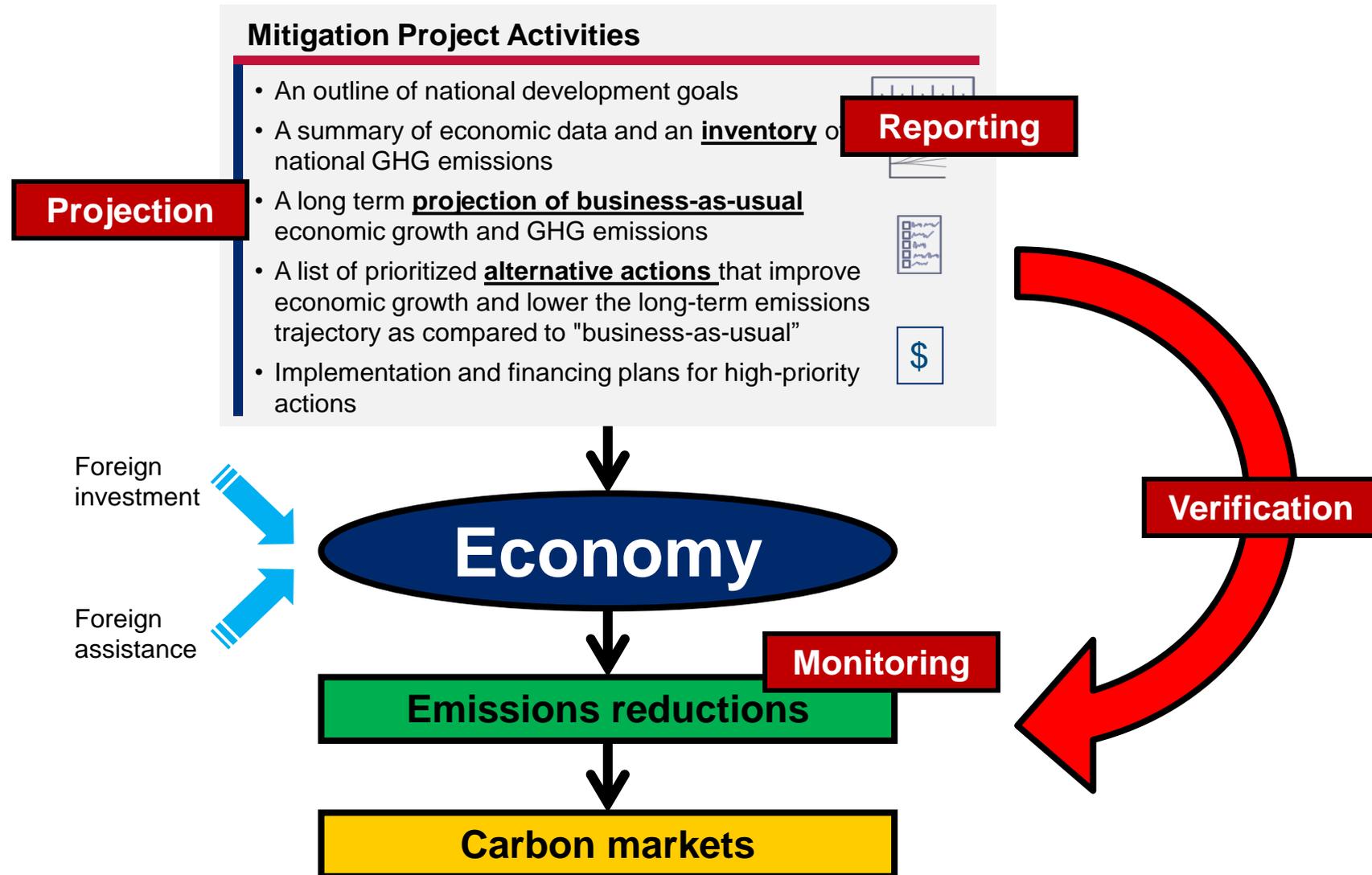
The numbers in the table, and the projects and the companies are entirely fictional.

**Offset buyers have choices but sellers must meet market standards.**

# Markets require baselines, principles of additionality, and methodologies



# Market participation has significant costs



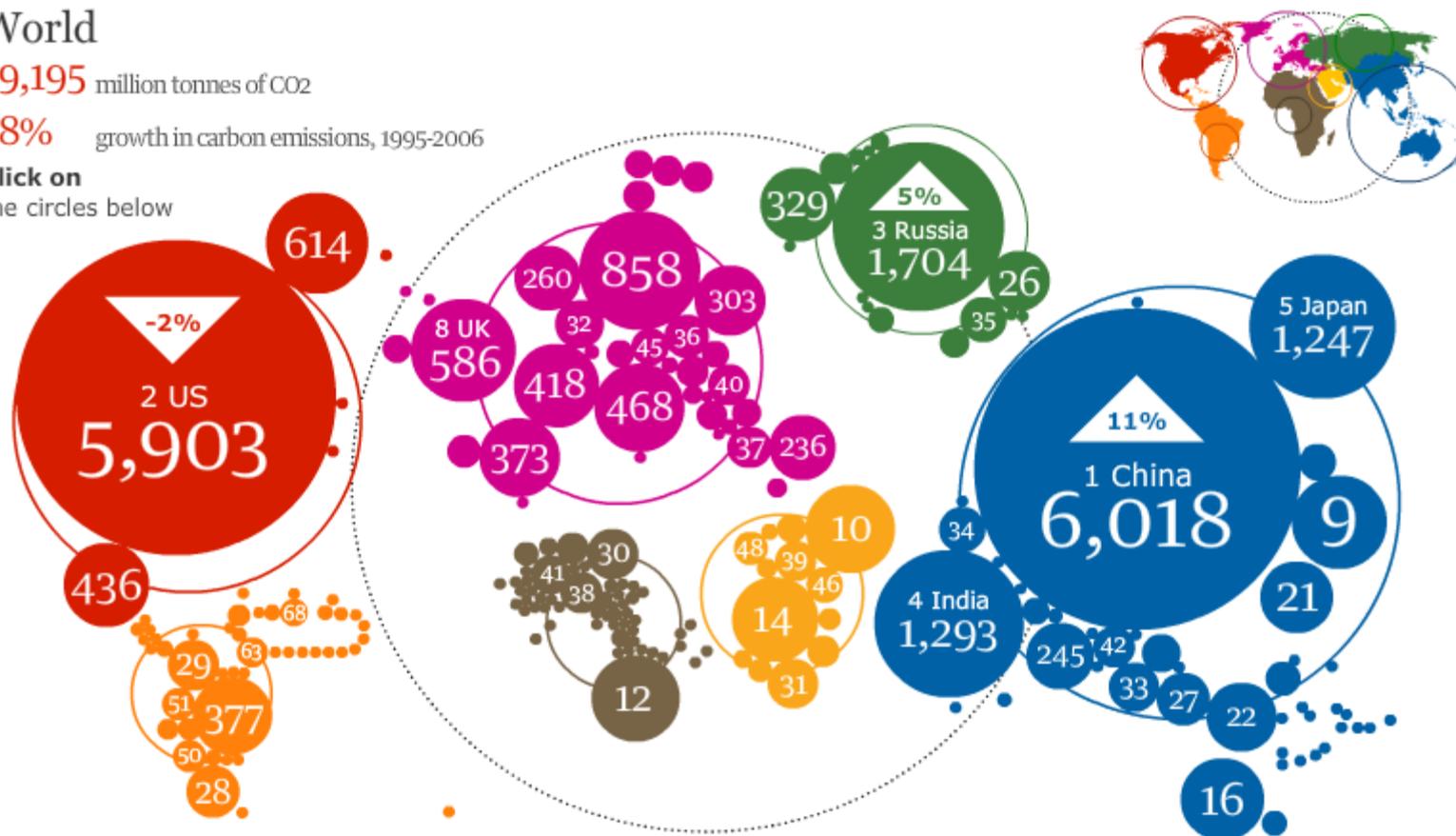
# Carbon markets may exist in many forms, geographies

## World

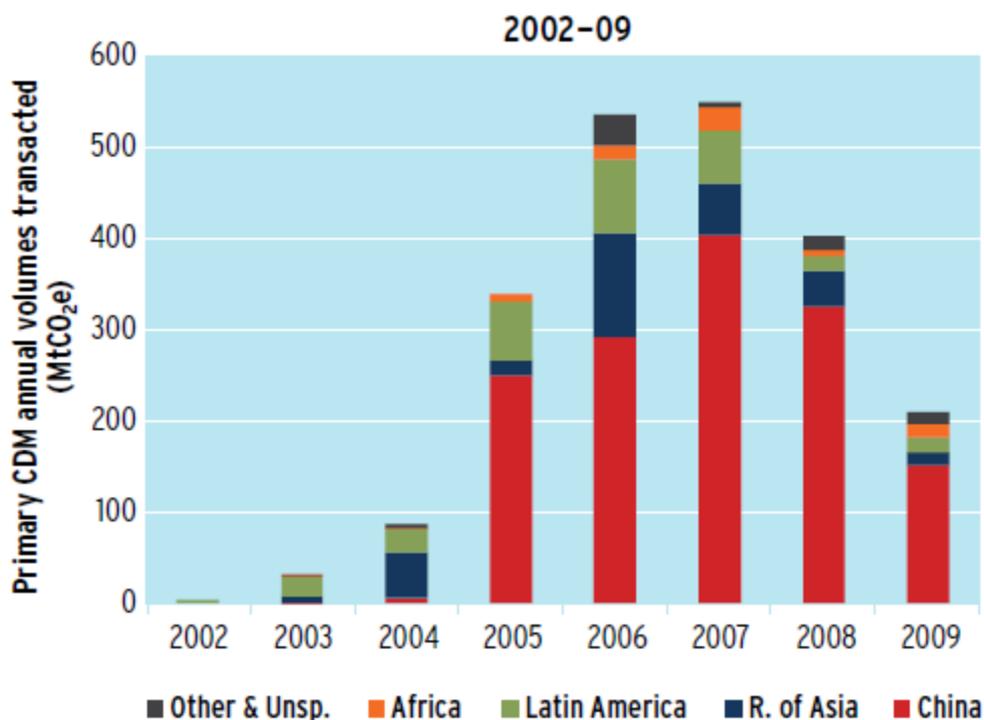
29,195 million tonnes of CO<sub>2</sub>

28% growth in carbon emissions, 1995-2006

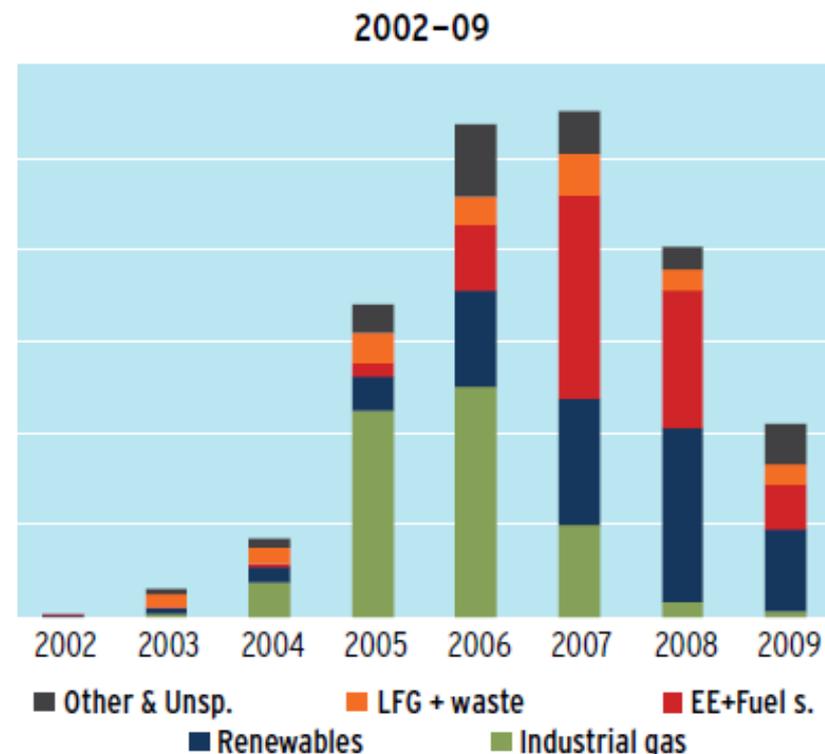
Click on the circles below



# China and renewable energy dominates trends in current CDM markets

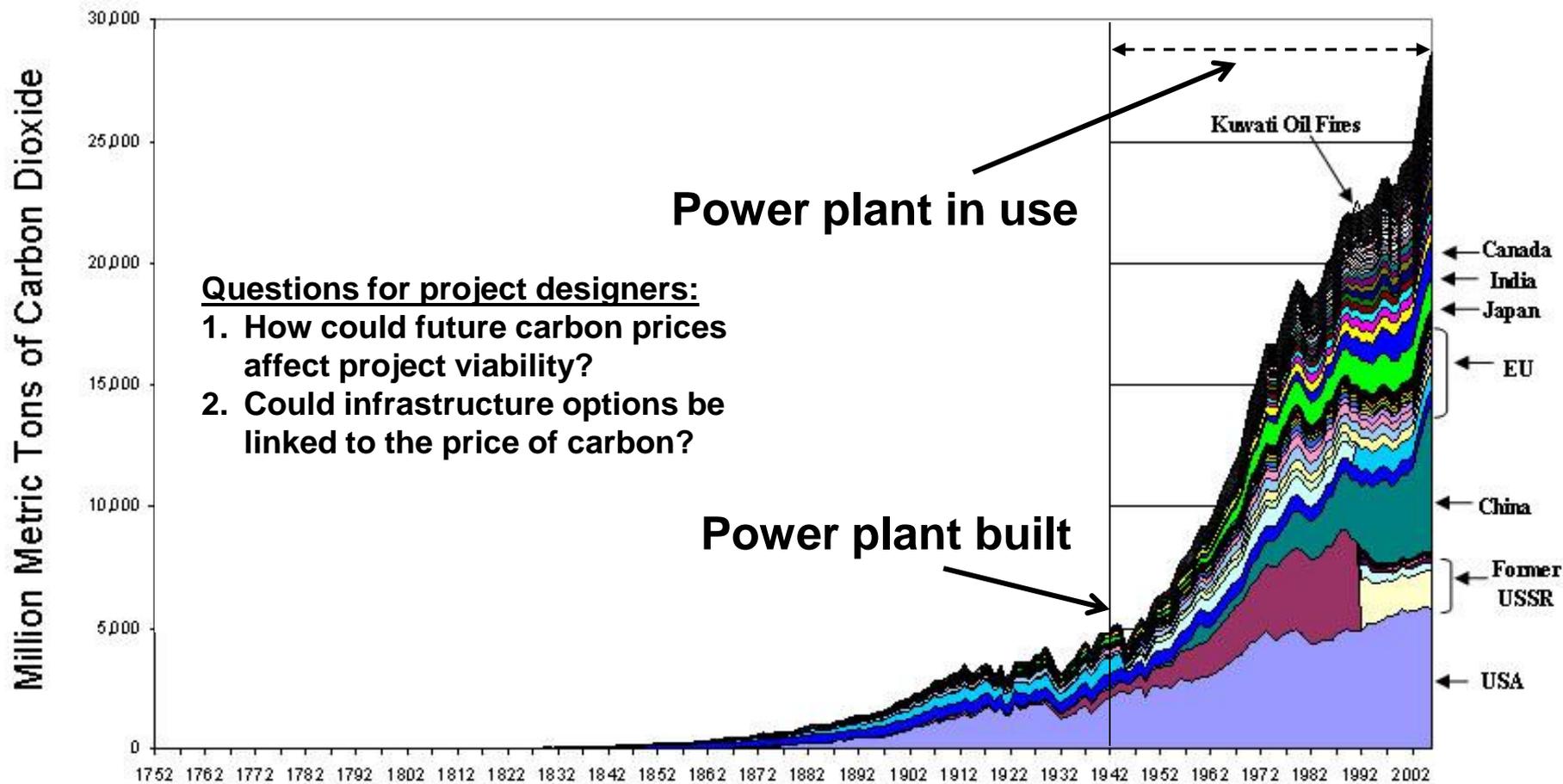


**China is the biggest player with 72% market share**



**High-GWP industrial gases were the “low-hanging fruit”; now switching to renewables**

# When we think about infrastructure, we have to think about the future



<http://www.epa.gov/climatechange/emissions/globalghg.html>

# The reality of carbon markets

- Participation in a market can be difficult
  - High level of technical and regulatory complication
  - Markets have different standards
  - High startup costs, high transaction costs for small-scale participants
- Payback may be uncertain or postponed into the future
  - Value of offset is uncertain and variable
  - Time lags between costs and payoffs
  - Uncertainty in the future use of markets
    - Post 2012 regime?
    - Lack of U.S. legislation
    - Underlying belief that markets are essential for economic efficiency and innovation
- Other co-benefits (e.g. social and environmental considerations) may not be captured by offsets

# Preparing for carbon markets

- How can USAID help?
  - New USAID programs should consider carbon markets' potential and uncertainty
  - Documented emissions reductions are necessary for market participation
    - Greatly increasing scale of sector involvement
    - Change in investment trends
  - Existing programs should seek co-benefits that prepare for a carbon market world
- Fundamental activities to help prepare for carbon markets:
  - Low Emission Development Strategies (LEDS)
  - GHG inventory systems at both national and project levels
  - REDD+ Readiness
  - Market Readiness
  - Benefit sharing
  - Policy, regulatory, enforcement capabilities

