

Energy Efficiency Cooperation: U.S. and China Building Together

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October 25, 2010



About the Natural Resources Defense Council (NRDC)

- NRDC's purpose is to safeguard the Earth: its people, its plants and animals and the natural systems on which all life depends.
 - We use law, science and the support of 1.3 million members and online activists to protect the planet's wildlife and wild places and to ensure a safe and healthy environment for all living things.
- We have 5 offices in the U.S. and an office in Beijing, China

Overview

- China's Energy Efficiency Goals
- Existing U.S.-China History of Cooperation
- Key Opportunities:
 - Buildings
 - Demand Side Management
 - Industry
 - Supply Chains

China's Existing Commitments

Energy Intensity

- **Target:** 20% reduction from 2005 levels by 2010
- **Status:** 15.6% by end of 2009
- Top-1000 Enterprises program:
Reduce energy demand by 100 million tce by 2010

⇒ *Currently exhausting all alternatives to achieve target*

Carbon Intensity

- **Target:** 40-45% reduction from 2005 levels by 2020
- Inscribed in Copenhagen Accord

12th Five-Year Plan (2011-2015)

- **Energy Intensity Target:** 15-20% reduction likely
- **Carbon Intensity Target** also likely to be included

Energy Efficiency Potential - 2030

ABATEMENT POTENTIAL BY CATEGORY – 2030

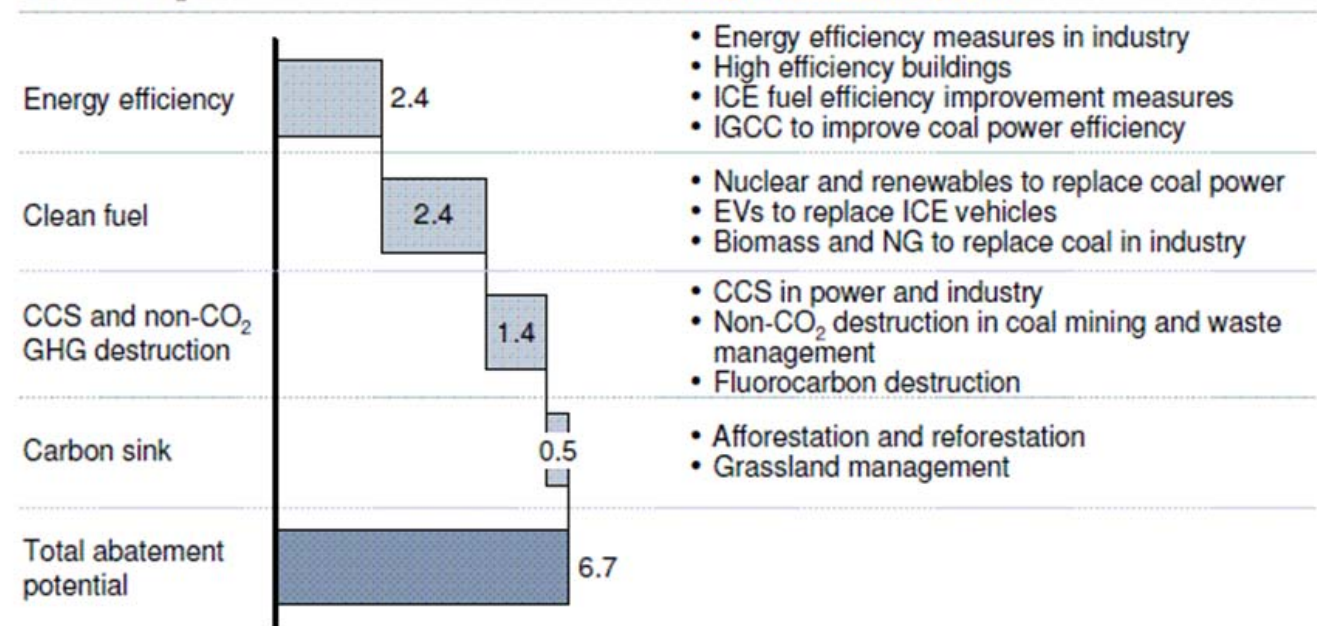
- Energy Efficiency

2.4 Gt CO₂

- Clean Energy

2.4 Gt CO₂

Abatement potential 2030 Gigatons CO₂e



Sources: McKinsey analysis *China's Green Revolution*, 2009

U.S.-China EE Cooperation

- Cooperation goes back nearly 20 yrs

Recent cooperation includes:

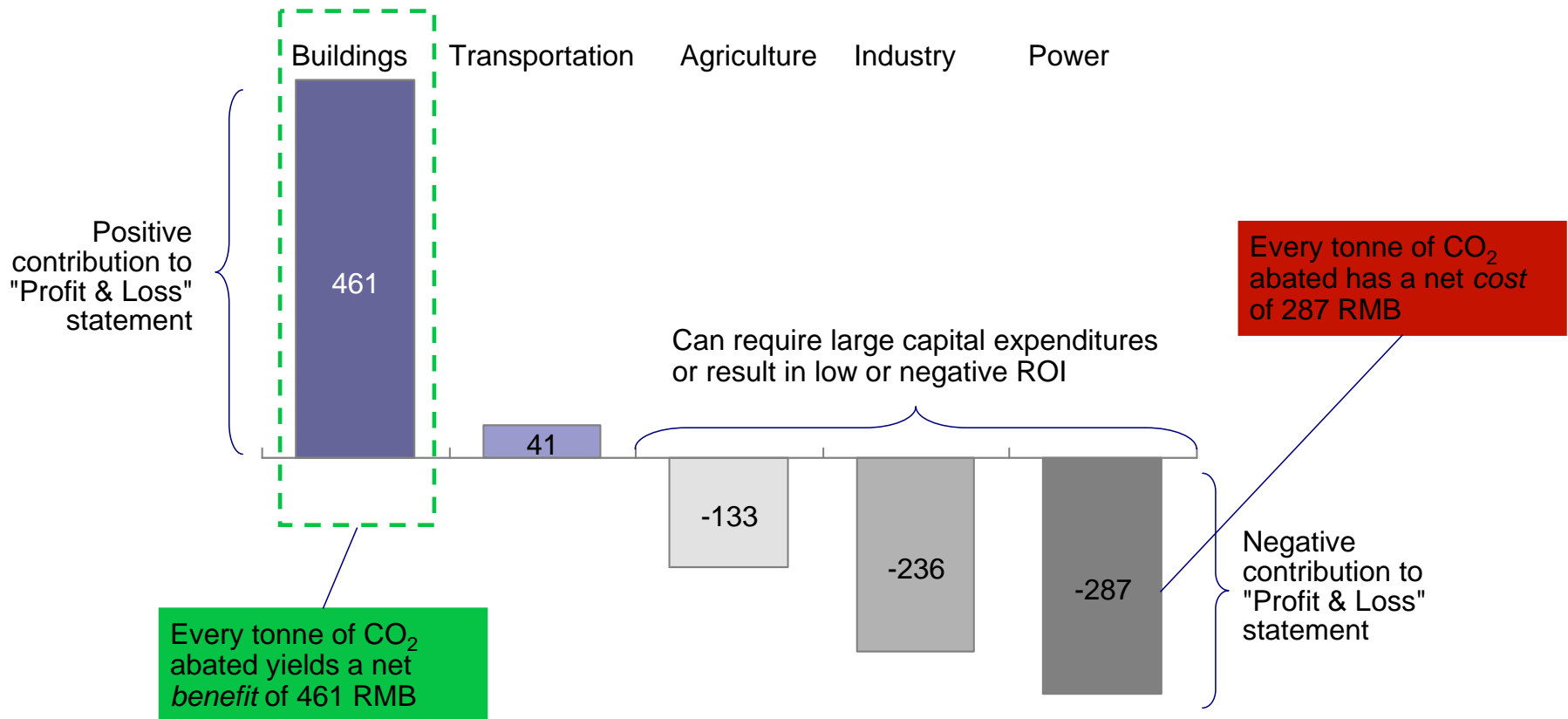
- Building Efficiency MOU (July 2009)
- Energy Efficiency Action Plan (Nov 2009)
- Energy Efficiency Forum (May 2010)
- Clean Energy Research Center on **Energy-Efficient Building Technologies (Oct 2010)**
 - Lawrence Berkeley National Lab–led consortium (NRDC is a U.S. partner)

California-Jiangsu Cooperation

- Energy Efficiency/Renewable Energy (2005)
- MOU on GHG reduction (Oct 2009)

Significant Building EE Potential

Cost-benefit estimates of CO₂ abatement (RMB/tCO₂)



Source: *From Gray to Green*, NRDC (2009)

China Building Efficiency Actions

- Agenda 21 Building (completed 2004)
- Current standards: 50% reduction for new buildings
- Energy retrofit target: 150 mil m² cold-climate residential by 2010
- **Under development:** energy rating and labeling for residential and commercial
- ***If meet 11th FYP's targets: 540 MtCO₂ reduction***



Shanghai Building Energy Label

Source: NRDC calculations based on LBNL, "Assessment of China's Energy-Saving and Emission-Reduction Accomplishments and Opportunities During the 11th Five Year Plan" (2010).

Demand-Side Management

- Energy conservation
- Energy efficiency
- Efficiency Power Plant (EPP) – *virtual* power plant
 - Weighted average cost of an EPP¹ (15 fen/kWh)
 - Cost of new power source (35-40 fen/kWh)
- California-Jiangsu Model
- NRDC cooperates with energy efficiency centers in 6 provinces, State Grid DSM Center, Southern Grid

¹Moskovitz, D., Weston, F., Lin, J., Zhou, F., Yu, C., Hu, Z., and Liu, S. 2007. Meeting China's Energy Efficiency and Environmental Goals with Efficiency Power Plants

Industrial EE: Greening the Supply Chain

- NRDC worked w/ major apparel manufactures to look at the energy use and pollution of their supply chain in China
- Applying 10 key measures could save:
 - Energy (fuel) up to 31%
 - Electricity up to 3%

Practice	Savings (kg coal/ton fabric)	% savings (rounded)
Recover heat from hot rinse water	61.1-320	2-12%
Prescreen coal	79.5	3%
Maintain steam traps	72-128	1-5%
Recover heat from smokestack	65	1%
Energy savings from leak detection, preventive maintenance, improved cleaning	47-340	1.5-5%

For more information, see: www.nrdc.org/cleanbydesign



Low-Carbon Industry Parks

- China is building 12 “clean energy economic zones” throughout the country
 - Significant investments converting old industry facilities
 - Will be leaders in clean energy deployment & install state of the art EE/RE
- Suzhou Industrial Park (est. 1994)
 - Sino-Singapore cooperation
 - Eco Science Hub: Low-Carbon Demonstration (2010)
 - SIPAC-NRDC-Nanjing University
- Shanghai Industrial Park
 - Investing \$750 million to convert old iron & steel plant into a clean energy center w/ as high EE as possible

Take Home Points

- Significant energy efficiency potential in China
 - China is aggressively moving to tap into this
 - But...
- U.S.-China cooperation is essential

Thank you!

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- Read our China blogs :
switchboard.nrdc.org/blogs/issues/greening_china/
- See our new reports on China:
http://china.nrdc.org/library/NRDC_Tianjin-side-event-reports
- China-U.S. Energy Efficiency Alliance:
www.chinausealliance.org/

Additional Slides

China's Efforts to Reduce Energy Use

- 11th Five-Year Plan
 - Reduce energy intensity by 20% between 2006 and 2010 (save 700 million tons of coal equivalent)
- Top-1000 program to save 100 million tce by 2010 (263 mt CO₂ reduction)
- Government financial support: 7 billion RMB in 2007 (central/provincial)
- Officials' political career prospects dependent in part on their energy-saving performance

China's Efforts to Reduce Energy Use (2)

- Distribute 150 million energy efficient light bulbs between 2008 and 2010
- Shut down 71 GW of small inefficient coal power plants between 2006 and mid-2010
- Implement efficiency dispatch rules – dispatch power plants based on coal consumption level
- Adopt energy labeling for refrigerator, air condition, washing machine, water heater, induction cooker, fluorescent lamp, motor, copier, computer monitor, etc.