US Climate Policy: Offsets R’ Us?

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Thank You To:

• Vic Niemeyer and Delavane Diaz for their analyses of the US electric sector
• Geoff Blanford for his analyses of sectoral caps
Cost Estimates of US Policy Proposals Prior to 2009 Driven By Electric Sector Assumptions

Note: Cost Estimates of Lieberman-Warner 2007
House-passed Climate Bill Seeks 80+% Cut in Emissions by 2050

But it allows 2 billion tons/year of emission offsets
Where do Emission Reductions Come From? EIA Says Primarily from Offsets and the Electric Sector

Abundant Offsets

No International Offsets

Source: EIA NEMS runs, HR2454 Cap, HR2454 No Int Offsets
CO₂ Price Paths Represent Alternative Assumptions about Offsets

EIA Allowance Price Estimates for H.R. 2454

Limited offset availability

Generous offset availability

Source: EIA NEMS runs, HR2454 Cap, No Int Offsets, No Int Offsets/Lim, High Cost, High Offsets
$20/ton and $50/ton Worlds Could Define Dramatically Different Futures for the Electric Sector

Source: EPRI Regional Stack Model, Midwest ISO results
The $100 billion/year Question Becomes, If You Allow Offsets, Will They Come?

- CDM may be allowed. It has grown, but volumes do not approach allowed levels

  CDM Project Pipeline

<table>
<thead>
<tr>
<th>Year</th>
<th>Projects Submitted</th>
<th>Registered</th>
<th>Issued</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>58</td>
<td>1</td>
<td>103,732</td>
</tr>
<tr>
<td>2005</td>
<td>499</td>
<td>62</td>
<td>26 million</td>
</tr>
<tr>
<td>2006</td>
<td>884</td>
<td>409</td>
<td>77 million</td>
</tr>
<tr>
<td>2007</td>
<td>1,465</td>
<td>427</td>
<td>138 million</td>
</tr>
<tr>
<td>2008</td>
<td>1,559</td>
<td>431</td>
<td>70 million</td>
</tr>
<tr>
<td>2009*</td>
<td>621</td>
<td>365</td>
<td></td>
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</tbody>
</table>

  Successor Agreement to Kyoto?
  REDD and Sectoral rules developed?

  Kyoto Protocol signed
  Rules to govern creation of offsets through CDM and JI established

  Kyoto Compliance Period 2008-12

  Source: Natsource

- Forestry and agricultural offsets allowed. Have great potential but face significant challenges (Steve Rose presentation)
- Sectoral offsets also allowed
Non-OECD Abatement Opportunities in 2030

Huge Theoretical Potential

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Energy-related CO₂ abatement by region

MERGE model results

Russia

China

India

Mid-income

Low-income

billion tons CO2 reduction from BAU

$/ton CO2
70% of abatement occurs in electric sector

MERGE model results

$/ton CO2

billion tons CO2 reduction from BAU

Russia
China
India
Mid-income
Low-income

Single Largest Source

electric sector
other
China’s Electric Sector Emissions

Suppose an agreement is reached with China’s electric sector.

$/ton CO₂ in 2030

Baseline

Cap

$18

$28

$48

$86

$161

Billion tons CO₂
Offset transfers from Non-OECD to OECD

International policy environment:

- 80% below 1990 caps in OECD (USA + EU + Japan + CANZ)
- W-M scale offset provisions in all OECD countries
- Expanding CDM for non-CO$_2$ offsets from non-OECD
- Energy offsets from capped Chinese electric sector

If institutional barriers are overcome, supply could become substantial.
Compliance in OECD after offset transfers

USA

Other OECD

Billion tons CO$_2$-e

1990 2000 2010 2020 2030 2040 2050

Domestic Non-CO$_2$ offsets
Imported credits

Reductions

BAU

CAP

Reductions

1990 2000 2010 2020 2030 2040 2050

Domestic Non-CO$_2$ offsets
Imported credits
But What Happens if Non-OECD Countries Take Targets??
Baseline Emissions for Non-OECD
Reductions required for G8’s global target

80% below for OECD + 50% below globally = 20% below for non-OECD

Billion tons CO₂-e

2000 2010 2020 2030 2040 2050

Low-income
Mid-income
India
China
Russia
In G8 scenario, trade flows the other direction

USA

Other OECD

Reductions

BAU

Billion tons CO2-e

Domestic Non-CO2 offsets

Imported credits

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Concluding Thoughts

- Emission offsets are the key driver of the cost of current US climate policy proposals
- If they are not abundant and cheap, we are likely in a >$50/ton CO₂ world
  - Electric sector drives cost
- If we allow offsets, how many tons will materialize?
  - CDM
  - Agriculture and forestry
  - Sectoral
- Offsets have added a new uncertainty for US utility planners