

REDD and Climate Change Mitigation: Economic Perspectives

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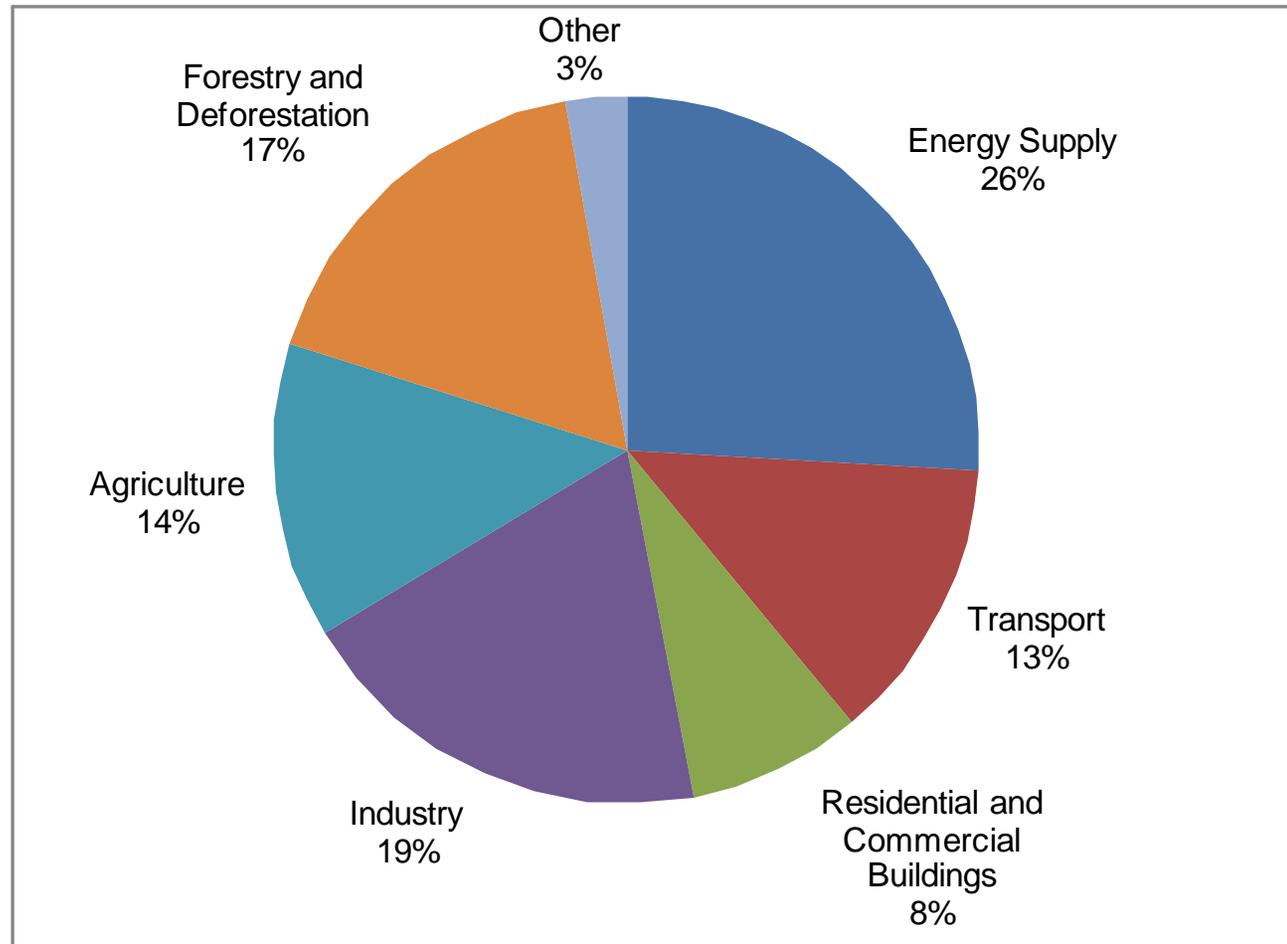
Key Points

- Scale of deforestation and the economic potential motivates REDD discussion
- How much does REDD cost?
- Important to move towards policy, but there are some policy issues that need additional consideration.

Deforestation is a large source of global emissions

Proportion of the World's GHG Emissions from Various sources.

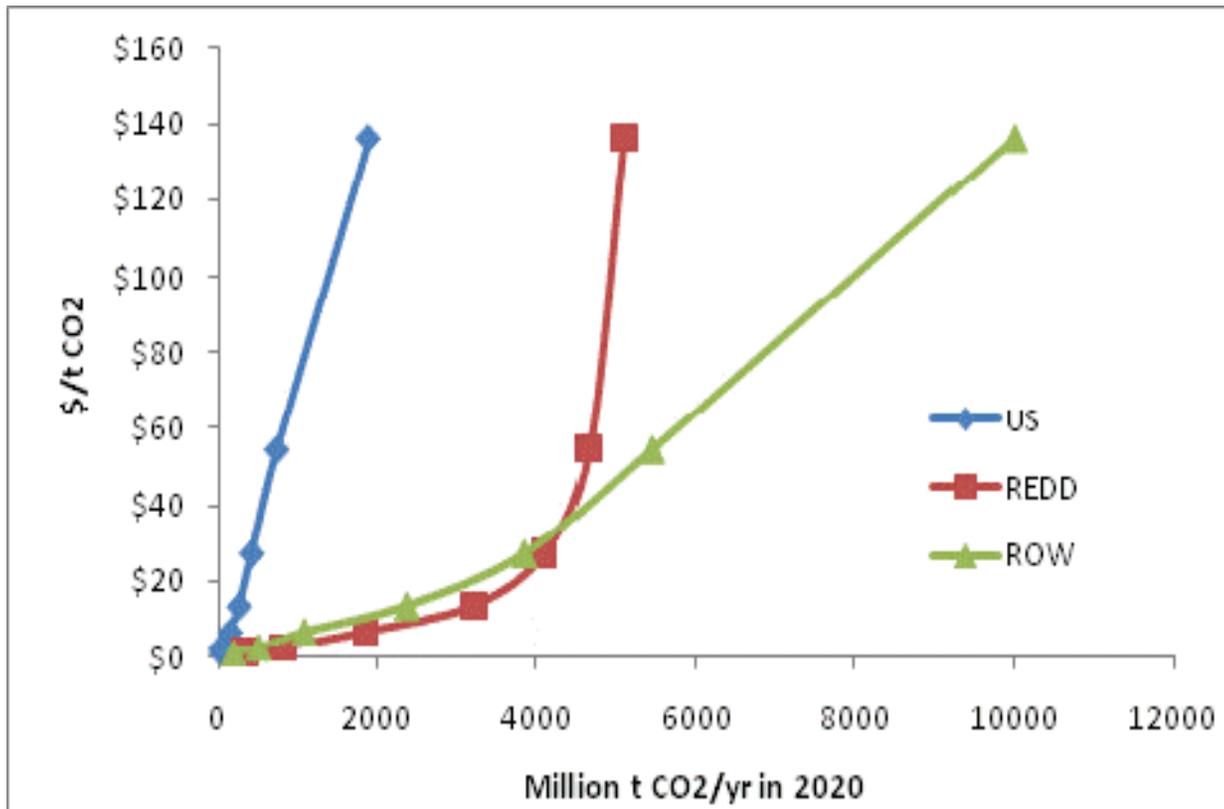
(IPCC – AR4)



REDD Mitigation Potential

Comparison to US and ROW

Estimates for 2020



At \$15/t CO₂

	MMtCO ₂ /yr
US	271
REDD	3,312
ROW	2,530

From Global Timber Model (Sohngen and Mendelsohn, 2007; Sohngen and Sedjo, 2006)

REDD: Range of costs

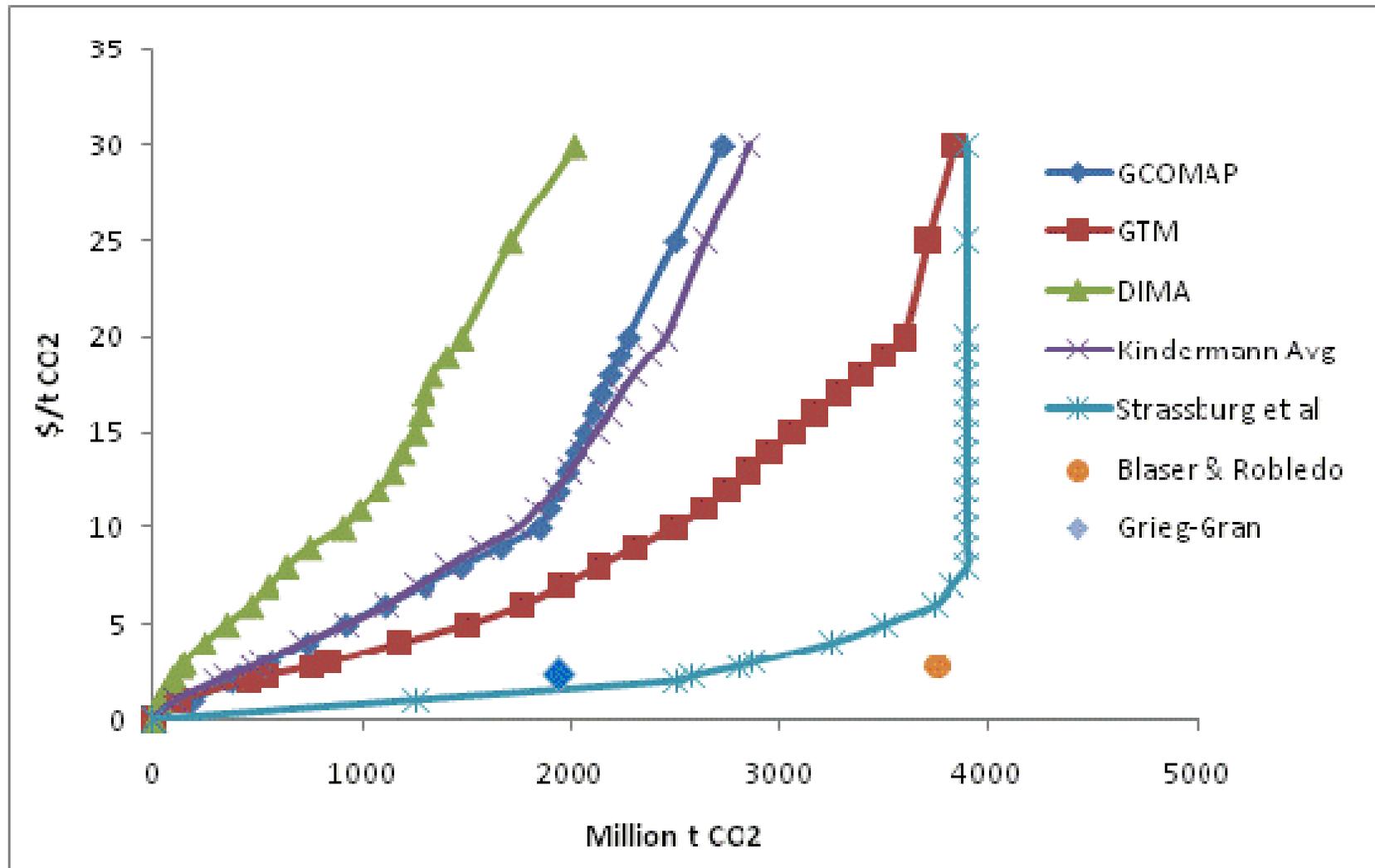
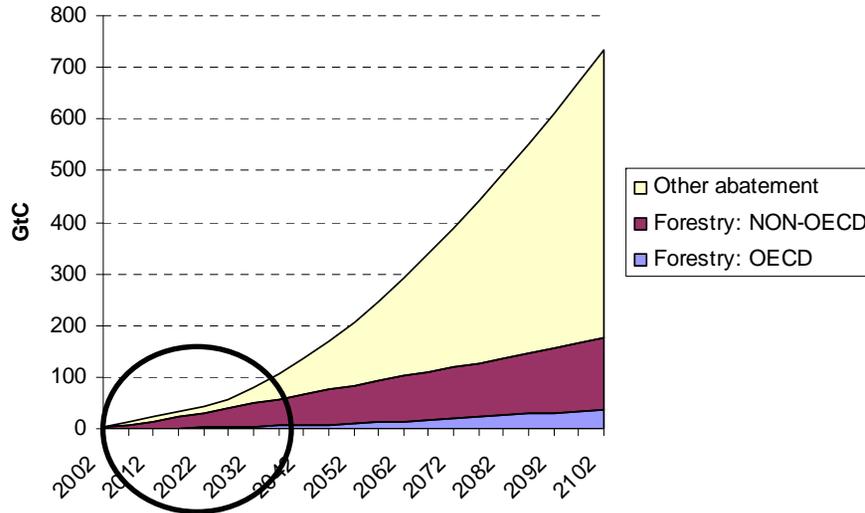


Figure from Murray et al., (2009)

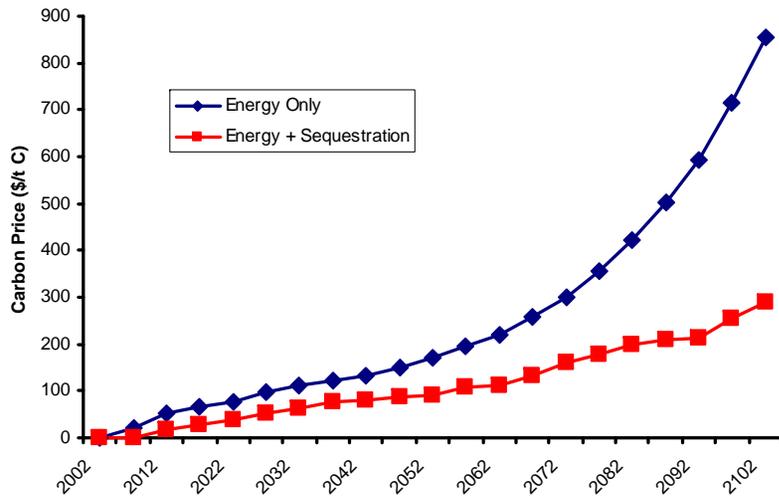
Implications of REDD...

Cumulative Carbon Abatement



550 ppm stabilization policy:

REDD is >70% of abatement potential over the next 25 years



REDD reduces carbon prices by 40-50% over the next century



Tavoni, Sohngen, and Bosetti (2007)

Costs/Benefits

Stabilization at 550 ppm

	US	Other Temperate	Tropics	Total
	Present Value of Carbon Asset (Billion US\$)			
Baseline	\$111	\$594	\$1,153	\$1,858

Tavoni, Sohngen, and Bosetti (2007)

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Benefit of Including Forests:
Consumption gain = \$3 trillion

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Annual Value of Gain	\$2.87	\$16.37	\$43.88	\$63.12

Transfer to Developing Countries:

\$44 billion per year

Average Payment = \$70/ha/yr

Tavoni, Sohngen, and Bosetti (2007)

Relationship between carbon prices and land rental prices on the ground?

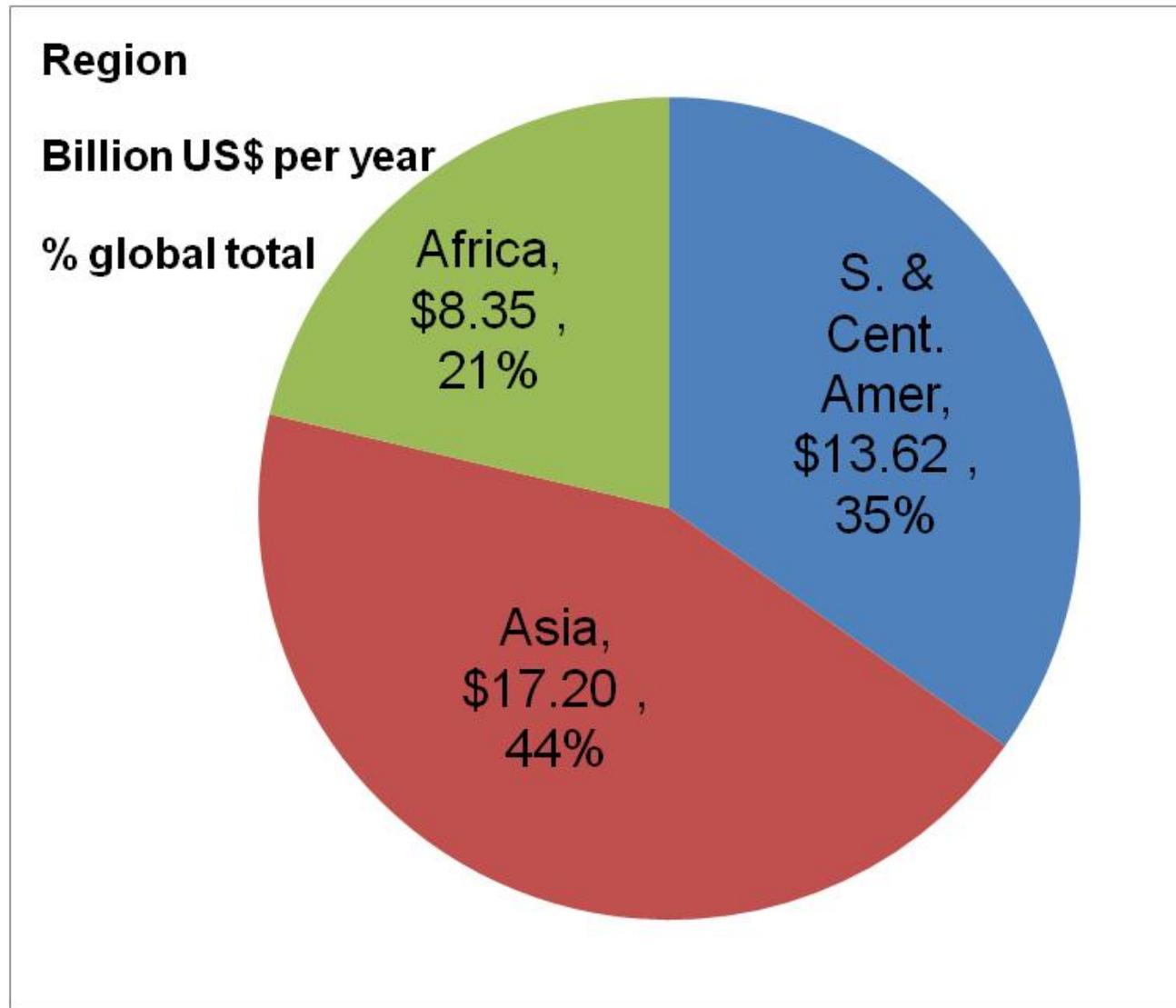
Annual Rental Values (\$/ha/yr)

	$P^C = \$1.40 \text{ tCO}_2^{-1}$	$P^C = \$13.6 \text{ tCO}_2^{-1}$	$P^C = \$27 \text{ tCO}_2^{-1}$	<u>tCO2/ha</u>
South Amer.	\$29.84	\$298.46	\$596.98	444
Cent. Amer.	\$23.22	\$232.66	\$465.83	345
SE Asia	\$32.93	\$329.55	\$659.37	500
Africa	\$24.97	\$249.83	\$499.79	370

Annual Rent/ha = $(R^c) * (tC/ha)$

Where would the payments go?

550 ppm Stabilization Policy

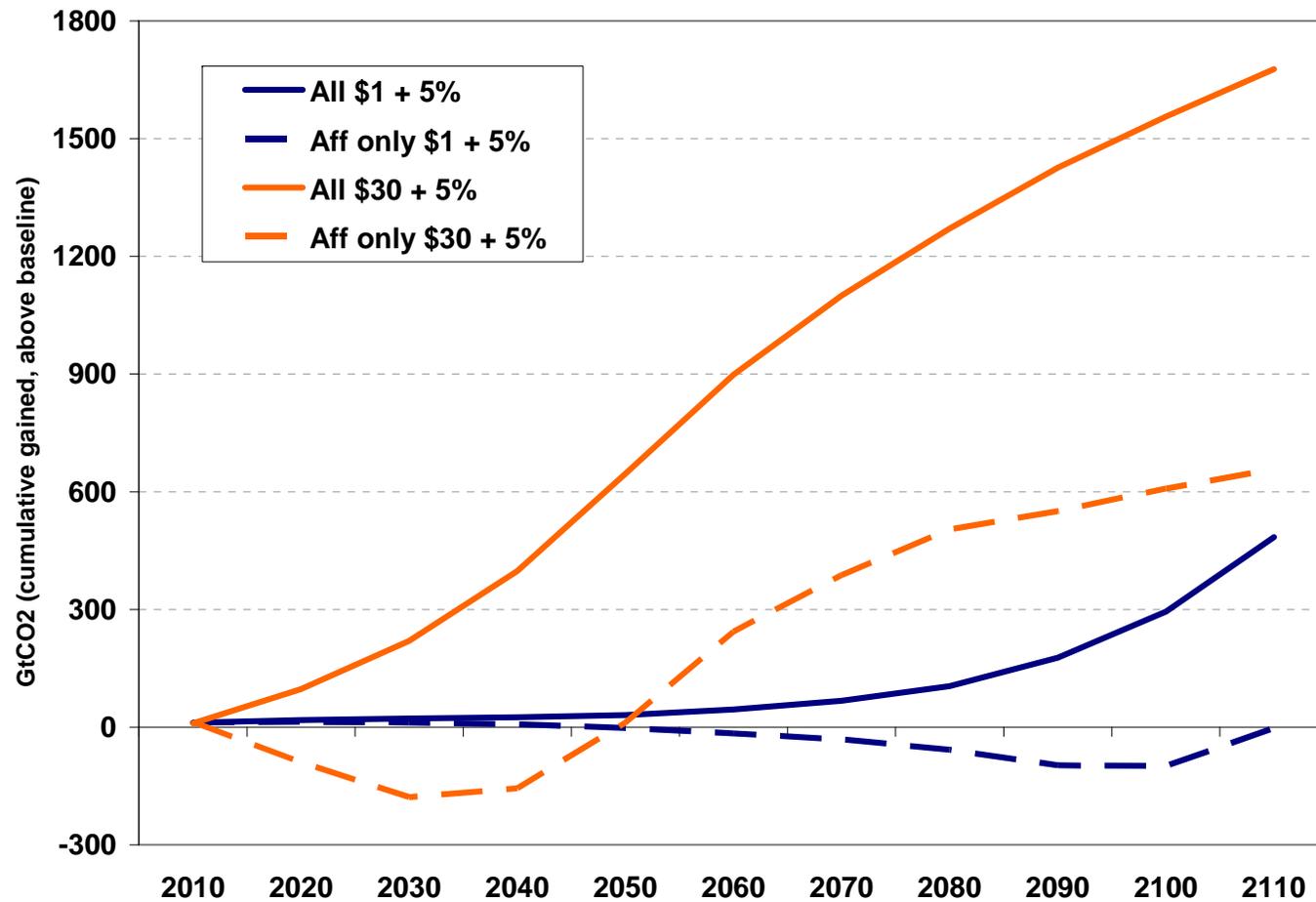


Additional Policy Issues

- REDD = 3.3 billion t CO₂ at \$15/t CO₂.
 - That's a lot of carbon... is it realistic?
- Political Instability, governance, etc.
 - Potentially affects a large share of the carbon
 - Maybe >50%.
- Still leaves quite a bit of carbon available.

Alternative View on Realism Question

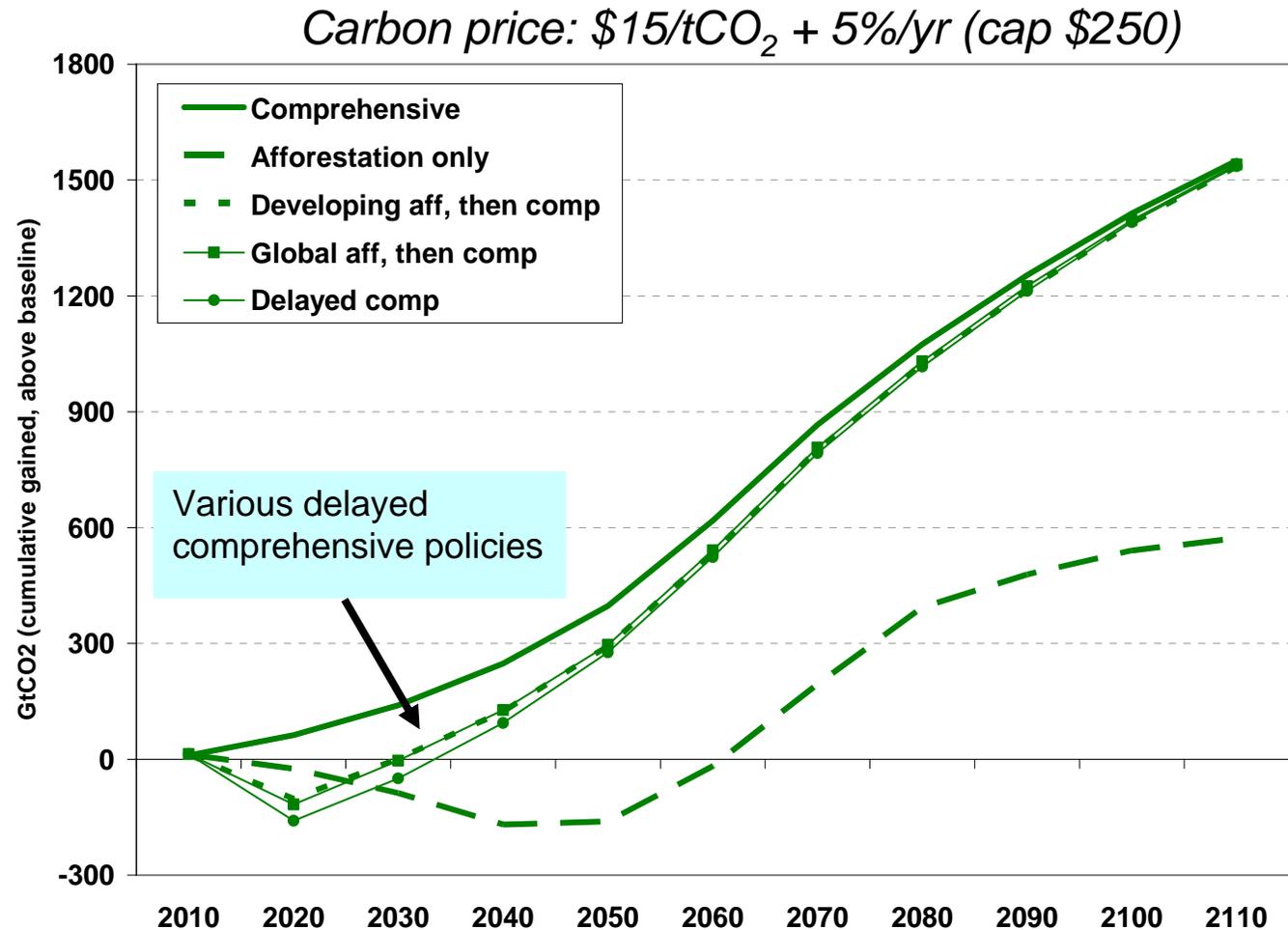
- Can we afford a policy that ignores deforestation?



Rose and Sohngen (forthcoming)

Several Policy Questions

- We do have some time to develop REDD policy.



Source: Rose and Sohngen (forthcoming)

There are Additional Questions/Concerns with REDD

- Measuring, Monitoring and Verification.
 - Seem to be \$1-2/t CO₂ (Antle et al., 2003; Mooney et al., 2004; Antinori and Sathaye, 2007, etc.)
- Contract design: Can we design contracts that provide incentives for landowners to maintain and enhance carbon on their land.
 - Permanence: Natural disturbance and other factors handled through contract design.
 - Land tenure/governance
- Other competing land uses (ag and biofuels).
 - Do raise costs of REDD. Scope unknown globally at present.
- Extent of “market”/leakage

Conclusions

- REDD Potential is large:
 - 3.3 billion t CO₂/yr at \$15/t CO₂
 - Some may be difficult to obtain
- Large transfer of \$\$ to developing countries.
- Can wait to continue working on developing better policy
 - But probably can't wait to develop the perfect policy.
- There are some important issues that still need to be addressed:
 - Measuring/monitoring/verification
 - Leakage/permanence/etc.