Nicholas Institute Symposium
Crafting Technology Solutions
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Contextual Discussion:

Context of the problem: to hedge our bet on climate sensitivity we need sufficient technology to preserve an option on a 2°C rise in temperature from pre-industrial

What creates technology?

Ideas…largely from small organizations…bureaucracy stifles creativity
Capital flows to those ideas…and capital is now high velocity and global
Viral innovation (a new phenomenon)…ala the internet and Linux…user driven

Price-based policy says two things:
Innovators: "invest to come under the tax level and live with the limited upside"
Users: **"**choose between risky new technology and a no-risk tax"

This is problematic…as an institutional matter:
Innovators invest in portfolios to pick winners with unlimited upside
Users have risk preferences (ala expensing R&D, high hurdle rates) that may favor paying tax

Quantity-based policy says two things also:
Over 40 years carbon is coming out of the system…***innovators*** upside limited only by competition
Users risk preference will be to bank lots of credits and ***institutionalize*** low carbon strategies

This might be problematic too…but in a different way:
Firms may be inclined to panic and overspend…a bubble is possible
In the worst case we overspend on guns and there is no war (and could have bought butter)
(i.e. climate is not as sensitive so we don't need all the technology we bought)

Technology Policy: Would you rather have the technology even if you're not sure you need it? Or would you rather not have the technology and find out you *really (really)* need it?

Now back to Ideas, Capital, and Viral Innovation:

If your risk preference is to have the technology, then you choose a quantity-based policy…like the Europeans and like US-CAP has advocated:

1. long term
2. globally traded (like every other commodity and most securities)
3. simple (tending towards upstream)
4. as few other policies, and standards, as possible

JAA's Top 10 Ideas for Real Technology Solutions:

1) Long-term cap with no safety valve
2) Tending towards an upstream point of regulation
3) CCS crediting system with low friction costs (if upstream is chosen)
4) Offset plan given that 1/3 global emission are not from fossil fuels (and satellite monitoring)
5) Non-OECD inclusion on a premium benefit basis as soon as practicable
6) Stronger intellectual property rights protection globally
7) Prizes for specific solutions (batteries, flue gas CCS, fuel cells, fusion, etc.)
8) Require public franchisees to communicate peak pricing periods (cable television & wireless)
9) Fix the national grid to minimize load loss and maximize distribution options
10) Recognize the opportunity cost of the U.S. *not* being the world's low-carbon tech leader

Government Funded Support:
Liability support for CCS and possibly Nuclear
Provide loan guarantees and/or IDB's for the financing of Low Carbon Communities (LCC's)

Internet 2.0 Ideas:
Create a Wiki for energy efficiency ideas for consumers
Linux type solutions for energy control software at the commercial and residential level

New Government Entities:
Create a major geo-engineering lab (potentially using funds diverted from NASA)
Create a cabinet-level climate czar for the next decade

Co2 Market Structural Issues:
Allow banked allowances to be lent for short sales in the co2 market
Require trading transparency in the co2 market

Leveraging Information and Brands:
SEC required disclosure on GHG emissions for most companies
Create an "Energy Star" for Mortgages, with an interest deduction

Other Government Policies Ideas:
Immigration flexibility for low-carbon expertise
Exchange offers for state/regional allowances once a federal system is in place

Conclusion…2 questions to keep in mind, *always*, as policy is debated:

> What is the nature of the risk we are trying to hedge?
>
> What is the cost of technology overspend relative to not having the technology if, and when, we really need it?