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Water Quality Trading: What is Success?

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Outline

- Brief overview of trading initiatives
- Lessons learned
- Realizing the potential – what constitutes success?

What is emissions trading?

- Regulator sets a pollution cap to achieve environmental objectives (e.g., a TMDL)
- Individual polluters are assigned an initial allocation of discharge permits
- Permits can be bought and sold through voluntary market trades
- Trading determines prices and the final allocation of permits and discharges between sources (but not total abatement)

What do policy makers want to accomplish?

- Cost savings compared to traditional regulations
- Facilitate achievement of environmental goals
  - Increased flexibility in pollution control methods
  - Incorporate nonpoint sources
  - Speed compliance
- Foster innovation
  - Incentives to develop new technologies and approaches

Historical background

- Trading was successfully applied in the 1990's under the Clean Air Act to reduce the cost of meeting SO_2 emissions
- Experiments, pilot programs, and demonstration projects for water quality trading began in the early 90's
- 57 water quality trading programs have been developed or are under development, most in the U.S.

Credit trading models

- Market Based Models
  - Credit trades conducted through market-like voluntary exchanges between willing buyers and sellers
    - Pennsylvania auction market
- Offset Models
  - One buyer negotiates purchases with few sellers (bi-lateral trades)
    - Rahr Malting, Southern Minnesota Beet Sugar Cooperative, Virginia phosphorus exchange

How is trading working out?

- Some definite successes
  - Hunter River salinity cap and trade
  - South Nation River phosphorous cap and tax
  - Grassland Farmers selenium cap and trade
  - Connecticut nitrogen cap with compliance incentives (point-point)
- But *ex post* assessments are generally negative about the performance of trading programs
  - Most have little or no trading activity

Determinants of trading outcomes

- Trading rules and procedures established by regulators
- Trading institutions implemented by regulators or the market to facilitate trading within the rules
- The objectives, information, and skill of participants
- Underlying economics

Determinants of trading outcomes

- Trading rules and procedures
  - Credit definition, duration, certification, technologies allowed to generate credits, procedures for quantification of water quality impacts of BMP adoption, trade ratios, baseline requirements, double dipping, liability rules, etc.
- Trading Institutions
  - Exchange mechanisms (e.g. clearing houses), auction formats
  - Information and trading services (public education and information programs, private aggregators, consultants)

Determinants of trading outcomes

- The objectives, information, and skill of participants
  - Homo economicus vs the real world of people with limited time, resources, skills, and orientation toward markets
  - Behavioral “failures” – what appear to be favorable incentives do not work
- Underlying economics
  - Cost heterogeneity – the bigger the better
  - Transactions costs

South Nation River (2000)

- Designed to use ag offsets to reduce regulated point source costs of meeting zero discharge limit on new or expanded facilities
- Developed and managed by South Nation Conservancy
  - Long established watershed management agency
  - Provides grants to farmers to install BMPs
  - “Trading” is one of several sources of BMP funding
  - Farmers do not knowingly trade!!

South Nation River

- Credits sold at a “price” set by the administrator to cover the average cost of installing agricultural BMPs
- 269 projects funded through 2009
- $708 thousand to farmers/$173 thousand in program delivery costs (CAD)
- Significant costs savings compared to no trading
- Water quality improving
  - Contributions of ag credits is positive but not quantified

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Greater Miami River

- Established and administered by the Miami Conservancy District
- Provides municipal WWTPs an option to purchase agricultural credits on favorable terms in advance of an expected tightening of discharge standards
- Ag BMPs selected in bi-annual reverse auctions
  - Famers submit applications through (and with technical assistance from) participating Soil and Water Conservation Districts
  - SWCDs can add their costs for assistance and annual inspections to farmers' bids
- Funding from participating WWTPs and grants from USEPA and USDA

Greater Miami

As of March 2013

- Eleven rounds of project submittals resulted in funding for 397 agricultural projects
- 1.14 million credits over the life of the projects
- $1.6 million in credit sales to agricultural producers
- Estimated 572 ton reduction in nutrient discharges

Lessons

- Water is harder than air
- Well-designed programs can protect/improve water quality and lower costs compared to traditional effluent standards, even if few trades occur
  - Rahr Malting

Lessons

- Trading can get BMPs on the ground given effective incentives and institutions
  - South Nation River, Greater Miami
- Various types of institutions can facilitate trading
  - Bilateral trading, clearing house markets
  - The best forms remain an open question
- Engaging trusted organizations can pay off in agricultural participation
  - South River Nation and Greater Miami

Realizing the Potential

- Trading can be beneficial with sound development
- It is important to consider the effects of trading rules on market performance during design
  - Rules should serve both economic and ecological functions
  - Economic analysis as well as water science and law must be integrated in rules development

Realizing the potential

- Public sector development cannot end with environmental agency rules development, implementation, and enforcement
  - Investments in the market place could get people to participate and achieve gains from trade (exchanges, consultants, contract design, education)
  - Integrating agencies that participants know and trust can pay off
    - E.g., South River Nation and Greater Miami
  - Information about what to expect is crucial
    - Uncertainty is a barrier to entry
    - Exaggerated returns from “promoters” can lead to costly mistakes
  - Research the market, information programs and services

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