

# Assurance

Kathleen Segerson  
Department of Economics  
University of Connecticut

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University of Connecticut

# Underlying Structure of NPP

- Ambient environmental quality is a random variable
- Distribution depends on farmers' actions
- Often it is the actions by a GROUP of farmers
- Realization depends on both farmers' actions AND random factors
- Underlying objective is to SHIFT the distribution to increase the PROBABILITY of meeting some environmental target

# What is “assurance”?

General idea: provide greater certainty about desired outcomes, i.e., about getting X in exchange for Y

Here, increase likelihood that specified environmental improvement occurs (e.g., environmental goals are met)

2 dimensions to this:

- (1) designing programs to increase likelihood of meeting goals (e.g., addressing leakage, additionality, transaction costs, trading ratios, scope of markets, etc.)
- (2) determining what will be done if goals are not met (“who should bear the burden?”)

# How to define environmental goals?

- Performance vs. Practices?
  - ambient water quality vs. BMPs?
  - Reduction in atmospheric concentrations of carbon dioxide vs. acres of forestland
- What is the “good” or “service” that is being bought/sold (i.e., contracted)?

# Possible Reasons for Failing to Meet Environmental Goals

- Failure of Farmer A to take agreed upon actions
- Failure of other farmers to take agreed upon actions
- Failure of agreed upon actions to result in anticipated environmental improvement
  - Incorrect prediction about link between actions and environmental quality
  - Randomness in relationship between actions and environmental quality
- Unanticipated responses/impacts (e.g., leakage)

Note: Not necessarily easy to identify reason

# Who should be responsible/liable and for what?

Considerations:

(1) Fairness

(2) Incentives

- Individual compliance
- Group monitoring/compliance

(3) Allocation of Risk

# Different Contexts

- Private purchasers
  - Offsets/credits
  - Sales to private parties (e.g., ecotourism)
- Public payments
  - Voluntary participation in government programs

# **Offsets/credits: Non-compliance with contract terms**

Currently, in water quality trading programs, point source purchasers are liable for non-compliance by nonpoint sellers

- (1) Is this “fair”?
- (2) Does it create correct incentives?
- (3) Does it allocate risk appropriately?



# Fairness

## Arguments against:

- Point source does not control compliance
- “Breach of contract” principles

## Argument for:

- “Principal-agent” relationship: Nonpoint source is an “agent” of the point source, i.e., acts “on behalf of” point source

# Incentives

- Compliance incentives for nonpoint sources
  - Ex ante vs. ex post payments?
- Incentives for point sources to enforce contracts, esp. in absence of regulatory enforcement authority

# Allocation of Risk

- Risk associated with non-compliance is borne by point source
- Large point sources may be better able to bear risks than small nonpoint sources
- Society as a whole still bears risks regarding ambient environmental quality, given compliance

# Other Contexts

- Voluntary government programs
  - Similar to other subsidy programs; no principal-agent relationship
- Private purchases (e.g., ecotourism)
  - Similar to other private goods: “Buyer beware”??

# Another “Assurance” Problem

Will information revealed through markets  
be used to justify regulation?

Implications?