Policy mix concepts and applications: Reflections on the emergence, and potential future directions, of market based instruments for conservation within a policy mix framework

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Outline

- Background
  - Why do policy mixes arise?
  - Why should policy mixes arise? (or should they?)
- Emerging areas
  - Behavioral economics
  - Market failures across sectors
  - Conservation policy: biodiversity offsets
- Conclusions

Background: Policy mix

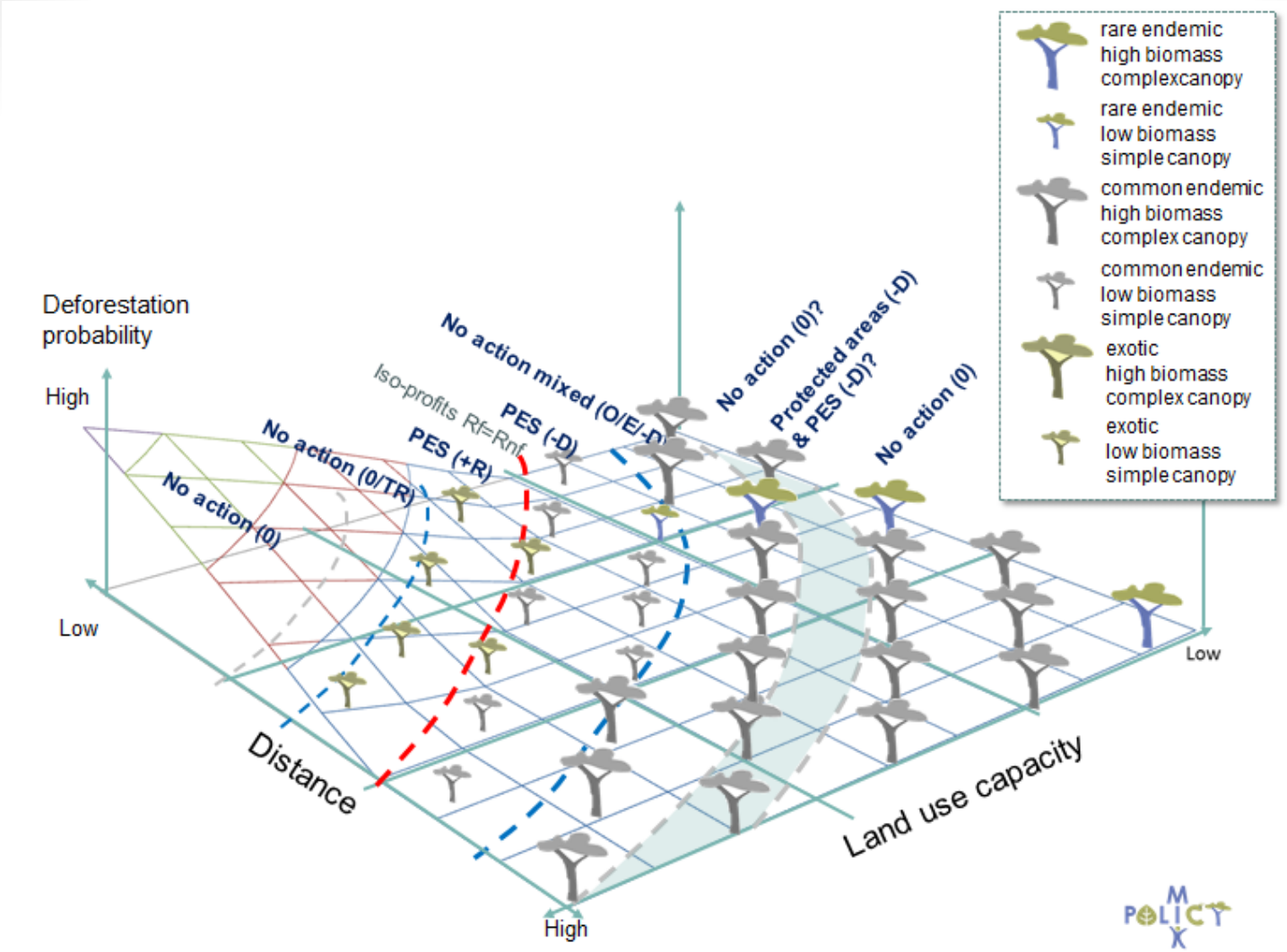
"A policy mix is a combination of policy instruments which has evolved to influence the quantity and quality of biodiversity conservation and ecosystem service provision in public and private sectors".

(Ring and Schröter-Schlaack 2011, pg. 15)

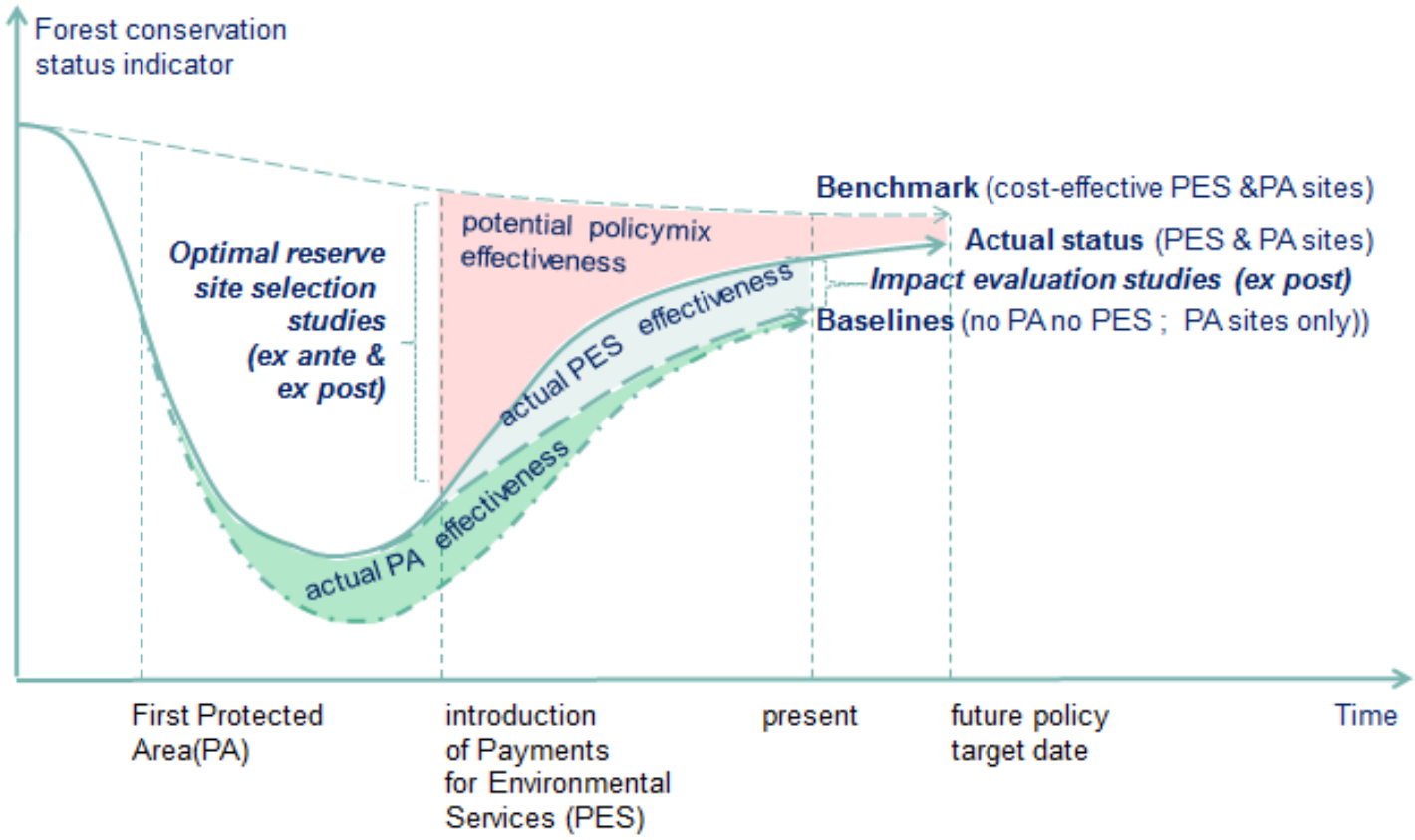
- Descriptive
- Positive
- Normative

What kinds of "mix"?

- Multiple instruments affecting one spatial unit.
  - Command and control and market based instruments
  - Stacking / bundling of conservation offset credits
- A mixture over space – different instruments reflecting spatial heterogeneity
  - Protected areas, PES, etc.
  - Marine biodiversity (ITQs and Marine Protected Areas)
  - Mixtures of instruments (positive, negative, other)
  - Instruments over different ecological and economic scales
- A mixture over time
  - Path dependence?



Source: Barton et al (2014)

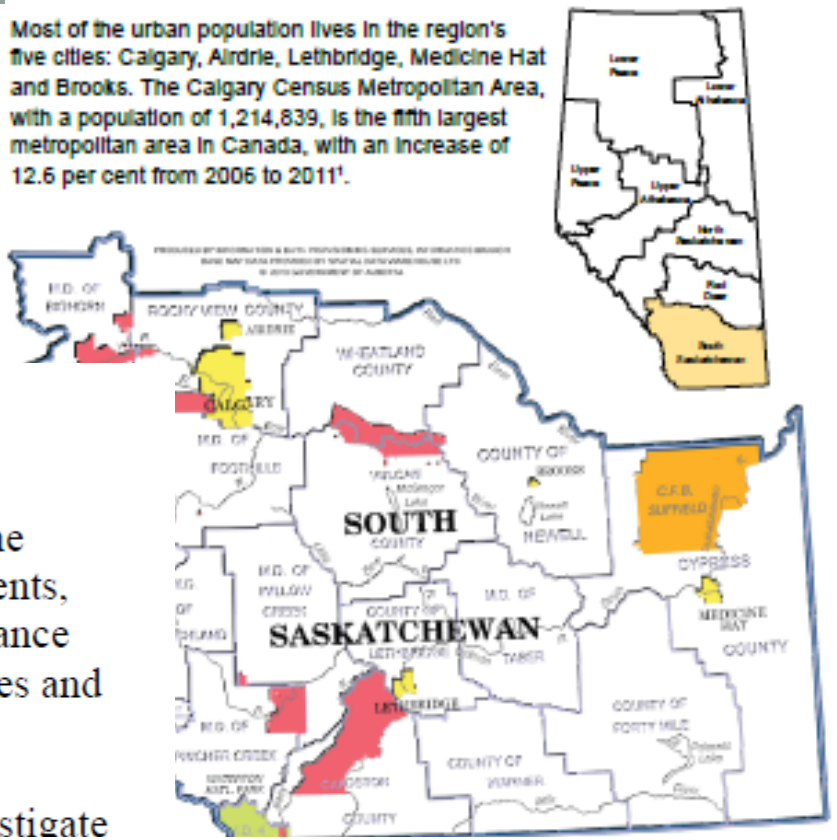


Barton et al 2014: Guidelines for multi-scale policy mix assessments, page 7

Draft South Saskatchewan Regional Plan

2014 - 2024

Most of the urban population lives in the region's five cities: Calgary, Airdrie, Lethbridge, Medicine Hat and Brooks. The Calgary Census Metropolitan Area, with a population of 1,214,839, is the fifth largest metropolitan area in Canada, with an increase of 12.6 per cent from 2006 to 2011[1].



Market-based instruments

23 The Lieutenant Governor in Council may

(a) support or advance research and development into the creation, application and implementation of instruments, including market-based instruments, to support, enhance and implement the purposes of this Act and objectives and policies in or proposed for a regional plan;

(b) establish, support or encourage pilot projects to investigate or test instruments, including market-b

White Area Public Land:

- Integration with other initiatives such as the Sou Offset Pilot and MULTISAR (Multiple Species at species-at-risk conservation program).
- An approach to voluntary conservation offsets for where public land linear footprint could be voluntar agreements with landowners for conservation of ir private land. The approach would build off principl

Conservation off-set programs

47(1) The Lieutenant Governor in Council may make regulations to counterbalance the effect of an activity.

(2) In this section, "counterbalance" includes

(g) encouraging voluntary measures to offset an activity by committing, without limitation, to additional restoration, reclamation or mitigation, the acquisition of land, the establishment of a conservation easement or the donation of actual or in-kind, financial or other resources;

Why do policy mixes arise?

- Policy evolution
  - Improving effectiveness, efficiency, equity
  - Policy peer effects, cascades
- Changing economic conditions
  - Emerging markets
  - Changing public goods values
  - Altering the ecosystem services mix
- Ecological change
  - Climate change, species loss, environmental quality change
- Changing social conditions
  - Population
  - Demographic change
  - Knowledge

A Digression – Policy Change and Policy Inertia

- Policy Inertia
  - Commonly arises in policy frameworks
  - Status quo “bias” (complexity), Path dependence, Closed Networks
- Policy Capacity
- Policy Change Pathways
  - Systemic Perturbations (Climate change?; Extinctions?)
  - Venue Change (New players)
  - Policy Learning (International agencies; Peer effects)
  - Subsystem Spillovers (Transfer from other sectors)

Source: Anderson et al, 2010 (Howlett papers cited within).

Why should policy mixes arise?

- Multiple Objectives
  - Tinbergen, etc.
- Multiple Externalities / Public goods / Market Failures
  - Layering (Levinson)
  - “Second Best” problems (Bennear and Stavins, others)
  - Transactions Costs / Information Failures
- Interaction Between Objectives
- Differential Economic Conditions (Pannell)
- Temporal Dimensions
  - Changing Conditions / Information

Policy Mix – The Early Years

- Tinbergen / Thiel
  - Policy maker determines targets , selects instruments
  - Agent responds
  - Policy targets achieved with number of instruments equal to number of targets/objectives
- Lucas Critique
  - Agents have expectations about policy and respond
  - Agents revise behavior and may render policy ineffective
  - Deeper model of behavior required
  - “Game” between agents and policy maker
- Policy as game theory / conflict resolution
  - Sorting Equilibria in Public Goods (Kuminoff et al 2014)

Acocella et al 2011

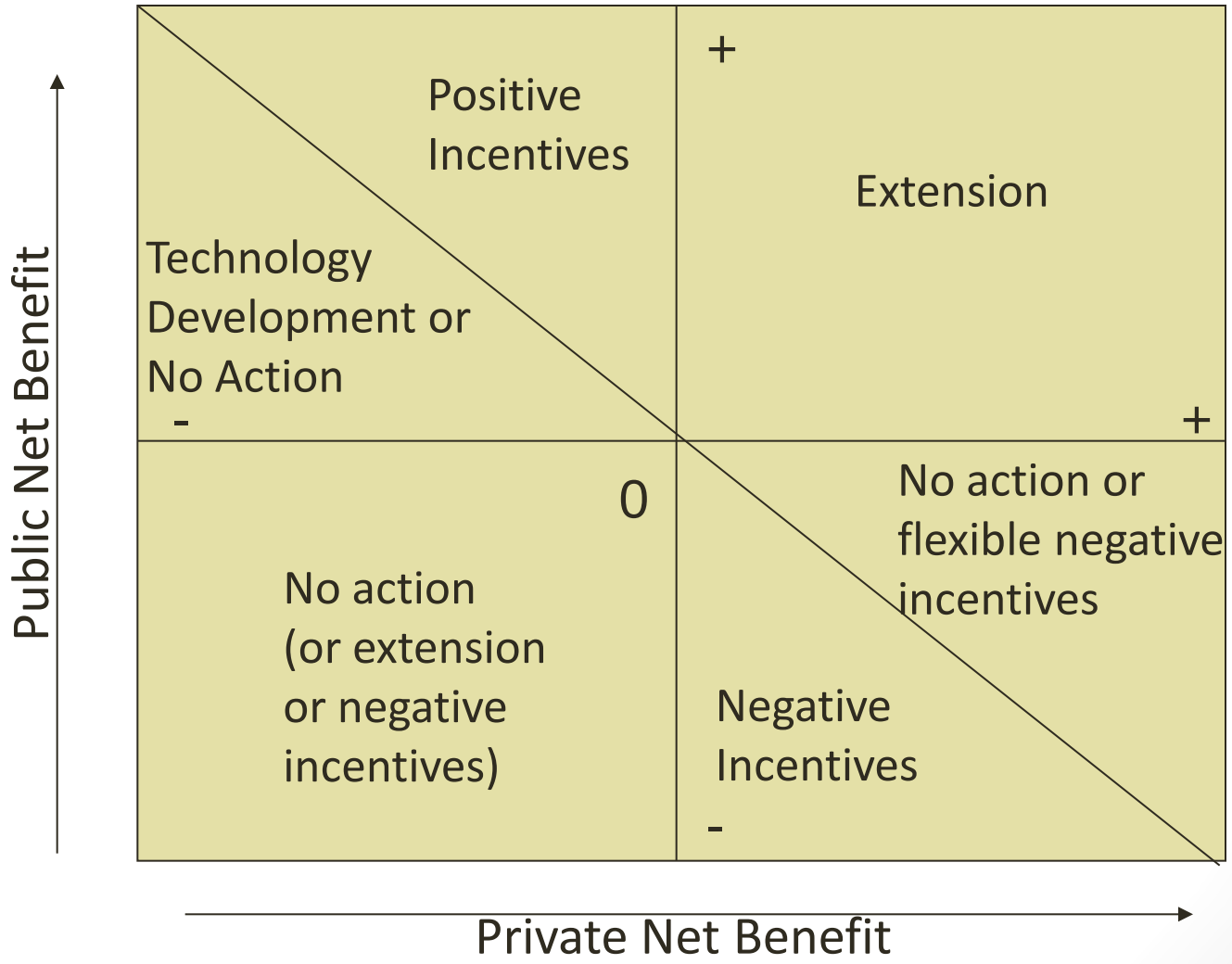
Conservation Policy – Multiple Objectives

- Multiple Objectives in Conservation
  - Coarse Filter / Fine Filter Objectives
    - Biodiversity / natural disturbance processes versus Individual Species concerns
  - Multiple Species at Risk
  - Multiple (interacting) Ecosystem Services
  - Objectives at various ecological / social scales
- Conservation and Other Objectives
  - Biodiversity and Sector Support
    - Farm sector support, Poverty alleviation

Multiple Externalities / Second Best Problems (Bennear and Stavins, 2007; Lehmann 2012, etc.)

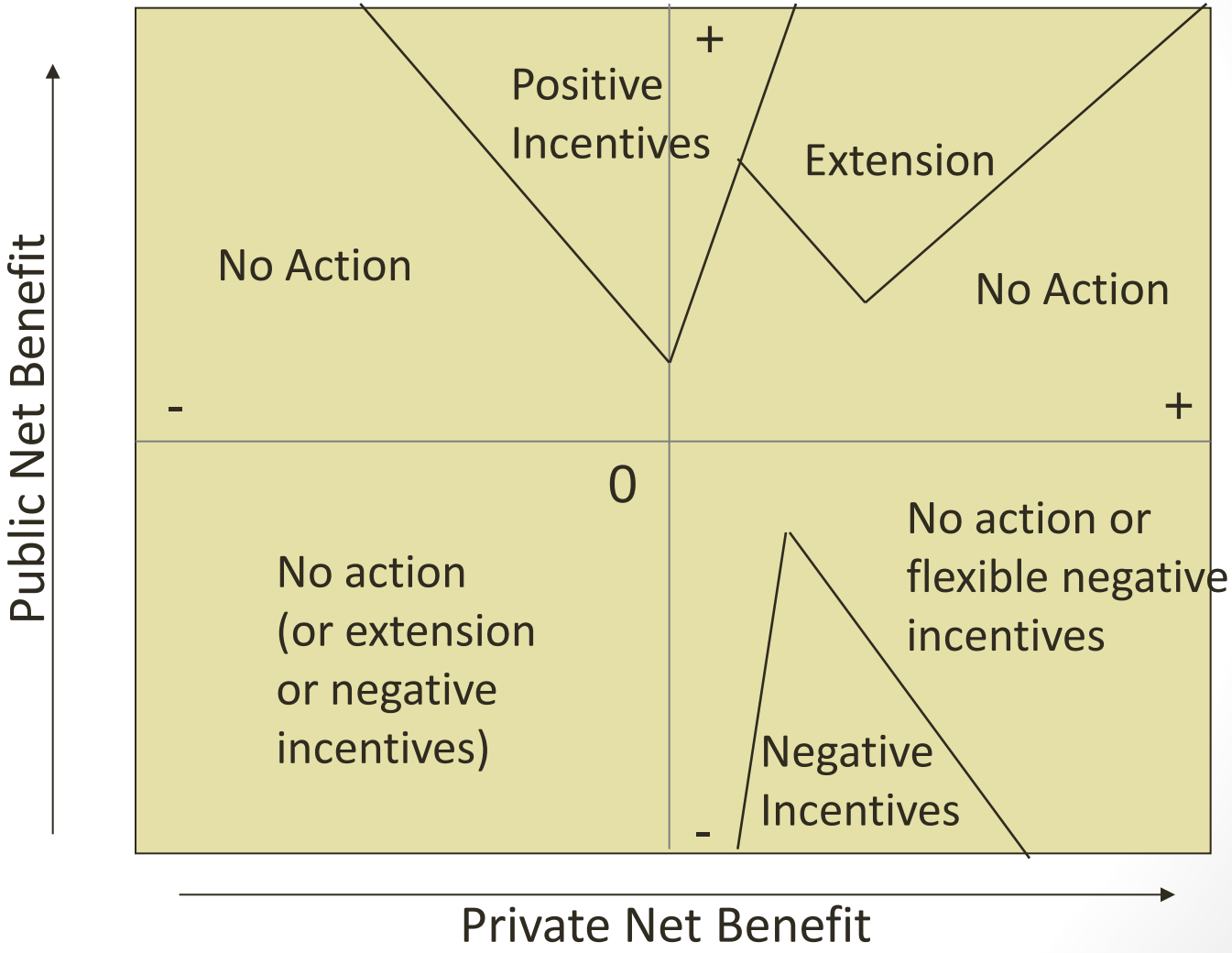
- Multiple Biodiversity / Environmental Externalities (Kinzig et al 2011)
- Environmental Externalities and Property Rights Problems
- Environmental Externalities and Market Power
- Environmental Externalities and Information Failures
- Environmental Externalities and Unobservable Behavior
- Environmental Externalities and Uncertainty, Equity Concerns, Capacity ("hotspots"; monitoring, etc.)
- Externalities and Transactions Costs (TCs)
  - Multiple policies to address high TCs of single instruments
    - Learning by doing; information provision, etc. (Lehmann 2012)

Public Private Benefits Framework



Pannell, D. (2008), Land Economics 84 (2):225-240. (Page 228)

Public Private Benefits Framework with Transactions and Learning Costs



Pannell, D. (2008), Land Economics 84 (2):225-240. (Page 228)

Emerging Areas

1. Behavioral economics
2. Market failures across sectors
3. Conservation policy: Biodiversity offsets

1. Behavioral Economics (Carlsson & Johanssen-Stenman, 2012)

- BE Elements:
  - Motivation beyond material goods – norms, fairness, etc.
  - Context influences choice – framing, social elements
  - Cognitive limitations
- Themes
  - Fairness and social norms
  - Framing
  - Heuristics

Behavioral Economics

- Shogren and Taylor (2008) and Shogren (2012) describe behavioral economics outcomes as a type of "behavioral failure" that may require multiple policies.
- As such – responses to behavioral economics outcomes, in the conservation/biodiversity area may require a policy mix (or have arisen because of a such phenomena).
  - Motivational Crowding Out: Maintenance payments?
  - WTP / WTA difference: Conservation Easements
  - Inertia, Defaults: Pilots, Learning by Doing, etc.
- Positive and normative approaches to benefit cost analysis do not align (Hammitt, 2013)
  - Challenging for ex ante policy design

Forest conservation policy & motivational crowding: Experimental evidence from Tanzania

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Payments for Environmental Services and Motivational Crowding

- Financial payments have potential to incent farmers to maintain or adopt land uses consistent with environmental services (water quality, biodiversity conservation and carbon storage)
- Psychology has clarified two distinct motivations for behavior: extrinsic (reward or penalty) or intrinsic (enjoyment, interest or duty) (Frey and Jengen, 2001). (Israeli Day Care example)
- Concerns that financial payments may "crowd out" intrinsic motivations and that crowding out may persist after payments stop (eg Farley and Constanza, 2010)

In summary . . .

- No evidence for persistent crowding out for rewards.
- Evidence for persistent crowding in for enforcements.
- Fact of enforcement may be more important than its magnitude.
- Collective payment unsuccessful.
- ***Strong heterogeneity of preferences: some people crowded out, others crowded in – similar finding to Clayton in Australia***

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WTP/WTA Divergence?

DU Canada Revolving Land Program

- PES schemes, Conservation easements – WTA Frame
  - Does this result in "expensive" conservation?
  - Coase theorem predictions invalid if WTA>>WTP
  - Evidence from conservation auctions in Canada
- An alternative
  - Ducks Unlimited Canada Revolving Land Purchase program
  - Purchase land (rather than easement)
  - Establish easements (limits on land use)
  - Sell land
  - Evidence that this scheme is more effective!
  - But is this WTP/WTA, selection, extent of the market, or market experience (List, 2003)?

2. Market failures across sectors

- Biodiversity conservation and credit institutions
  - Responses to market based instruments affected by credit markets
  - PES schemes may be used to “soak up” elements of other missing markets.
  - Inaccurate signals of ecosystem service scarcity arise from missing markets.
  - Jayachandran (2013 AER) ; Fenichel et al (2014)
- Insurance markets and credit institutions
  - Climate Change Adaptation (insurance)
  - Lack of credit institutions
  - Bundling?
- Information / extension
- “Cross Compliance” – agricultural subsidies and conservation?

Fenichel et al (2014)

- PES scheme in the presence of credit market constraints
- Context – land use services in Panama
- Dynamic optimization approach with calibration to case study parameters
- Credit constraints have a significant effect on landowner response to PES
- PES schemes not effective in achieving development goals
- Mechanisms to address credit constraints help improve effectiveness of PES schemes
- Linked PES and credit policies (credit union access?).

McCarney and Osgood (2013)

- Climate change adaptation research
- Weather index insurance as a climate change adaptation tool
- Interaction with credit markets
- Combinations of insurance and credit can improve productivity / efficiency / adaptation
- Is there a linkage between insurance, credit and conservation schemes?

3. Conservation Policy – Biodiversity Offsets

- Offsets are gaining popularity as “the” mechanism for conservation
  - Layered over existing regulatory structure
  - Linkage with international capital markets (IFC PS 6)
- Offsets arise from a No Net Loss objective
  - Is this the appropriate goal?
  - Interaction between “objective” and “instrument” (**game**?)
- Multiple ecosystem services raise challenges
  - Stacking and bundling as a solution
- Examples
  - Offset programs in the U.S.
  - Offset programs in Australia

But, ….

- Policy mixes have arisen, and may be “optimal” in many cases, but not in all cases (Levinson 2010)
- But policy mixes may be complex (multiple elements)
  - Multiple MBIs may be efficient – but costly (TCs)
- Complexity may induce decision “errors”
  - Heuristics, defaults / status quo bias
- Government agents may strive for simplicity
  - “One Window Approach”
  - Nudges? / Defaults
- The need for program evaluation?

Conflicting Views? Levinson, 2010 (page 4)

"All three viewpoints have appeared in print.

Krugman (2010) articulates the mutually reinforcing viewpoint: 'I would advocate supplementing market-based disincentives with direct controls.'

Sijm (2005) makes the case for redundancy: 'the coexistence of [tradable permits] and policies affecting fossil fuel use by participating sectors is hard to justify and, hence, these policies could be considered to be redundant and ready to be abolished."

And the U.S. Congressional Budget Office (2009) sees the two as sometimes conflicting: "regulatory standards combined with market-based approaches often will increase the cost of meeting an environmental goal.' "

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Program Evaluation?

- Formal evaluation of policy mixes? (or even PES?)
  - Relatively few (Zheng et al 2013)
- Challenging for multiple policies!

Shogren (2012, p. 25):

"The set of challenges would be enormous if we had to design environmental and resource policy to correct simultaneously both market failure and behavioural failure. In the world of ex-ante policy design, where natural experiments are prohibited and ex-post policy changes are difficult if not impossible in the near-term, constructing policies or markets that promote efficiency without consideration of relevant behavioural failures would likely result in inefficient outcomes. "

Conclusions

- Policy Mix – Long Overdue Refocusing on Mixtures of Policy
- PolicyMix project has successfully identified the importance of policy mixes in conservation – ahead of its time!
- What is an optimal policy mix?
  - Endogenous / evolutionary policy mix? (games, interactions)
  - Challenge for economic analysis (BCA – measurement, behavior)
- The need for evaluation?
  - Challenging!
  - Experimental analysis?
- Emerging Issues in Policy Mix
  - Policy Mix and Behavioral Economics
  - Policy Mix across Economic Sectors
  - Policy Mix and Complexity / Transactions Costs

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