Payments for Ecosystem Services - A fisheries and aquaculture perspective

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Biodiversity Conservation through Mitigation, Policy, Economic Instruments, and Technical Change

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Outline

1. Brief review of ecosystem services linked to fisheries and aquaculture
2. Overview of management mechanisms
3. Brief review of payments for ecosystem services and their role in fisheries and aquaculture
4. Skimming through examples of PES in Fi&AQ as buyer and seller of ecosystem services
5. 2 Case studies on potential PES in by-catch reduction situations
6. Concluding thoughts on the usefulness of PES in FI&AQ

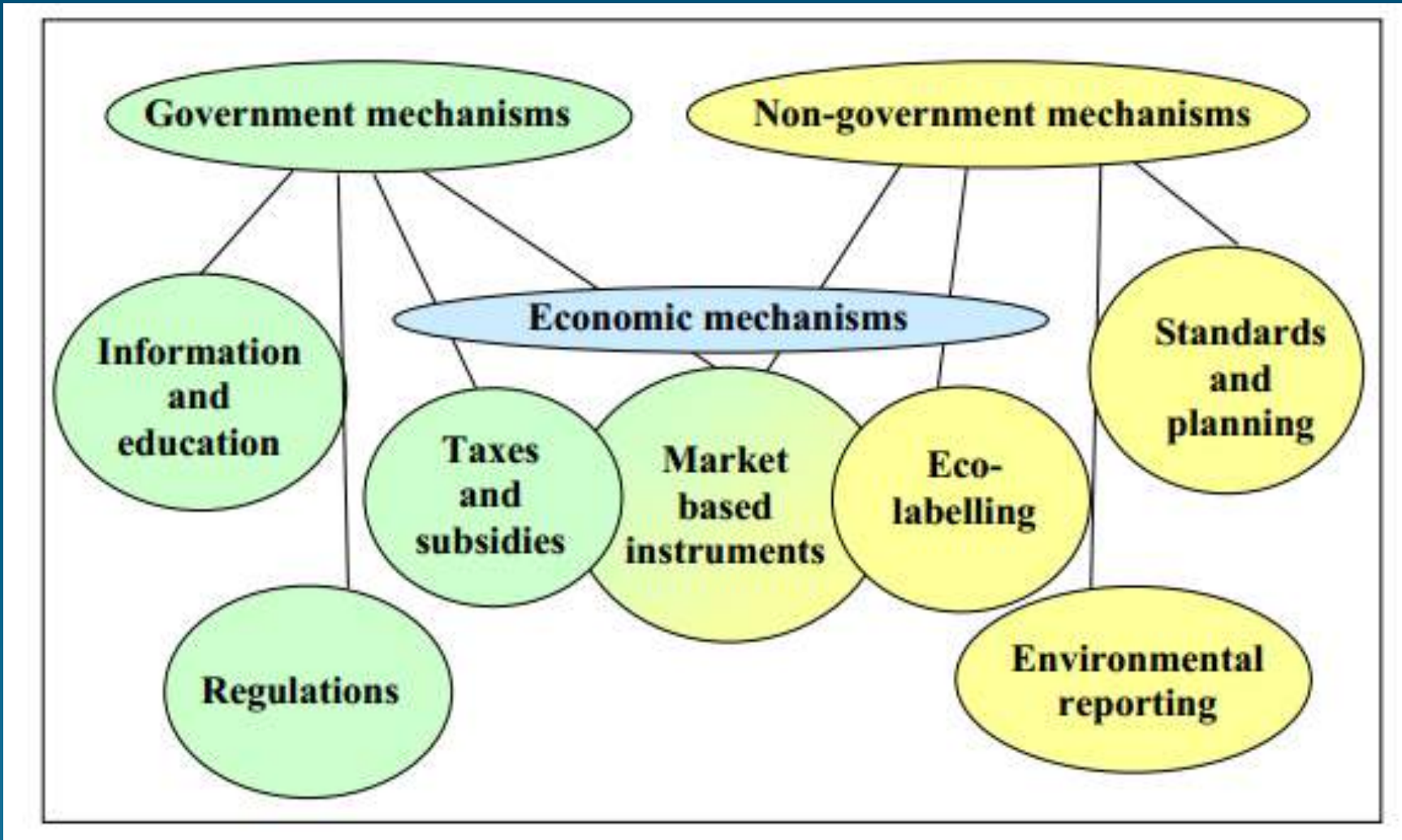
1. ES and FI&AQ

Fisheries and Aquaculture derived benefits from ES
Food and Nutrition Security
Livelihoods
Economic Growth
Culture
etc

Provisioning	**Regulating**	**Cultural**
Products obtained from ecosystems	Benefits obtained from regulation of ecosystem processes	Nonmaterial benefits obtained from ecosystems
Food	Climate regulation	Spiritual and religious
Fresh water	Disease regulation	Recreation and ecotourism
Fuelwood	Water regulation	Aesthetic
Fiber	Water purification	Inspirational
biochemicals	Pollination	Educational
Genetic resources		Sense of place
		Cultural heritage
Supporting Services necessary for the production of all other ecosystem services		
Soil formation	Nutrient cycling	Primary production

MEA, 2003

2. FI&AQ ES Management mechanisms



Windle et al, 2005

3. Payments for ecosystem services

- Wunder classifies PES as (1) voluntary transactions where (2) a well-defined environmental service (ES) is (3) being "bought" by a minimum of one ES buyer (4) from a minimum of one ES provider, (5) if and only if the ES provider secures ES provision (conditionality).
- Sommerville et al 2009 define PES as approaches that aim to (1) transfer positive incentives (not only monetary) to environmental service providers that are (2) conditional on the provision of the service, where successful implementation is based on a consideration of (1) additionality and (2) varying institutional contexts

Why might we need PES in FI&AQ?

- General agreement that command and control is costly and requires a great deal of information not necessarily available
- Market-based mechanisms should allow for more flexibility, minimize costs of attaining an objective, and provides + and - incentives to private actors to attain goals.
- We have market-based experience in FI&AQ especially focusing on the “provisioning” ES (fish)
- PES could be an added tool in the FI&AQ management portfolio to support increases in other ES, which are currently often managed through command and control or technical changes

Generic PES Scheme in FI&AQ

BUYERS

- Government
- Private sector
- Community
- Individuals

PAYMENTS/ INCENTIVES

- Output based
- Effort based

SELLERS of ES

- Fishermen

SERVICES

INTERMEDIARIES

Trusts,, NGOs

KNOWLEDGE PROVIDERS

Fishies managers, economists, Regulators, ecologists, and legal advisors, etc

MOTIVATIONS of DIFFERENT STAKEHOLDERS

Public sector

- Implementing international & national regulations
- Investing in long-term natural resource supply
- Responding to public pressure
- Reducing costs

Private sector

- Regulatory compliance
- Reduction of operating and mantenance costs
- Hedging of risks related to future fish supply or future regulations
- Maintaining licence to operate
- Enhancing brand and improve public image

MOTIVATIONS of DIFFERENT STAKEHOLDERS

SELLERS

- Increased cash income
- Additional stable and secure income
- Increased management rights
- Employment
- Improved resilience of local ecosystems
- Increased food security on the long-term
- Potential for higher productivity in the long term
- Increased knowledge of sustainable fisheries
- Skill development and raising of personal self-belief
- Community cohesion

4. Examples PES in FI&AQ

FI&AQ sector as seller of ES

payments to individuals or private entities

- Funding for transitioning to more environmentally sensitive fishing practices (versus limiting to legal requirements to adopt new techniques)
- Provision of less harmful fishing tools (e.g. larger mesh sized nets)
- Buy-back programmes to decrease fishing effort
- Certification and labeling of aquaculture facilities and products
  - e.g. filter feeders controlling coastal eutrophication (China, Sweden Blue Mussels)
  - e.g. integrated aquaculture (mangroves)
- Certification and labeling of fisheries production systems
- Ecotourism – paying to decrease fisheries and payments from conservation to not fish in MPA or protected habitats (as well as to provide monitoring services) – livelihood diversification
- Payments for closed seasons – Brasilian defeso
- Mangrove replanting projects

payments to communities

- community-based management/TURFS – defined exclusive access rights for improved sustainable management and ES

payments through governments (fuzzy area here)

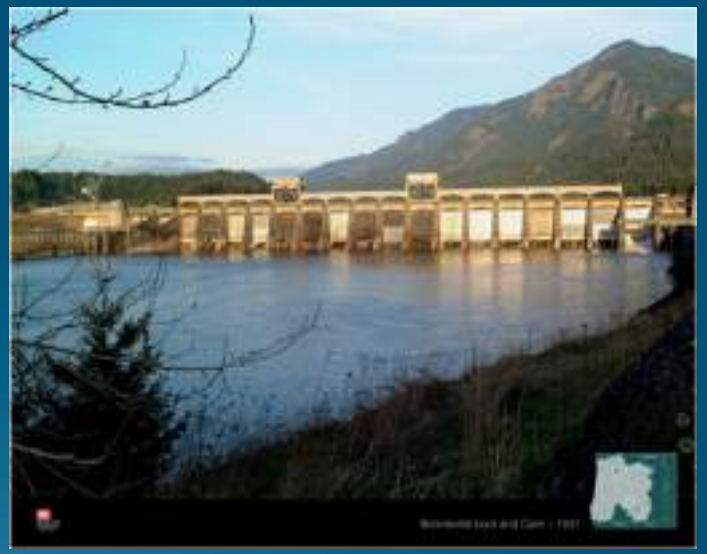
- debt for nature swaps – although negative incentives are usually used to ensure local compliance

FI&AQ paying for access to food ES

Within the sector (another fuzzy area)

- where market-based mechanisms for sustainable fisheries exist, e.g. ITQ – PES could pay for less than TAC catches
- access fees (licenses, 3rd party agreements) that are used for improved fisheries management
- voluntary protected areas in ABNJ (increased biodiversity and habitat protection for social acceptance)

FI&AQ paying for access to food ES



With other sectors

- Payment for increased water flows (e.g. dams)
- Recreational fisheries – inland rec fishers paying for improved infrastructure on private lands
- Rec fisheries fees being used to habitat restoration and projection of river systems

Smith et al, 2013

FI&AQ benefitting from other PES although not actors in the PES

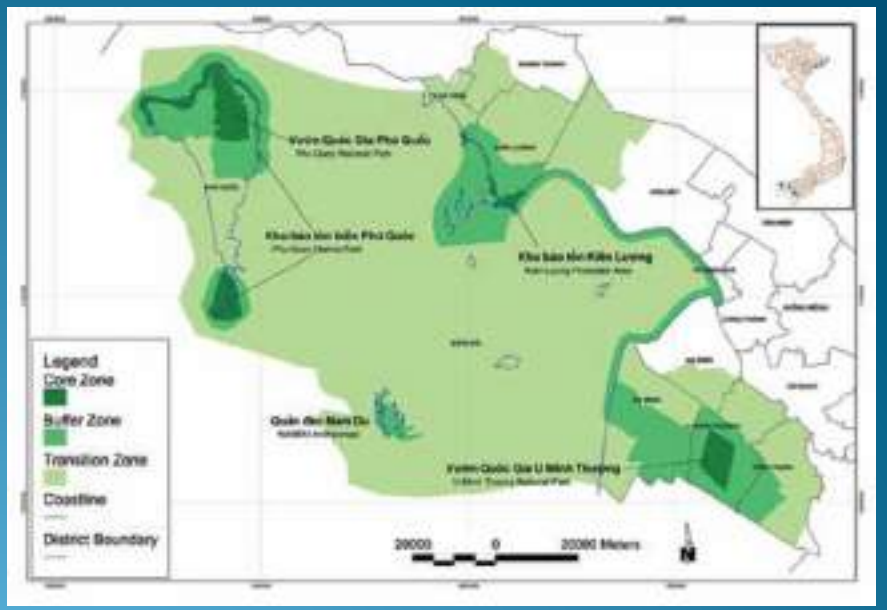
- This is where PES have a longer history
- water restoration certificates
- watershed buy-out programmes

Smith et al, 2013

5. Two bycatch case studies on PES potential

COASTAL GILLNET FISHERIES

TRAWL SHRIMP FISHERIES



CASE 1

BYCATCH in COASTAL GILLNET FISHERIES

FISH

Provisioning ES

BIODIVERSITY

Supporting/Cultural ES

Impacts

- Harbour porpoise (*Phocoena phocoena*)
- Seabirds

CASE 1 BYCATCH in COASTAL GILLNET FISHERIES

FISHERIES CHARACTERISTICS

- Family-owned companies
- Mainly based Freest and Fehmarn ports
- Traditional fishing techniques (gillnet, longlines)
- High selectivity for target species: herrings, cods, flatfish
- Labour-intensive fisheries low profits
- Historically fish provisioning benefited the local community
- Occasional by catch (seabirds and harbour purpoise) broke down community acceptance
- Fishrmen sensible to on-going deterioration of public image

CASE 1 BYCATCH in COASTAL GILLNET FISHERIES

PES ☺

Occurrence of by-catch	Low
Specific-actions effective to decrease by-catch	Yes
ES Seller	Traditional fishermen
Number of ES sellers	Relatively low
Buyer	WWF & Government
Scientific advisor/intermediary	Thünen Institute of Baltic Sea Fisheries
Conditionality (Required monitoring)	Effort-based (Low – passive mode)
Evaluation of payment amount	Incurred costs of reduced fish catch
Assumed benefits to buyers	Clear
Likelihood of leakage	Low (fishing in local waters and regulations in place)
Likelihood of free riders	Low due to community cohesion
Potential for perceived unfairness	Low – most fishermen in PES
Existence of non-economic motivation	Reputation within the community
Permanence of benefits	PES likely to cover transition costs

CASE 2

BYCATCH in TRAWL SHRIMP FISHERIES

SHRIMP

MARINE ECOSYSTEM

Provisioning ES

Supporting/Provisioning ES

Impacts

CASE 2 BYCATCH in TRAWL SHRIMP FISHERIES

FISHERIES CHARACTERISTICS

- Fishery of Kien Giang province (Viet Nam)

Comprises different segments:

1) Shrimp trawlers

- Landed yield mainly for export
- High profit
- Relatively high fish catchability
- Enormous by-catch of non-target juvenile species

2) Artisanal fishing fleets

- Landed yield mainly for household consumption
- Low profit
- Relatively low fish catchability
- Depleting remaining stocks by fishing with mosquito nets

CASE 2 BYCATCH in TRAWL SHRIMP FISHERIES

PES ☹

Occurrence of by-catch	High
Specific-actions effective to decrease by-catch	By-catch device only partial solution Multiple actions needed
ES Seller	Shrimp trawling & traditional fishermen
Number of ES sellers	High
Buyer	International organizations & Government
Scientific advisor/intermediary	Food and Agriculture Organization
Conditionality (Required monitoring)	Output-based (High – required actual effectiveness)
Evaluation of payment amount	Incurred costs of reduced fish catch
Assumed benefits to buyers	Clear
Likelihood of leakage	High – depletion of other fishing grounds already occurring
Likelihood of free riders	High – competition for natural resources
Potential for perceived unfairness	High – few fishermen in PES
Existence of non-economic motivation	Food security and poverty reduction
Permanence of benefits	PES likely to be unable to cover transition costs for the scale of the phenomenon

6. A few thoughts on PES in FI&AQ

- A potentially useful tool but…

- Conditionality criterion hard to meet
- Free riding
- Hard to monitor impacts
- What's our baseline?
- Direct payments likely not sustainable (only as long as the project exists) and may create a disincentive to protect ES that might have been there traditionally (incentives become entitlements)

6. A few thoughts on PES in FI&AQ

- Leakage and substitution effects need to be considered in PES planning
- PES or subsidy?
- Not by PES alone
- PES implementation could deal with equity and poverty reduction issues

Thank you!