Institutional Analysis of Payment for Watershed Ecosystem Services
Lessons from two case studies in Colombia and Germany

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OUTLINE

• INTRODUCTION
  – Payment for watershed ecosystem services (PWES)
  – PWES as an institution
  – Framework of analysis

• METHOD
  – Explorative case study

• RESULTS AND DISCUSSION
  – Conditions of institution durability observed in the cases

• CONCLUSION
INTRODUCTION

• Payment for Watershed Ecosystem Services (PWES) “…mechanisms addressed to maintain or modify land uses that affect water quality and quantity down streams”. (UNDESA, 2003)

• Alternative to command and control instrument
  – In some cases more effective (environmental results) and more efficient (Brouwer et al., 2002.)
  – Changes in land use instead remedial solutions

• Interest of researching on the conditions making PWES endurable
INTRODUCTION

PWES AS INSTITUTION

PWES: Institution established to resolve the environmental conflict upstream – downstream
(Paavola, 2007)
INTRODUCTION

Objective: identification of conditions under which PWES are endurable institutions


Applicability to PWES analysis:

- Characteristics of CPR and watershed ecosystem services:
  - Difficulty of exclusion: of use – farmers
  - Rivalness: on resource use water – land
CRITICAL ENABLING CONDITIONS FOR INSTITUTIONAL SUSTAINABILITY OF CPR

1. RESOURCE SYSTEM
   - Feasibility of improving the resource
   - Indicators of resource conditions
   - Traceability of resource improvement
   - Well-demarcated boundaries
   - Small size

2. GROUP CHARACTERISTICS
   - Small size
   - Past successful/organizational experiences
   - Appropriate leadership
   - Trust
   - Low poverty

3. RELATION RESOURCE AND GROUP
   - Overlap between residential and resource location
   - High levels of dependence on resource system
   - Fairness in allocation of benefits from resource

4. INSTITUTIONAL ARRANGEMENTS
   - Rules are easy an simple to understand
   - Ease in enforcement of rules
   - Graduated sanctions

5. EXTERNAL ENVIRONMENT
   - Supportive external sanctioning institutions
   - Low levels of articulation with external markets

(AGRAWAL, 2001)
METHOD

• Explorative case study

2 case studies
– Colombia, Water users Association of Bolo River
– Germany, Organic farming in the catchment area of Mangfalltal

– Sources of evidence:
  • documentation
  • archival records
  • interviews
Water users association of Bolo River, Asobolo Valle del Cauca, Colombia
Water users association of Bolo River, Asobolo Valle del Cauca, Colombia.

- Asobolo (1992)

**Ecosystem Services Beneficiaries**
- Water users downstream irrigation
- Sugar cane

**Fee/Contribution**
- USD 2,73 L/s consumed/ trimester
- Max: USD 3000 / Min: USD 1,20

**Intermediary**
- ASOBOLO

**Payment**
- In kind:
  - Social Program
  - Agri-environmental Programs

**Ecosystem Services Providers**
- Farmers living in the upper watershed

**Ecosystem Services**
- Water flow regulation
- Water quantity
- **Land uses**
  - Reforestation, organic farming
Organic farming in the Mangfalltal Catchment Area, Germany

Source: Grüneliga, 2007

Source: http://de.wikipedia.org/wiki/Bayern

Source: http://maps.google.com/maps?hl=es&tab=wl
Organic farming in the Mangfalltal catchment area Munich, Germany

- Mangfalltal (1993)

**E.S. Beneficiaries**
- Water users city of Munich
  - Fee/ Contribution
    - USD 0,007 m³ consumed

**Intermediary**
- Water Company
  - Payment
    - In cash: USD 326 ha/year

**E.S. Providers**
- Farmers living in Water Protection and conversion area
  - Ecosystem Services
    - Water quality: Mainly reduction of Nitrate
  - Land uses
    - Organic farming

**Organic Farming Associations (3)**
- Certification of land use changes, Monitoring
RESULTS AND DISCUSSION

SIMILARITIES (15 out of 18 conditions)

Emerging process:

- Feasibility of improvement the resource
- Indicators of resource available
- High dependence of the resource (water users)
- Small group in the design
RESULTS AND DISCUSSION

Continued operation of the scheme

- **Group characteristics**
  - Previous organizational experiences
  - Appropriate leadership

- **Institutional arrangement**
  - Rules simple and easy to understand
  - Ease of enforcement of the rules
  - Monitoring
  - Graduated sanctioning mechanism
RESULTS AND DISCUSSION

DIFFERENCES (3 out of 18 conditions)

• **Traceability**
  - Mangfalltal: reduction of nitrate levels
  - Asobolo: no changes in water flow registered yet

• **Trust**
  - Asobolo: scheme based on oral contracts, reduction of transaction costs
  - Mangfalltal: design of the scheme, OFAs closer to the farmers than the water company

• **Levels Poverty - Asobolo**
  - Obstacles for participation overcome
    - Objective of poverty alleviation
CONCLUSION

• The differences from developing and developed countries are evident, however, several similarities regarding the conditions contributing to the durability of PWES were found.

• If similarities of conditions for the durability of PWES can be found in such different contexts, they might be relevant for other PWES schemes and for future implementation.
Thank you for your attention!