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Paying for Water-related Environmental Services: a survey on Italian PES mechanisms

TESAF Davide Pettenella, Enrico Vidale, Paola Gatto and Laura Secco
 Dipartimento Territorio e Sistemi Agro-forestali
 Università di Padova

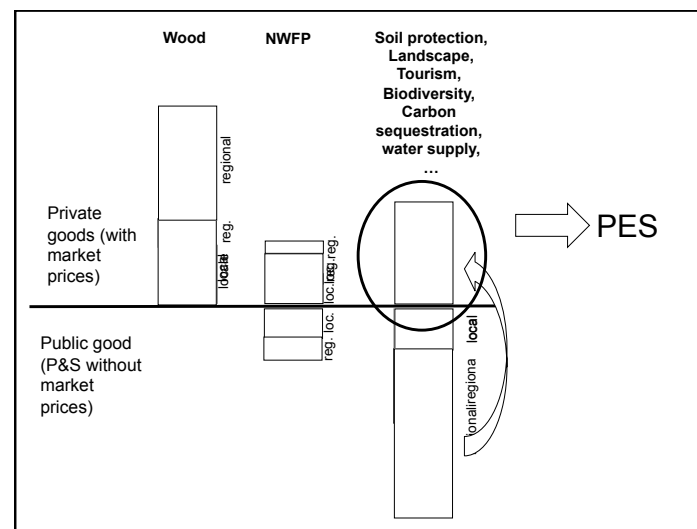
Outline

1. Background: changes in the source of income from forest activities
2. PES: logical frame
3. Water-related PES in the Italian experience
4. Final remarks

Slides may be downloaded from the Dept TeSAF web-site (www.tesaf.unipd.it/pettenella)




1. Background: changes in the source of income from forest activities



Forestry sector (in Med countries): from commodities to services supply

“Secondary goods”

- Environmental education
- Sport and outdoor activities
- Cultural activities (concerts, museums, ...)
- Recreation or tourism
- Therapy
- ...
- ... and services



New ways to value and market forest *externalities*

CASE STUDIES

Newforex studies there is a high number of forest types, techniques in which forests are situated, degree of urbanization, importance of forest goods and services, and socio-economic context. Consequently, there are significant variations in the demand as well as the value of forest externalities. Our aim of analysis and actions for their marketing. Therefore, we identify, will have to work in a set of specific cases. Our target have studies representing a range of these variables, and in addition a developing country case study.

The case study regions cover four main processes:

1. an existing pilot where we will collect among the relevant populations (e.g. general public, forest owners, stakeholders, etc.) the needed structural data on forest externalities (value, costs of provision, and possible market-based methods);
2. provide data and models for forest production and costs to assess, for example the role of forest secondary effects for users;
3. an audit and demonstration trials for the application of the demonstrated methods for valuation of forest externalities and assessment of costs of provision, and evaluation of the potential for implementing market-based methods for forest externalities provision;
4. as an experimentation for demonstrating general guidelines and recommendations to the main stakeholder groups.

Region	Country	Forest type	Forest use	Externalities	Reference
Mediterranean region	Spain, France	Acidoboreal, evergreen broadleaf forest	High share of non-wooded forest, for wood production and other uses	High share of non-wooded forest, for wood production and other uses	EPIC, 2004/05
Atlantic forest	Spain, France	Evergreen broadleaf forest	High quality, recreation and agricultural landscape	High quality, recreation and agricultural landscape	LEADER
Forest region	France	Acidoboreal, evergreen broadleaf forest	High quality, recreation and agricultural landscape	High quality, recreation and agricultural landscape	LEADER
Mediterranean region	Spain, Italy	Acidoboreal, evergreen broadleaf forest	High quality, recreation and agricultural landscape	High quality, recreation and agricultural landscape	LEADER
Central European region	France	Acidoboreal, evergreen broadleaf forest	High quality, recreation and agricultural landscape	High quality, recreation and agricultural landscape	LEADER
Developing country	Spain	Acidoboreal, evergreen broadleaf forest	High quality, recreation and agricultural landscape	High quality, recreation and agricultural landscape	LEADER

6 case studies

<http://www.newforex.org>

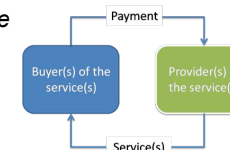


2. Payments for Environmental Service (PES): logical frame

Payments for Environmental Services (PES)

Definition (Wunder, 2005):

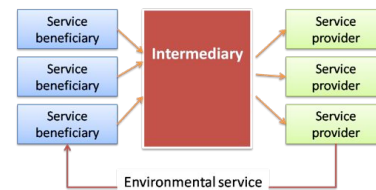
- “a voluntary (1) transaction where
- a well-defined ecosystem service (2) (or a land-use likely to secure that service)
- is being bought by a (minimum one) ecosystem buyer (3)
- from a (minimum one) ecosystem provider (4)
- if and only if the ecosystem service provider secures ecosystem service provision (5) (conditionality)”.



Payment for Environmental Services (PES)

True PES:
Scheme that satisfies all
the 5 criteria

PES-like Scheme:
Scheme that doesn't
satisfy all the 5 criteria



Source: NEWFOREX D4.1 (2011)



3. Water-related PES in the Italian experience

Research questions

- Which are the water-related PES in Italy?
- Which PES? ("True" PES or "PES like" scheme)
- How are (forest) land owners compensated?
- Are PES covering the costs of provision?

A world wide scientific evidence: "Vegetation cover and its management can have a profound impact on the partitioning of water and energy" (Robinson et al 2011).

A preliminary question:

- are PES needed?
- are there water related positive externalities offered by forest (land) resources?
- Sedimentation of artificial basins (555 large* and 8843 small) is a huge problem (661 M €/yr - Bazzoffi, 2010), strictly connected with land use.
- Common problems: reduced lifespan of the basin; costs of dragging from 10 €/m³ to 30 €/m³ (Molino, 2004)
- Water is becoming a scarce and valuable resource in the Med area: agriculture is strongly dependent on irrigation, 15% of the Italian population is not able to enjoy a regular service of tap water provision

(*) i.e.: with dams higher than 15 m and capacity of at least 1 M m³ water

Three Italian examples of water PES

1. Water quantity: water catchment and storage for hydro power generation
2. Water quantity and quality: water catchment and storage for drinking water
3. Water quality: mineral water production

1. Hydro power generation

Basic information

- The first source of renewable energy in Italy (5.1% of total final consumption)
- National frame law: no. 959 in 1953
- Payment is based on power of hydroelectric plant (>220 kW/h): 28 kWh installed/year (in 2011)
- Extra payment for the Municipalities that have the catchment area or host the power plant (5.3 €/kWh)
- Beneficiaries: Municipalities, frequently organised in Consortia (BIM – *Bacini Imbriferi Montani*)
- Numbers: 69 BIMs; 1,684 Municipalities involved; 252 dams; 518 power plants

Criteria to distribute the payment among the Municipalities

(Source: Decree Ministry of Public Works)

- 10% flat rate shared equally among Municipalities
- 20% paid in relation to the territorial area of each Municipality
- 30% paid in relation to the population of each Municipality
- 40% paid in relation to the localisation of various infrastructures (dam, power plant, torrents, channels, ...)

Use of money raised by the PES

- Public works: infrastructures, social services, cultural events (recently: renewable energy generation and distribution)
- <5% administrative costs
- Local politicians are the decision makers (aim: to raise the voters' consensus)

Is this a PES?

- Payments are favouring the most populated Municipalities
- Payments are based more on damages due to infrastructures than on land services (water provision, sedimentation reduction). Some infrastructures are providing positive externalities
- Payments are given to public institutions that are not the same responsible for mountain development (coordination?)
- So, a PES-like scheme based on a public regulative frame with no direct payments to the externality providers

However...

... no high costs of provision by land owners

... the “scale effect” should be considered

- Micro scale <50 km² → forest management may contribute a lot
- Meso scale between 50 and 20,000 km² → only coordinate forest management may have a meaningful effect
- Macro scale >20,000 km² → scarce or no effect: soil and rock play the main role

Source: CIFOR 2005

2. Drinking water provision

An exemplary case: *Romagna Acque* and the Ridracoli dam (1/2)

- Managers: a public company controlled by the local administrations (Province and Municipalities)
- Built in the 1982; capacity of 33 M m³; more than 100 M m³ of high quality drinking water provided/ year
- Almost 50% of the total Romagna drinking water consumption

An exemplary case: *Romagna Acque* and the Ridracoli dam (2/2)

- From 1982 to 2007: 25 years of constant investments in the catchment basin area (mainly forest area): an almost fixed amount of 4% of the total company revenues from water tariff, equal to a annual PES of 5-600,000 €
 - Initial sediment transport volume (1982): 42,600 m³
 - Today sediment transport volume: <30,000 m³
- Now: no more investments needed (a part from ordinary maintenance works and environmental education);

From *Romagna Acque* experience a lesson learned →

- National Frame Law: no. 36 in 1994
- Till 3% of the tariff payment can be used by Water authorities for public works in the catchment areas
- Only 2 (3) Regions have decided to implement the law: Piedmont, Veneto (and Emilia-Romagna).
 - Piedmont: funds are managed by Mountain Community only for ordinary maintenance
 - Veneto: all public works in the catchment area are financed

Is this a PES?

- Payments are activated only through lobbying (the representatives of the land owners are weaker than the local water authorities, always oriented to reduce their tariff)
- Investments in the catchment areas are not always based on clear criteria (in Veneto they are used for all public works, some of them – i.e. mountain road construction – having negative externalities on water quality!)
- In any case, a PES-like scheme based on a public regulative frame with no direct payment to the externality providers

3. Water quality: bottled water

Basic information

- Italy: the country in the world with the highest *per capita* consumption of mineral water
- A sector dominated by a strong industrial lobby
- Mineral water: quality standards that are lower than for tap water
- Remarkable environmental impacts of this business, mainly due to logistic and the cost of plastic recycling
- Huge investments in marketing based on concepts like: water from forest areas, from National Parks, from mountain areas, ...

Regulative framework

- The law (now the National Frame Law - Decree 152 in 2006) allows the establishment of PES
- Zoning:

– Area of absolute protection around the spring (fenced)
 – ± 200 m around the first zone: no economic activities are allowed
 Managed directly by the concessionaires

– Water catchment area (some thousands hectares):
 light protection and control
 Under the control of concessionaires
 → PES (limitations to land owners are not compensated)

The “Case dell’acqua” case

- Mineral water are owned by the State and used under concessions under payments that are ridiculous (few cents per 1 m³):
- Low payment, not so special quality, high negative environmental impacts → strong negative reactions by civil society and some Municipal public authorities → strong campaign to support the consumption of “the water of the Mayor” = local, environmentally friendly, safe, good and cheap

The “Case dell’acqua” case

46 Municipalities offering (free of charge) refrigerated tap water added with CO₂



Are PES implemented in this sector?

- No evidence: the same industrial group that is representing a reference model in this sector (Vitel in F), in Italy is not implementing any PES



3. Final remarks

- True water related PES: not existing in Italy (and elsewhere?)
- The regulative framework allows (and favours) the establishment of PES-like schemes, but implementation is lacking behind
- Civil society strongly against privatisation of water resources: not the best political environment to implement market-based instruments like PES
- Criteria for defining PES: opportunity costs in land use, more than provision costs
- There is room for developing PES as an instrument of green marketing (or green washing?) by mineral water companies to raise public consensus

So you are free to see the Italian glass of water

Half full
or half empty

