




Analysis of Different Approaches and Methodologies on Valuation and Payments for Forest Ecosystem Services in the Pan-European Region

Zuzana Sarvašová, Martina Štěrbová

FOREST EUROPE Background



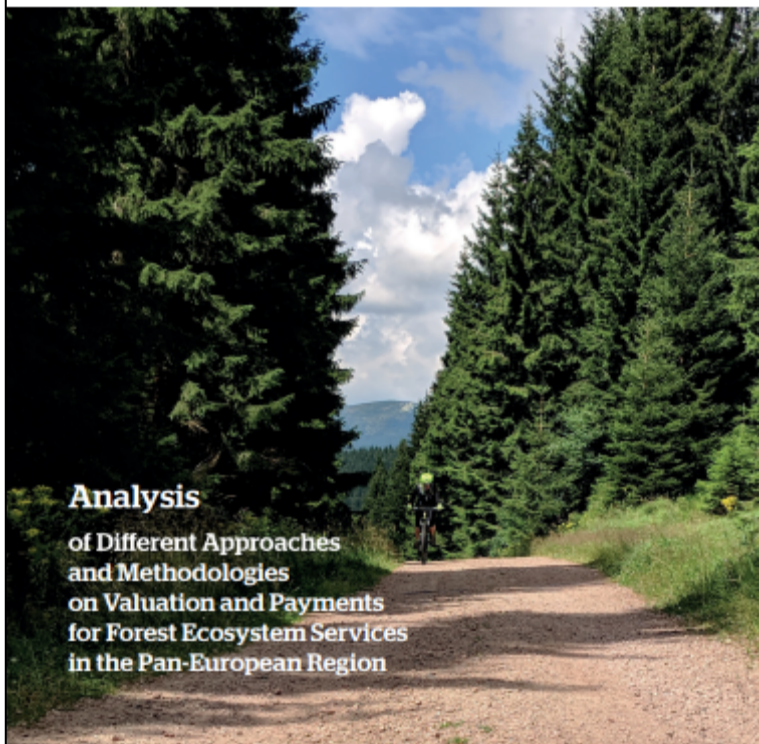
- The Madrid Ministerial Resolution 1: Forest sector in the center of Green Economy was reflected in the work program 2016 - 2020, as a Pan-European action 4.4: **Incorporating the value of forests ecosystems services in a green economy.**
- Slovak Presidency  Forest Europe committed coordination and fulfillment of 4.4 **Expert Group on Valuation and Payments for Forest Ecosystem Services**

Expert group on valuation and Payments for Forest Ecosystem Services

- Analysis of different approaches and methodologies on Valuation and Payments for Forest Ecosystem Service in the PanEuropean Region,
- Review of case studies/best practice examples of valuation methods and PES schemes implemented in signatory countries,
- Proposal of recommendations for policy makers.



Outputs – Publication



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Edited by:
Lucia Ambrušová and Igor Viszlai

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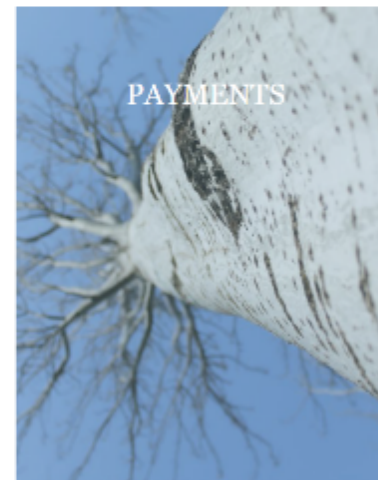
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Outputs – Web Portal

<https://foresteurope.org/Web-Portal-on-Forest-Ecosystem-Services/>
... as a platform for knowledge and information exchange...

Web Portal on Forest Ecosystem Services



I. Ecosystem Services

The benefits that people obtain from ecosystems – the direct and indirect contributions of ecosystems to human wellbeing

MA (2005) TEEB (2010) CICES (2013)

Comparison of three main classifications of ecosystem services (only those services supplied by forest ecosystems are shown)

MA	TEEB	CICES
PROVISIONING	PROVISIONING	PROVISIONING
Industrial wood	Raw materials	Materials / Biomass, fibre
Fuelwood		Energy / Biomass-based energy
Non-wood forest products	Food / Raw materials	Nutrition / Biomass
		Materials / Biomass, fibre
Fresh water (water purification) (also Regulation service)	Water supply	Materials / Water
		Nutrition / Water
Genetic resources	Genetic resources	Materials / Biomass, fibre (genetic resources)
REGULATION	REGULATING	REGULATION AND MAINTENANCE
Pest regulation. Disease regulation	Biological control	Maintenance of physical, chemical, biological conditions / Pest and disease control
Health protection		
Water regulation	Regulation of water flows	Mediation of flows / Liquid flows
	Disturbance prevention or moderation	Mediation of flows / Air flows (storms)
Water purification and waste treatment	Waste treatment (water purification)	Maintenance of physical, chemical, biological conditions / Water conditions
Air quality regulation	Air purification	Maintenance of physical, chemical, biological conditions / Atmospheric composition and climate regulation

Classification of ES according to TEEB (2010)	Suitable valuation method		
PROVISIONING SERVICES			
Raw materials	Market prices; Contingent valuation method; Choice modelling; Value transfer method; Market price method; Efficiency (shadow) method; Restoration costs method; Replacement costs method	Classification of ES according to TEEB (2010)	Suitable valuation method
		REGULATING SERVICES	
Food / Raw materials	Market prices; Contingent valuation method; Choice modelling; Value transfer method; Market price method; Efficiency (shadow) method; Restoration costs method; Replacement costs method	Climate regulation (incl. C sequestration)	Contingent valuation method; Choice modelling; Averting behavioural method; Value transfer method; Related goods approaches; Production function-based methods; Indirect opportunity costs
Water supply	Market prices; Contingent valuation method; Choice modelling; Value transfer method; Related goods approaches; Indirect opportunity costs method; Replacement costs method	Erosion prevention	Contingent valuation method; Choice modelling; Averting behavioural method; Value transfer method; Related goods approaches; Production function-based methods; Indirect opportunity costs; Replacement costs method; Preventive/defensive expenditures
Genetic resources	Contingent valuation method; Choice modelling; Value transfer method; Related goods approaches; Indirect opportunity costs method	Maintaining soil fertility	Contingent valuation method; Choice modelling; Averting behavioural method; Value transfer method; Related goods approaches; Production function-based methods; Indirect opportunity costs; Restoration costs method
		Pollination	Contingent valuation method; Choice modelling; Averting behavioural method; Value transfer method; Related goods approaches; Production function-based methods; Indirect opportunity costs


II. Valuation approaches and methods

A number of different economic valuation approaches and methods have been developed so far to determine the value of FES.

Below you can find an overview of valuation of approaches and methods including a description of each of them, its suitability for FES to be valued, list of benefits and limitations of its implementation, and case example from different FOREST EUROPE signatory countries.



Valuation approaches and
methods classified according
to type of FES to be valued



Overview of valuation
approaches and methods





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Contingent Valuation Method (CVM)

Contingent Valuation Method

Suitability for the forest ecosystem services to be valued: All forest services **Description of the method:** Contingent Valuation Method (CVM) is a questionnaire based technique that seeks to discover individual preferences for an environmental change. It uses one of two measures of consumer's surplus: compensating variation (CV) or equivalent variation (EV). CV is the amount of money (change in income) necessary to make an individual indifferent with respect to an initial situation and a new situation with different prices. EV may be viewed as a change in income equivalent to a change in welfare after a change in prices has occurred. CVM is used to estimate the consumer's willingness to pay (WTP) for a specified good or service, or his/her WTA compensation for forgoing a desired good or service. In practice, it is usually derived from the responses of potential consumers to a hypothetical exchange situation. The method assumes that the consumer's expressed WTP in a hypothetical situation is a utility indicator to the consumer in an actual situation. The basic premise of the contingent valuation method is that individuals are sensitive to a given environmental change and that their preferences could be measured in terms of their WTP to undergo (or their WTA a compensation to avoid) this change. Therefore, the given change is presented to individuals through a survey where the environmental change is presented and where people are directly asked to state their WTP or their WTA the given environmental change. The most used variants of CVM are Open-ended, Dichotomous or Polychotomous choice, Iterative bidding game, and Payment card.

Benefits of the method: Measurement of non-use values possible (to provide a comprehensive measure of total economic value) Valuation of future goods and services possible The use of surveys allows to collect relevant socioeconomic and attitudinal data on the respondents that could be relevant for understanding the variables influencing social preferences and choices The use of surveys allows to estimate hypothetical changes and their impact before they have taken place Participative/deliberative approaches before valuing the good or service at stake seem to provide with more stable results

Limitations of the method: Results sensitive to numerous sources of bias in survey design and implementation Preferences for non-use values tend to be less stable Budget and time demands are high

Case examples:

- [Conservation Programs Norway](#)



NÁRODNÉ
LESNÍCKE
CENTRUM


Valuation approaches and methods

A number of different economic valuation approaches and methods have been developed so far to determine the value of FES.


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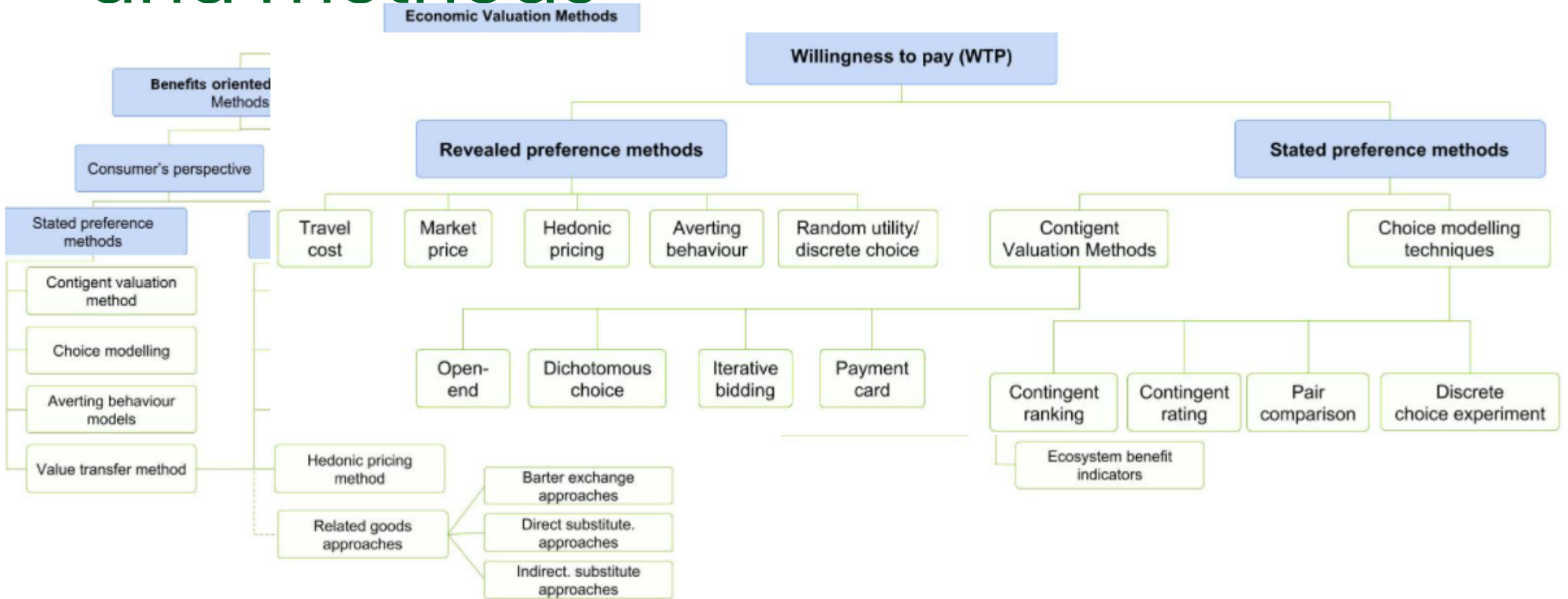
Valuation approaches and methods classified according to type of FES to be valued



Overview of valuation approaches and methods



Overview of valuation approaches and methods



Limitations to Economic Valuation

- Interdependence of ecosystems and their services; Marginality; Double counting; Spatial issues; Temporal issues; Environmental limits; Dealing with uncertainty; Data transfer and knowledge gap

Practical barriers:

(i) **cultural** – considering economic approaches for solving environmental problems is generally seen with some reservations in several European countries. Hence there is less of experience with economic valuation of environmental services in these countries (apparently there are fewer economic valuations of FES for example in the German speaking countries than in the UK or in Scandinavia);

(ii) **methodological** – no generally accepted procedural rules amidst methodological complexities of valuation; and

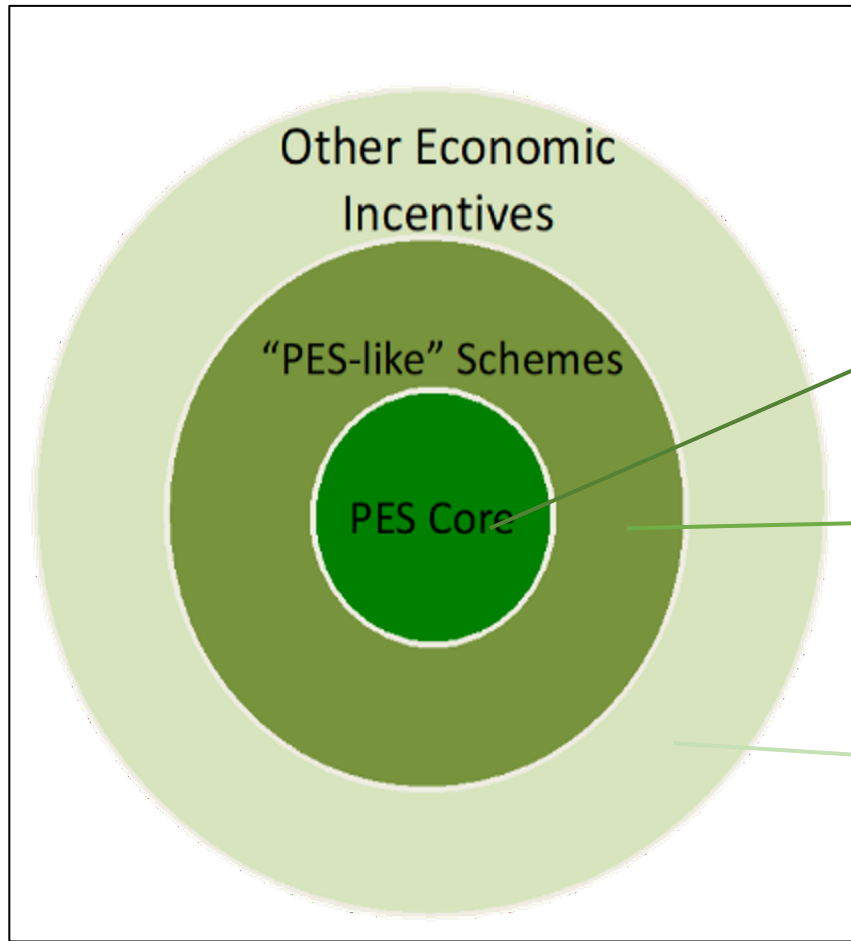
(iii) **political** – it can be much easier to communicate political decisions based on “real money” than on what some see as intangible and nebulous values based on the consumer surplus concept.

III. Payments for Forest Ecosystem Services

The basic idea behind PES is that those who maintain ecosystems in good condition and provide ecosystem services and incur in an extra cost, should be paid for doing so.

Wunder (2015) defines PES as voluntary transactions between service users and service providers that are conditional on agreed rules of natural resource management for generating offsite services.

PES definitions



5 PES key principles:

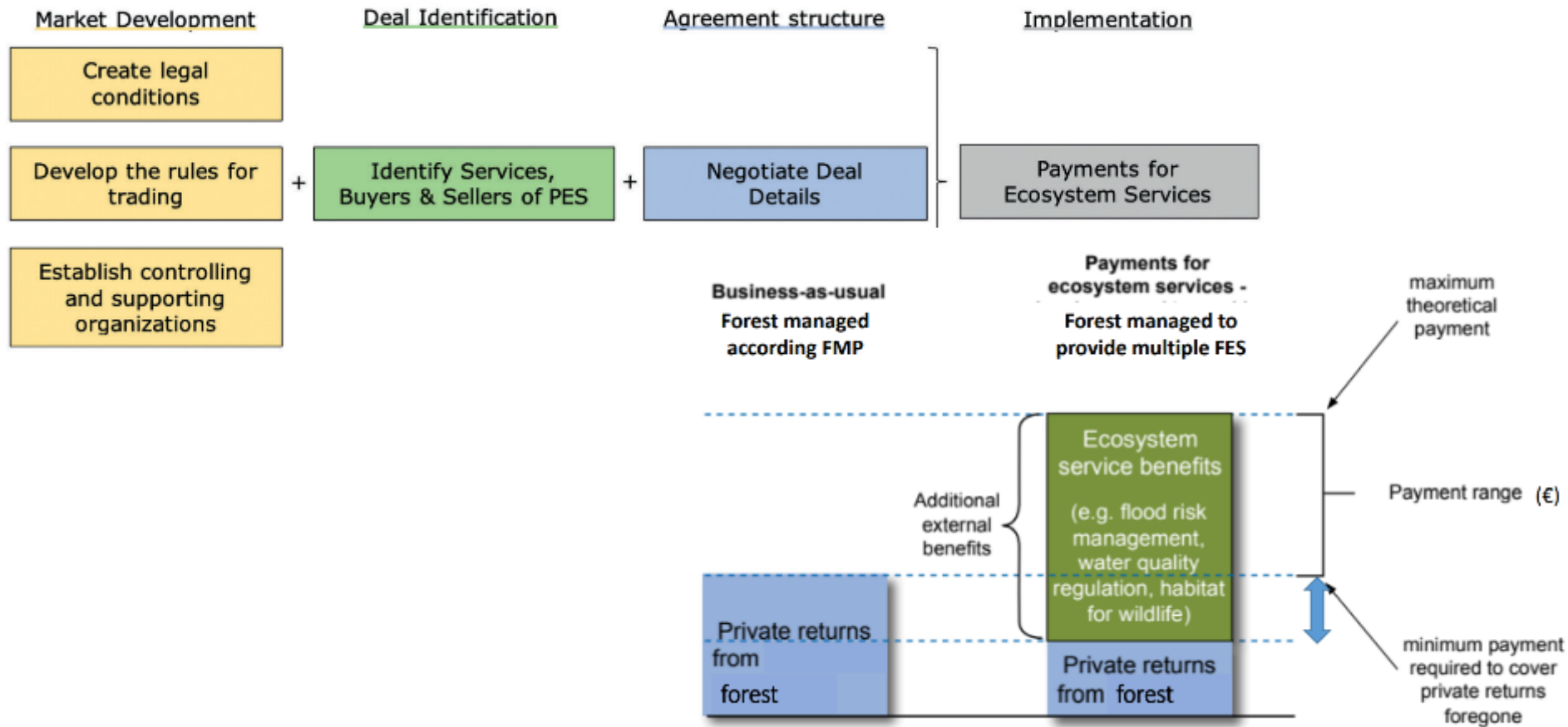
1. Voluntariness
2. A well-defined ES
3. Beneficiary pays
4. Direct payments
5. Conditionality

Some of key principles is missing
e.g. public payments, eco-labels

Any payment for any ES,
e.g. reforestation subsidies

(Wunder 2005)

How PES works in practice

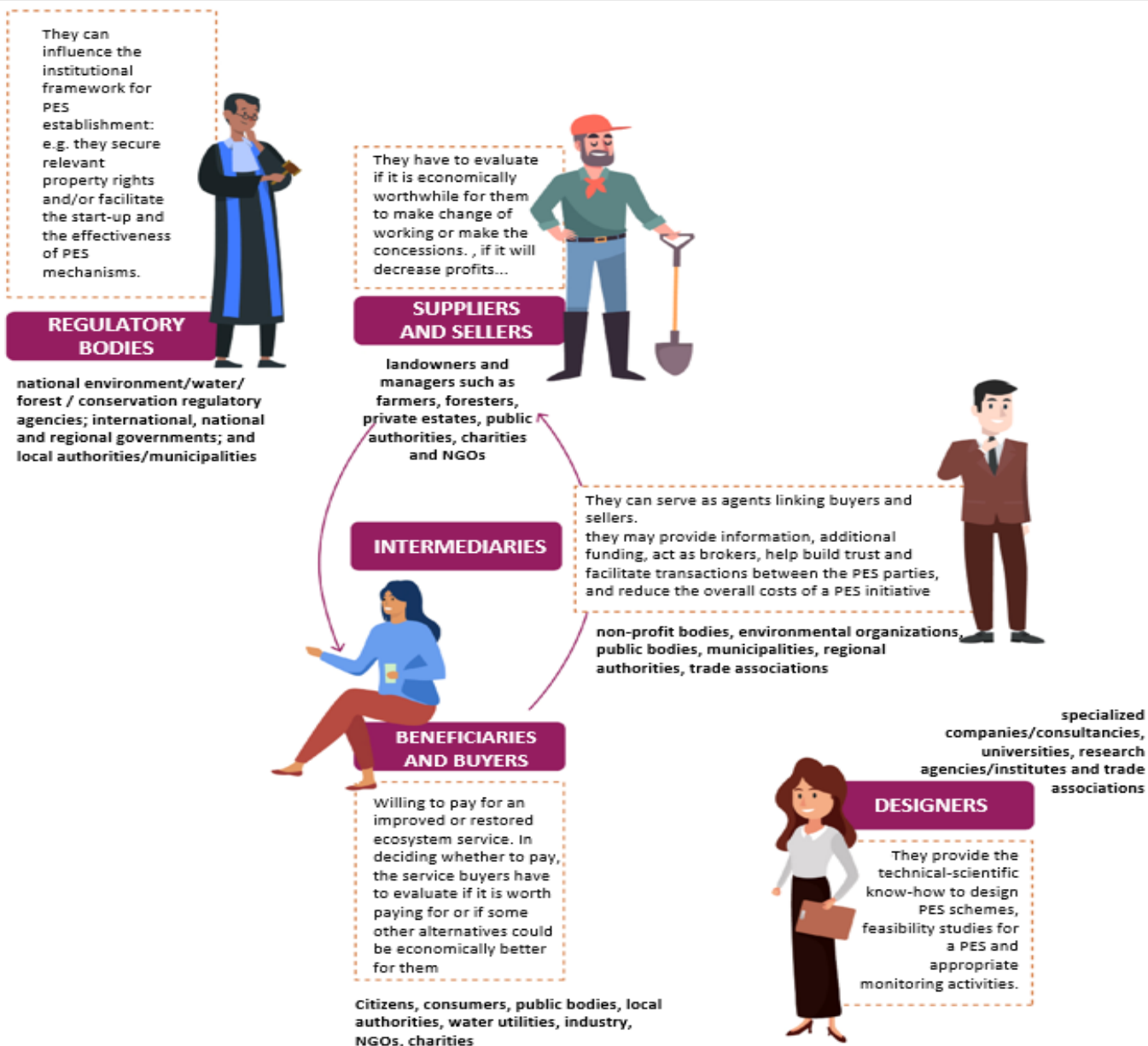


(Adopted from Smith et al., 2013)

Classification of PES

- **public schemes** or government-financed PES, through which government pays land or resource managers to enhance ecosystem services on behalf of the wider public; (Pigouvian – type)
- **private schemes** or user-financed PES, self-organised private deals in which beneficiaries of ecosystem services contract directly with service providers; (Coasean – type)
- **public-private schemes**, in principle have the same features as a private scheme, except that the buyer is a public utility.

Actors



(Adopted from Nisbet et al. 2021)

Preconditions for PES

- Economic preconditions
- Cultural preconditions (users and providers motives for action)
- Legislative and institutional framework
- Ownership and tenure rights
- Stakeholders and negotiations
- Monitoring, enforcement and compliance

PES opportunities and risks

- PES provides an opportunity to put a price on previously un-priced ecosystem services.
- PES is raising awareness about environmental issues.
- PES offer distributional benefits, if communities can improve their livelihoods by offering and selling their ES and through access to new markets support the European policies for rural areas.
- PES schemes can be unfair and can provide perverse incentives where payments go to those who have degraded or threaten to degrade their land, rather than those already sustainably managing it.



Case Studies:



Forest Biodiversity Programme METSO FIN, Genetic resources, Lifecycle maintenance, Public mechanisms

Forest Biodiversity Programme METSO

Location

Country: Finland
Scale: regional
Region: Southern Finland

Compensated /improved ecosystem services

Habitat services

Management

The Forest Biodiversity Programme METSO (2008-2025) aims to halt the ongoing decline in the biodiversity of forest habitats and species, and establish stable favourable trends in Southern Finland's forest ecosystems. It is a collaborative effort between the Ministry of the Environment, the Ministry of Agriculture and Forestry and different stakeholders.

The voluntary METSO Programme offers compensation to landowners so they can protect their forests, either permanently or under fixed-term agreements. The METSO Programme also includes nature management projects that do not generate expenses for landowners.

There are ten forested habitats being preserved under the METSO Programme. The sites are selected according to their ecological structure and their value for biodiversity. Regional forest and environmental authorities decide whether the subject is suitable for the programme. If the area is suitable for the METSO Programme, negotiations begin with landowners about conservation measures. The landowner makes the final decision after receiving a compensation offer.

Forest owners get full financial compensation equivalent to the value of timber at the protected site. With permanent protection, the private forest owner's income from the site is tax free. Additionally, protected sites can be used for nature-based tourism and recreation. For forest companies, METSO offers tools for sustainable forestry and provides a green image that is also attractive to customers abroad.

Stakeholders

Service providers:

- Private forests landowners

Beneficiaries of services:

- Individuals

Knowledge providers:

- Finnish Environment Institute SYKE plays role in development and monitoring of the programme, provides expertise on aspects of biodiversity conservation, ecosystem services and nature management applied in METSO

Donors – funding agencies or sponsors:

- Ministry of Environment
- Ministry of Agriculture and Forestry

Timeline

Establishment year: 2008
Time horizon: medium term (2008-2025)
Status of PES: active

Availability of economic data

Funding for the METSO programme varies between 30–40 million euros per year

References / Source of information

METSO Programme website: <https://metsonpolku.fi/en-US>
www.svke.fi/metso/en
<https://mumf.fi/en/forests/biodiversity-and-protection/metso-programme>

interactive-map/

Interactive

Type of FES

Type of financial mechanism

All

Auctioning

Cap-and-trade scheme

Certification

Conservation banks

Credit programmes

Direct acquisition of goods

Donations

Land lease



Mature Forest Reserves

Location

Country: Spain
Scale: regional
Region: province of Girona (north-east Spain)

Compensated /improved ecosystem services

- protection of biodiversity

Management

This program is running in the Catalan province of Girona since 2008 and supposes an up-scaling of the experience which started in the protected area of Montseny. Its main purpose is to overcome current scarcity of mature forest stands, that is those over their rotation age, in view of conserving the biodiversity they host. In this line a public administration launches an annual call addressed to owners of forest parcels, who satisfy certain criteria, offering them a reward for their commitment to leave the stands in natural evolution during thirty years more. Specific criteria apply to be eligible (such as presence of autochthonous or climax vegetation and good genetic quality trees). Forest stands must have been left intact for 80-100 years prior to the agreement.

Transaction is voluntary and the payment is conditional on the signature of a commitment with the public administration. Funds come from the general public budget and private donors; and beneficiaries can be both private landholders as well as municipalities. The reward they receive is meant to compensate the profit loss calculated based on the management plan approved by the Forest Ownership Center. Non-compliance is monitored, there is a penalty for non-compliance (5,000€). Public funds of the Diputació of Girona are mainly addressed to public forests owners, that is why it was important the introduction of private donations (even if discontinuous) that allowed the extension of the programme to private forest owners.

Stakeholders

- Sellers or service providers:**
- Private forest land owners and municipalities
- Buyers and beneficiaries of services:**
- Government and donor enterprises

Timeline

Establishment year: 2008
Time horizon: long term
Status of PES: active scheme

Availability of economic data

Payments are capped: the maximum funding for private landowners and municipalities for the 25 years are respectively €133,000 and €200,000. Both private owners and municipalities can be granted with a maximum funding of €25,000 each.

Forest CO2: assessment of forest-carbon sinks and
 design of compensation systems as tools for climate change
 mitigation.

Forest CO2: assessment of forest-carbon sinks and
 design of compensation systems as tools for climate change
 mitigation. (incl. C sequestration), Credit programmes

Forest CO2: assessment of forest-carbon sinks and
 design of compensation systems as tools for climate change
 mitigation. (incl. C sequestration), Genetic resources, Lifecycle
 maintenance, Water supply, Credit programmes

Forest Reserves
 Genetic resources, Lifecycle maintenance, Donations, Public-private
 mechanisms

CLOSE

BRATISLAVA MINISTERIAL DECLARATION “The Future We Want: The Forests We Need”

Signatories of FOREST EUROPE commit ourselves:

33. To work further on valuation of forest ecosystem services and on exploring potential policies and instruments, including market-based, especially those that reward their provision, while taking into account regional particularities and needs, differences in national legislation and, where applicable, the existence of traditional rights of owners and citizens.

Sincere thanks to

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Thank you for your attention!



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