

Petersberg Phase II / Athens Declaration Process
Principles for Multipurpose Management in the Sava River Basin
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**Valuation and Payment Mechanisms for Ecosystem
Services in Integrated Water Resource Management**

by

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Presentation Structure

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- ü Types and arrangements of PES
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Water-related ecosystem services: introduction

Ecosystem services: benefits people obtain from ecosystems

- Provisioning services
- Regulating services
- Cultural services
- Supporting services

Examples of water-related ecosystem services:

- Flood prevention, control and mitigation
- Regulating runoff and water supply
- Improving surface and ground water quality
- Reducing erosion, stabilising river banks
- Improving water infiltration, supporting water storage

Water management vs. ecosystem services

Competing or conflicting water uses cause problems

- At country level (water scarcity, floods, water quality)
- Differing upstream-downstream interest of riparian countries

Existing or improved ecosystem services may help:

- Water quantity related services (afforestation; conservation agriculture; flood plain restoration)
- Water-quality related services (extensification of land use; integrated pest management; pollution quotas)
- “Bundling” of services

Improving ecosystem services in a basin

- Identify & prioritise water management problems
- Analyse measures how to address them
- If ecosystem services can contribute, additional groundwork
 - Sub-division into hydrological units (according to types of soil, land-use, ground-water level...)
 - Establishment of biophysical relationships
 - Socio-Economic analysis
- ü identify relevant ecosystem services
- ü identify major stakeholders
- ü assess net benefits of changes in ecosystem services
- ü assess distribution of costs and benefits among stakeholders and designs payment and compensation packages

Valuing water-related ecosystem services

Ecosystem valuation studies: essential for designing payment schemes for ecosystem services

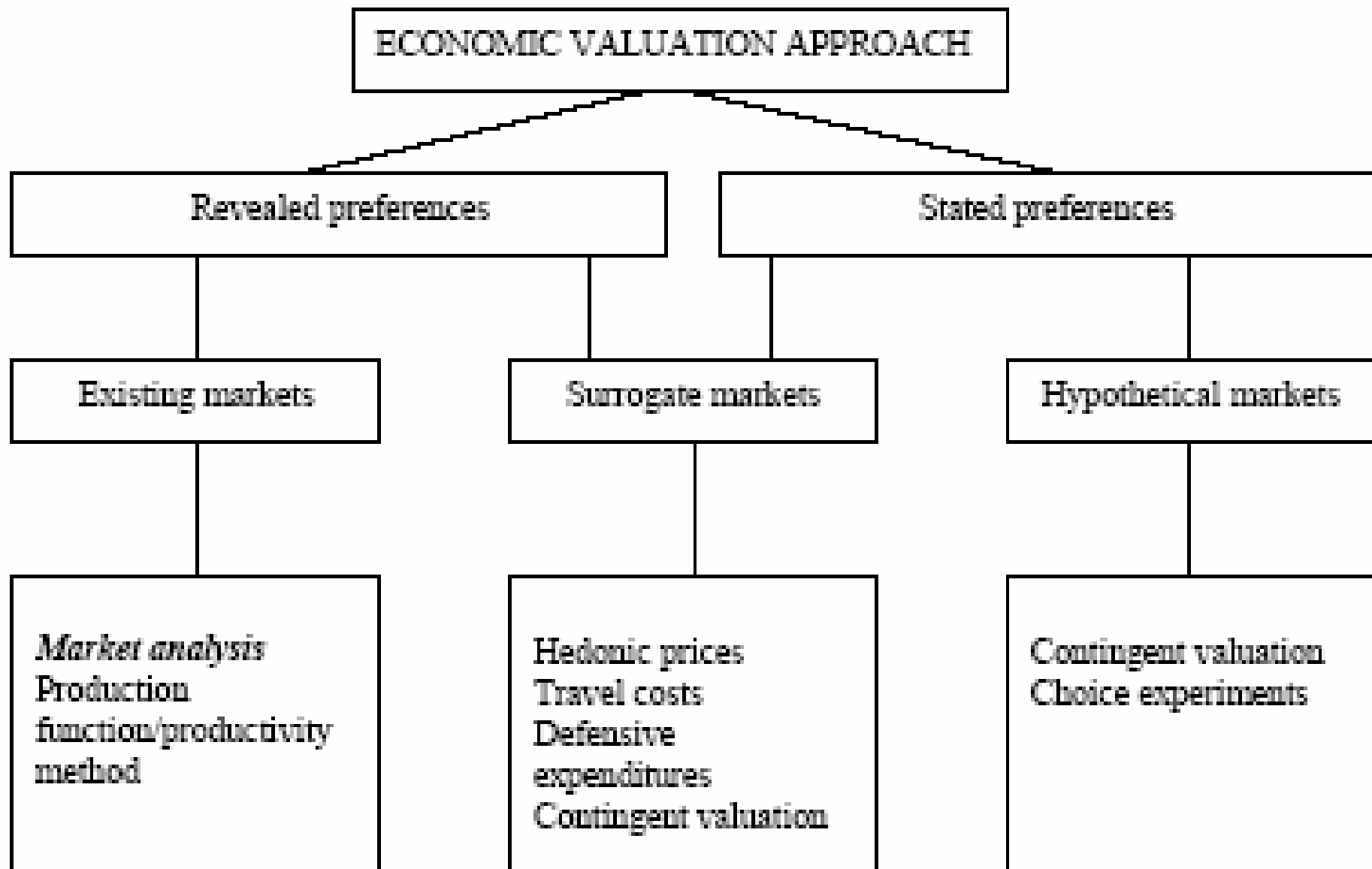
- Assess contribution to social and economic well-being
- Understand how and why use ecosystems
- Assess relative impact of alternative actions
- Make wide range of services comparable

Valuation studies:

- Neither conceptually nor practically simple
- Based on the concept of total economic value
- Compare net benefits of maintaining status quo with net benefits of alternative scenarios

Total economic value of ecosystem services

- Two main categories: use values and non use values
- Use values:
 - Direct use values
 - Indirect use values
 - Option values
 - Bequest values
- Non-use values
- Valuation methodologies: value environment using info
 - from existing markets
 - surrogate markets
 - from hypothetical markets



Challenges to economic valuation

- Ecosystem valuation studies site-specific
- Scale effects important
- Benefits to human life, safety, culture
- Aggregation of individuals: risk of marginalising some individuals or groups
- Issues related to distributional justice or equity
- Valuation: assisting tool for stakeholders to reach agreement on the price of services
- At present: preference for adopting a discourse-based approach to valuation of ecosystem services.

Payments for Ecosystem Services (PES)

- PES scheme: contractual transaction between a buyer and a seller for an ecosystem service or land use practice
- Tailor to the context of a specific basin
- Basic condition: create political support
- Core principles:
 - Adaptive learning process
 - Environmental effectiveness and economic efficiency
 - Take advantage of synergies
 - Avoid social inequities
 - Promote trust between sellers and buyers (transparency)
 - Monitor fulfilment of service contract provisions

Stakeholder involvement

- PES schemes: balance interests of stakeholders
- Create favourable conditions for dialogue
- Set up local consultations
- Private sector important:
 - ü potential buyers of ecosystem services
 - ü contribute financially
 - ü share practical experience
- Transboundary waters:
 - ü joint bodies
 - ü involve non-Parties and NGOs

Types and arrangements of PES

- Types of PES schemes related to contractual arrangements
- Major types:
 - Public schemes
 - Private (self-organised) schemes of buyers & sellers
 - Trading schemes

Various financial arrangements:

- Sellers: compensation, investment, development fund
- Buyers: customer charges, lump-sum, tax-based payment

Facilitating PES: role of governments

- Legal frameworks for protection, restoration and sustainable use of water-related ecosystems
- Recognise role of ecosystems in water management
- Individual and communal property/usufruct rights for groundwater, surface water and land
- Clear framework for PES establishment, implementation
- Encourage establishment of private PES schemes
- Tax incentives (exemptions) for municipal and private participation in PES
- Regulatory framework for trading schemes (quotas, permits)
- Promote PES as incentive for transboundary cooperation

Accompanying measures for PES schemes (1)

- Information exchange and monitoring
 - Monitoring effectiveness of agreed land use/management practices
 - Exchange of data and information among upstream and downstream populations, institutions and sectors, also in transboundary context
- Awareness raising, communication, capacity strengthening
 - Suppliers need to know the value of services, and what buyers are prepared to pay for them: involve public in decision-making

Accompanying measures for PES schemes (2)

- Research needs
 - Quantify flood protection services from forest systems by interlocking hydrological, hydraulic and economic simulation models
 - Role of wetlands for groundwater recharge, water purification
 - Role of healthy water-related ecosystems in eco-tourism
- Financing
 - International/bilateral funding for water-related ecosystems
 - Urge IFIs to allow PES schemes/carry out pilot projects
 - Explore private sector participation in funding public schemes

Examples of PES schemes in the UNECE region

- Public PES scheme at local level (New York City – Catskill watershed management programme)
- Public PES scheme at national level (nitrate strategy of Switzerland)
- Public PES scheme at EU level (agri-environmental measures)
- Private deals (Vittel S.A.'s payments for water quality)
- Trading scheme (US nutrient trading)
- More examples in website reports of recent conferences (Geneva, October 2005; Wageningen, December 2005)

New York City – Catskill watershed management programme

- Management problem: pathogens/phosphorous in surface water require special treatment for NYC municipal water supply
- Ecosystem service: high-quality drinking water by natural filtration
- Purpose: improved farm/forestry practices
- Supplier: upstream landowners, farmers, timber companies
- Buyer: NYC municipal water-supply company
- Funding: additional taxation, NYC bonds, trust funds
- Instruments: compensation to landowners; property transfer; development of markets
- Regulations: several Federal, state, local regulatory changes
- Public sector role: NYC lead, Federal and state financial assistance
- Equity concerns: farmers participate, fear business losses otherwise
- Lessons learnt: programme cost-effective and politically acceptable, cost of programme less than additional filtration plant

Nitrate strategy of Switzerland

- Management problem: pollution of groundwater aquifers with nitrates
- Ecosystem service: reduction of nitrate charges in groundwater; provision of high-quality drinking water
- Purpose: change management practice in agriculture
- Supplier: farmers
- Buyer: Federal Government, cantons, water supplier
- Funding: Federal Government, cantons, water supplier
- Instruments: compensation for contractually fixed changes in agricultural practice beyond legal requirements/good agricultural practice
- Regulations: Federal laws and ordinances
- Public sector role: information and lobbying campaign
- Equity concerns: apply to farmers contributing to local contamination
- Lessons learnt: 20 “local projects” for 3,000 hectares, could grow

EU agri-environmental measures

- Management problem: water pollution by fertilizers, pesticides
- Ecosystem service: improving quality of surface and ground waters
- Purpose: change management practice in agriculture (e.g. low-intensity pasture systems; extensification; integrated farm management; organic farming; preservation of landscape; conservation of high-value habitats)
- Supplier: farmers
- Buyer: government authorities
- Funding: EU taxpayers
- Instruments: compensation for additional costs, loss of income
- Regulations: Nitrates Directive; WFD; EU CAP; AEM
- Public sector role: information campaigns
- Equity concerns: for farmers committed for a five-year minimum period
- Lessons learnt: improved soil and water quality

Vittel S.A.'s payments for water quality

- Management problem: nutrient run-off and pesticides
- Ecosystem service: provide high-quality mineral drinking water
- Purpose: change of management practice in N.E. France catchment area
- Supplier: dairy farmers
- Buyer: Nestlé Waters, owner of mineral water sources of Vittel S.A.
- Funding: Vittel finances compensation payments + technological costs
- Instruments: property acquisition; compensation for changing practice
- Regulations: regulatory framework based on existing French water legislation
- Public sector role: implement regulatory framework, finance research
- Equity concerns: farms of all size in catchment area have access to PES
- Lessons learnt: “export” of approach after Vittel purchased Perrier, Contrexeville; scheme feasible due to high profitability of business

US nutrient trading

- Management problem: high nutrient loads in surface water
- Ecosystem service: improved water quality
- Purpose: incentive for non-point sources to comply with water-quality standards
- Supplier: point source and non-point source polluters
- Buyer: polluting sources discharging above allowable level
- Funding: credit buyers; US Government finances transaction costs
- Instruments: trading of nutrient reduction credits
- Regulations: exist in some catchment areas only
- Public sector role: strong regulations; coverage of design, transaction and monitoring costs
- Equity concerns: more cost-efficient and equitable than command-and-control measures
- Lessons learnt: limited to two catchment areas so far

Challenges and questions for discussion

- Water management problems in the Sava River basin and sub-basins?
- Which water-related ecosystem services are used to alleviate them?
- Who is supplying them? And who is using/paying them?
- How could they be improved?
- Any valuation/cost-benefit studies of improving ecosystem services?
- What are the drivers for introducing PES? And which type of PES schemes?

Further reading

“Payments for ecosystem services in integrated water resource management”

Submitted to the Chairperson of the Working Group on
Integrated Water Resources Management
UNECE Meeting of the Parties to the Helsinki Convention

www.unece.org

Possible ecosystem services in the Sava River region?

Water quantity related services:

- afforestation
- conservation agriculture
- flood plain restoration

Water-quality related services

- extensification of land use
- conversion of cropland into grassland
- integrated pest management
- organic farming
- pollution quotas

Possible PES schemes in the Sava River basin?

- Public schemes:
 - municipality or government sole primary purchaser of specified ecosystem service or land use/management practice
- Private (self-organised) schemes of buyers & sellers:
 - may involve companies, NGOs, associations, cooperatives
- Trading schemes:
 - involve setting up of markets in established rights, permits, quotas. Prerequisite: strong, well-defined, functioning regulatory framework.

Is the judicial system suitable and mature for PES schemes?