The Concept and Application of Payment for Ecosystem Services

Dr. Katherine Warner

IUCN Head Country Group-1

Presentation

- What is PES?
- Why PES?
- Who?
- How? And How Much?
- Critical Elements
- PES in Practice: Case study

PES: What?

<u>Incentive based</u> mechanisms for Sustainable Resource Management

(also poverty alleviation, supports systematic and coordinated actions and funding conservation and sustainable use in the corridors)

PES: Why?

Direct financial and economic incentives for ecosystem conservation requires finding **new** systems for generating private and public revenues.

PES

Ecosystem Services *– the provision of natural resources and healthy functioning ecological systems that produce environmentally and economically valuable goods and services.*

PES: What?

Payments for Ecosystem Services (PES) *-*

Compensation for providing ecosystem services. The actual payment that is transferred can take on many forms from actual cash to in-kind assistance, exemption from taxes, tenure security, skills training, and other types of compensation. PES includes those services for watershed, biodiversity, carbon sequestration, landscape beauty, and bundled services.

PES: What?

The core principles of PES are that ***those who provide ecosystem services should be compensated or rewarded for doing so, and those who use the services should pay for their provision***.

PES

For example, the downstream water users who benefit from the watershed protection services provided should compensate upland farmers for sustainable land use management practices.

PES: What?

PES are for a clearly-defined ***ecosystem service (or bundle of services)*** and specifies a land or resource use that is known to provide that service.

PES: What?

Some form of **payment** (either cash, or some other direct benefit such as in-kind contributions, preferential credit, lower tax rates, employment, etc) is paid to the ecosystem service provider, and financed by the ecosystem service user.

PES: Who?

*The user is the **buye**r of the ecosystem service, and the provider is the **seller** of it*.

PES: How Much?

In order for PES to provide a meaningful incentive, the payments the sellers receive must be equivalent to the *opportunity costs* of foregoing alternative land use practices (*minimum payment*).

PES: How Much?

Opportunity costs: – The value of foregone opportunities or alternatives because of time or money towards some other option.

For example, the opportunity costs of a household maintaining a hectare under forest is the income foregone by not clearing and using the land for an agricultural crop.

PES: Why Pay?

Buyers must be convinced that their payments for ecosystem services are *cost-effective* and less than the costs of unsustainable natural resource management.

PES: Critical Element

A critical element in a PES mechanism is that both sellers and buyers of ecosystem services must feel confidence and *trust*;

- for the sellers that they will receive the agreed upon payments and benefits
- for the buyers that the ecosystems services for which they are paying are indeed being provided.

PES: How?

Developing and implementing PES mechanisms have a cost. Minimizing *transaction costs* is needed to make payments for ecosystems services of interest to both potential buyers and sellers of services

PES: How?

One way of addressing high transaction costs is through the use of existing, viable processes and institutions.

PES: Critical Element

This means that the service, or the land or resource use that is known to provide it, must be able to be **monitored and measured.**

Policy and Legal Frameworks

For PES approaches to be successfully designed and implemented need to be supported by institutions, legal frameworks, and policies that **define** the ecosystem services, sellers or providers (who has the right to utilize and benefit), buyers or fee payers, and financial mechanisms (including the fees and taxes that generate funds for payments) .

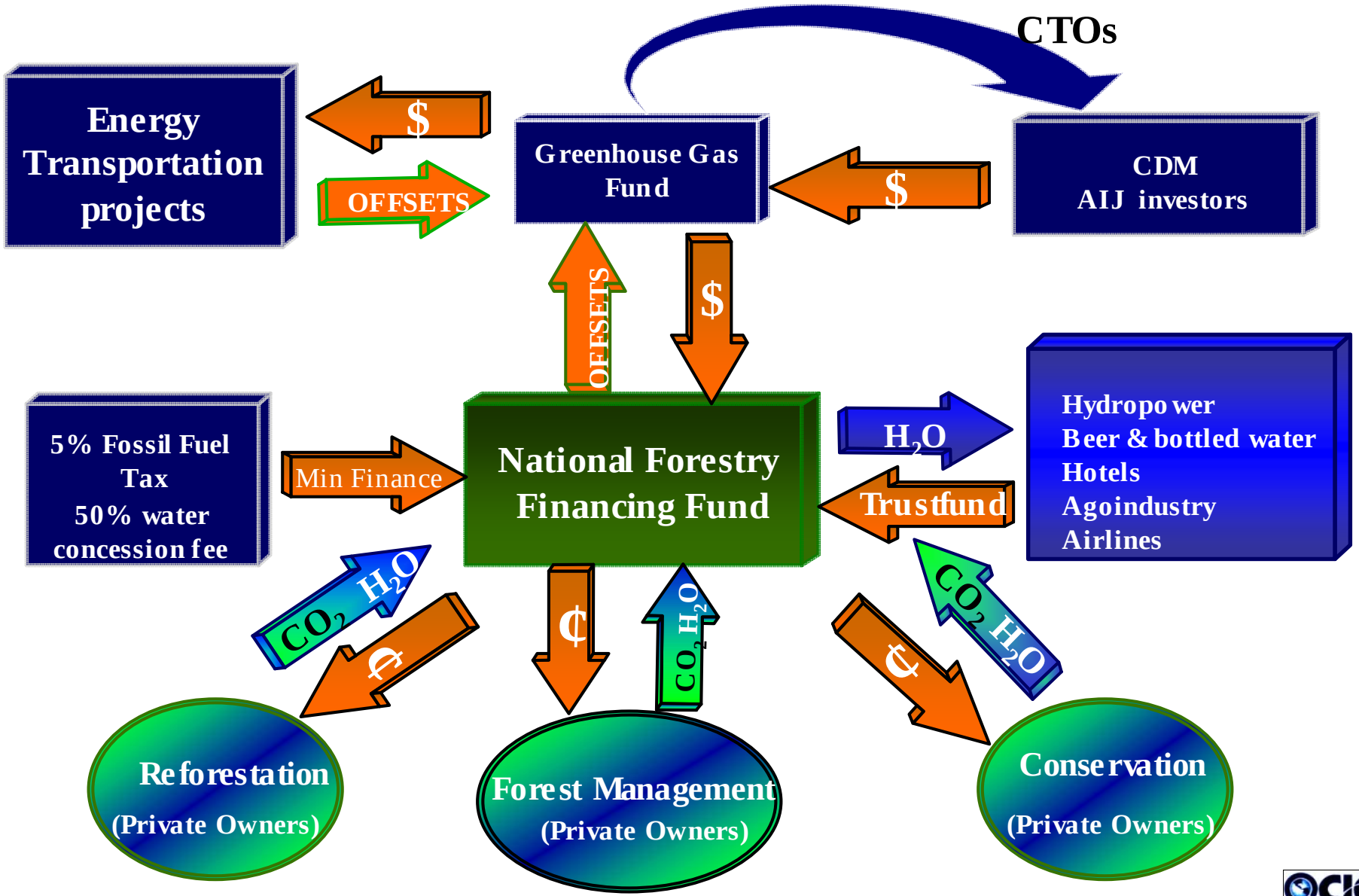
PES in Practice
Costa Rica

Luis Gamez

Pubic Utilities Company of Heredia, Costa Rica

Forest Environmental Services Payment (FESP)

Government of Cost Rica



What?

Watershed services (water quality and quantity)

Who?

Buyers: Water company (utility)

Sellers: Farmers (landowners)

How Much?

Determining Levels of Payment of Government's FESP

Based on the *Opportunity Cost of Land*

Payment >= OCL

How Much?

- Grazing land is the major competitor to forest conservation
- What is the OCL for dairy and cattle ranching?
- Measure ~ cost of rental 1 Ha. for pasture
- Market value = acceptable income / Ha. of benefits foregone

How Much?

Modalities & Distribution of Payment (2003)

Contract Type	Total Payment (US$)	Distribution by year				
		1	2	3	4	5
Forest Conservation	228	20%	20%	20%	20%	20%
Sustainable Forest Management	359	50%	20%	10%	10%	10%
Reforestation	584	50%	20%	15%	10%	5%

Types of Forest Conservation Contracts

Contract	Maximum Area (ha)	Land Owner Type
Individual	300	Individual land owners
Community	300 by land owner There is no limit for NGOs	Small and medium land owners associated with a local NGO
Indigenous Reserve	600	Indigenous Reserve Development Association

Estimation of Use Value

$$VC = \sum_{i=1}^{n} \frac{\alpha_i B_i Ab_i}{Oc_i}(1+\beta_i)$$

Where,

VC	Value of forest water capture function (¢/m3) (quality+ quantity)
β_i	Opportunity cost of cattle raising competing forest in watershed *i* (¢/ha/yr)
Abi	Area with forestcover in watershed *i* (ha)
Oci	Water volume captures by forest in in watershed *i* (m3/ha/yr)
	Valuation of the quality of runoff captured by the forest (%)
αi	Importance of the forest in watershed *i* for the water function (%)

δ_{ij}

Estimation of Replacement Value

$$VP = \sum_{i=1}^{n} \frac{\delta_{ij} C_{ij}}{Oc_i}$$

Where,

VP	Protection value of watersheds (¢/m3)
Cij	Costs of activity *j* aimed at protection of watershed *i* (¢/ha/yr)
	Fraction of *j* aimed at the water functions of forest protection in watershed *i* (%)

Environmentally adjusted water fee

Use value
(opportunity cost)

$$VC = \sum_{i=1}^{n} \frac{\alpha_i B_i Ab_i}{Oc_i}(1+\beta_i)$$

$$VC = \frac{0.414 * 53000 * 5561.56}{81390000}(1+0.80) = 2.70 \quad \text{colones/m}^3$$

Recovery & Protection
(replacement cost)

$$VP = \sum_{i=1}^{n} \frac{\delta_{ij} C_{ij}}{Oc_i}$$

$$VP = \frac{0.414 * 128777 * 7469.28}{81390000} = 4.89 \quad \text{colones/m}^3$$

Additional fee

¢3.80 /m³

*monto actual

User contribution to PES financing

Nº DE CLIENTE 0[illegible]835
Nº DE MEDIDOR 969294
LOCALIZACION 12-09-1790

Empresa de Servicios Públicos de Heredia S.A.
Rec.# 2488
AGUA

OROZCO SANCHEZ MARIO A
STA CRUZ ESC 400 N

DESCRIPCION DE TARIFA	LECTURA ACTUAL	LECTURA ANTERIOR	CONSUMO DIARIO M³	CONSUMO M³
DOMICILIARIA	700	684		16

FACTURACION

CODIGO	DETALLE	IMPORTE
1	IMP. ACUEDUCTO	880.60
09	TARIFA HIDRICA	30.40

HISTORIAL DE CONSUMO M³

MES	AÑO	M³
01	2002	19
02	2002	19
03	2002	20
04	2002	22
05	2002	16

MES AL COBRO 06-2002

MESES PENDIENTES | TOTAL A PAGAR 911.00 | CARGO POR MORA 18.00

FACTURACION ACTUAL	FACTURACION ANTERIOR	DIAS FACTURADOS	PROXIMA FACTURACION	VENCE
15/07/2002				05/08/2002

OBSERVACIONES PAGO EN CAJA EXTERNA HASTA EL 15-08-2002

DOMICILIARIA | 700 | 684

FACTURACION

CODIGO	DETALLE	IMPORTE
1	IMP. ACUEDUCTO	880.60
09	TARIFA HIDRICA	30.40

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Empresa de Servicios Públicos de Heredia S.A.
AGUA

NUMERO DE CLIENTE	TARIFA	LOCALIZACION	IMPORTE A PAGAR
00039835	DOMICILIARIA	12-09-1790	911.00
NUMERO DE MEDIDOR	CONSUMO M³	PERIODO	MORA
969294	16	06-2002	18.00
	RECAUDACION EXTERNA AUTORIZADA AL	IMPORTE DESP. VENCIMIENTO	929.00
	15/08/2002	FECHA DE VENCIMIENTO	05/08/2002

Recibo# 2488 CAJA

Approximately
US $ 0.20 /month
per household

Critical Factor: Monitoring

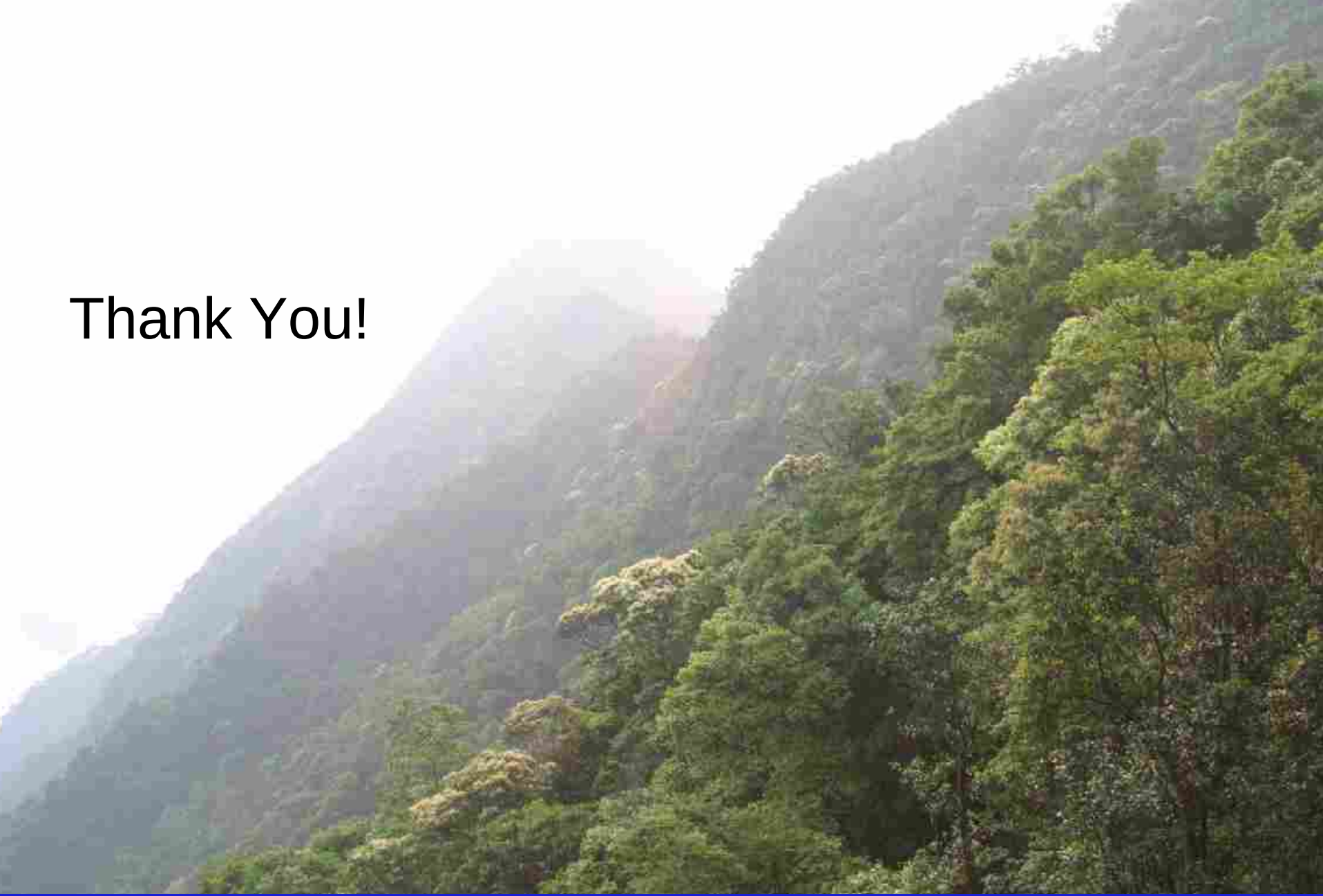
Annual monitoring (by the water company)

Costa Rica: Lessons

- FESP can become driver for positive impacts
- Increase & protect forest cover in private land while generating additional revenues for landowner
- Stimulates management and reforestation
- Shows potential in economic opportunities for public-private partnerships in achieving conservation goals.
- Drives public interest and awareness in conservation
- Increases perception of the economic value of environmental services
- Enables interest and participation in payments & compensation
- Creative sources of funding

PES: Summary

- Offer an innovative incentive based approach to improve the management and conservation of ecosystems and the services they provide
- Require that the rights and responsibilities of the buyers, sellers and intermediaries are clearly defined;
- Transactions costs are minimized;
- Mechanisms exist for fees to be assessed, collected and effectively disbursed;
- Monitoring systems are put in place that link payments to performance;
- And policies and procedures support PES programs.


Thank You!