

# Payments for Ecosystem Services

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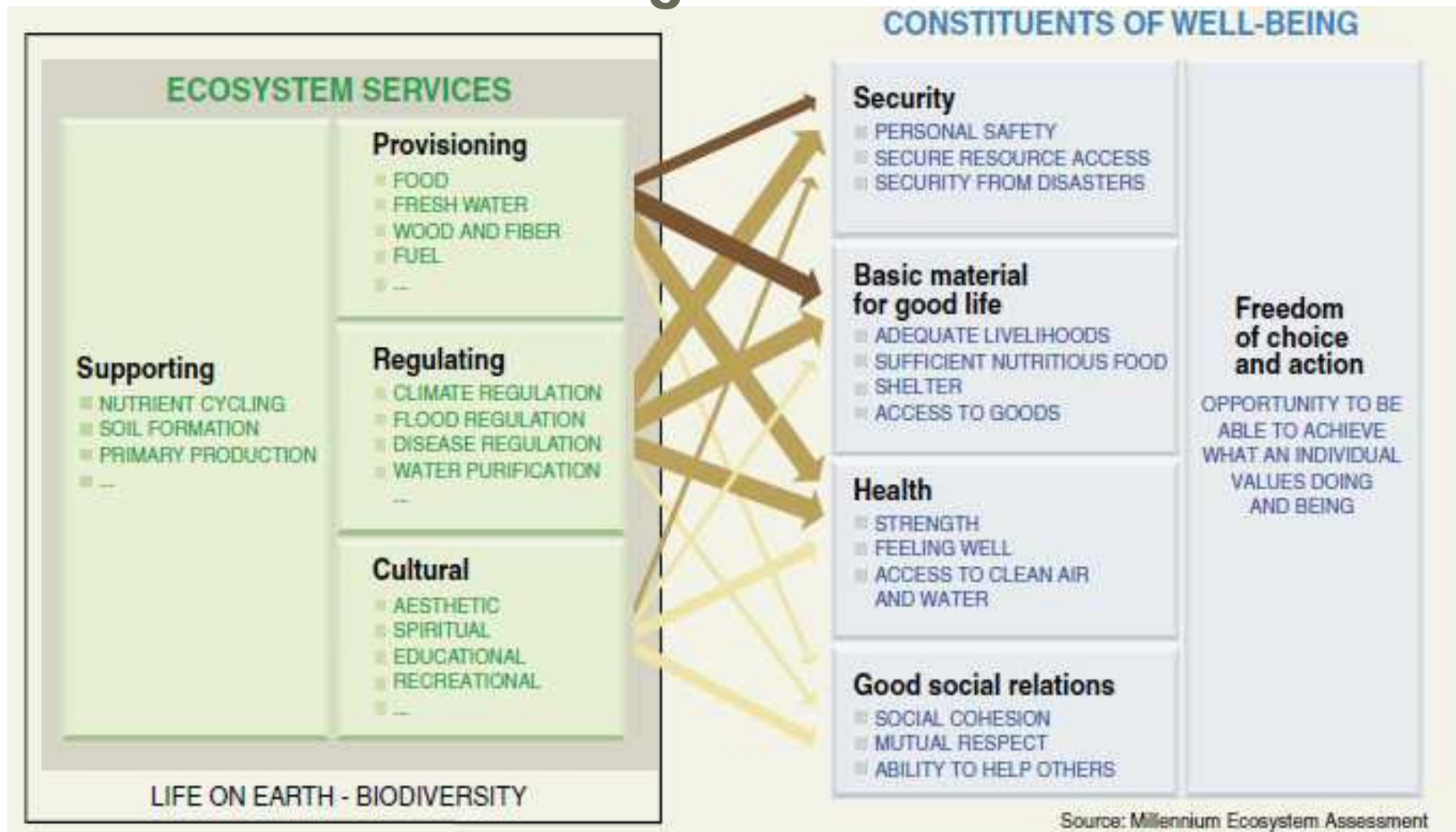
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# Ecosystem Services enhance Human Well-being.



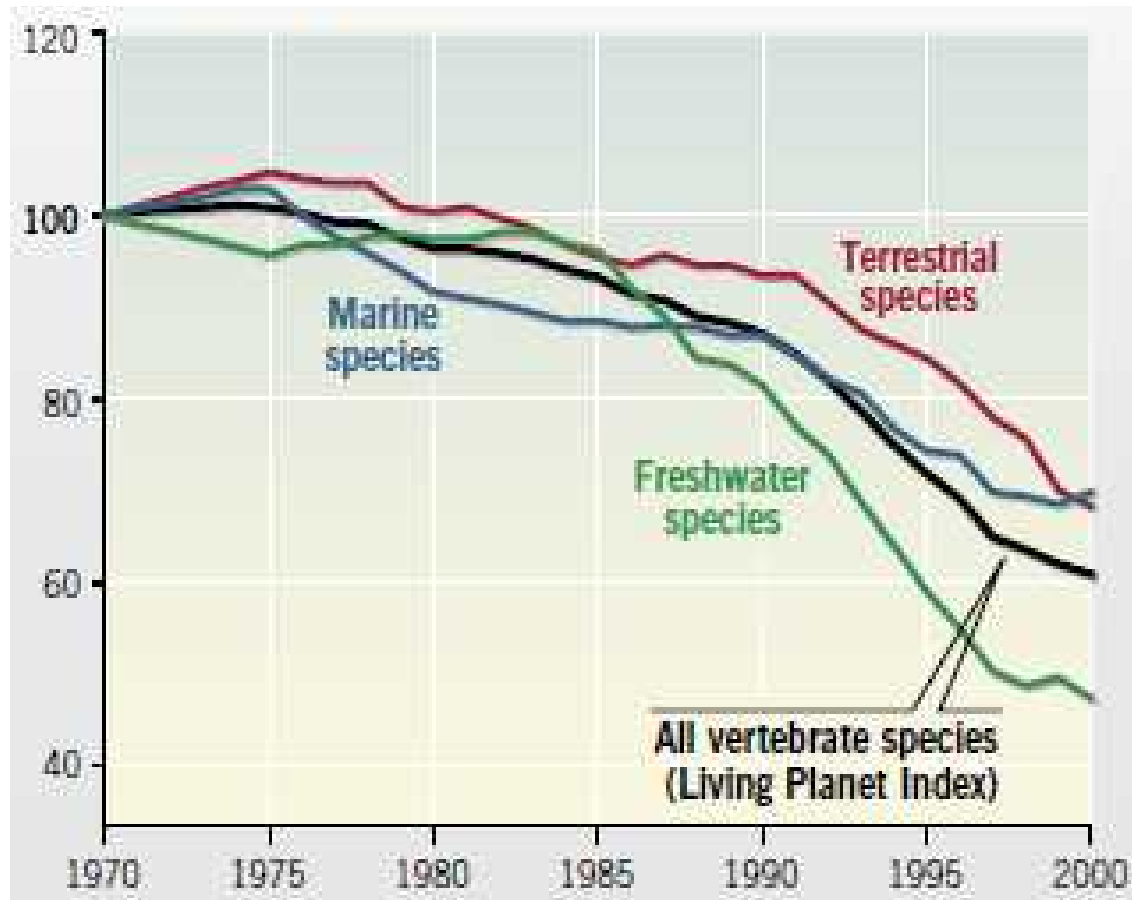
# How valuable are ecosystem services?

## Indicative Estimates:

- Annual economic value of global ecosystem services estimated to be around US\$33 trillion (Costanza et al. 1997)
- Fish catch worth approximately US\$58 billion annually
- Herbal medicine market generates almost US\$ 43 billion/year
- Pollination by honey bee for agriculture worth about US\$ 2-8 billion/year (UNEP 2007)

# Ecosystem Services are declining...

More than 60% of the environmental services are degrading faster than they can recover (MEA 2005).

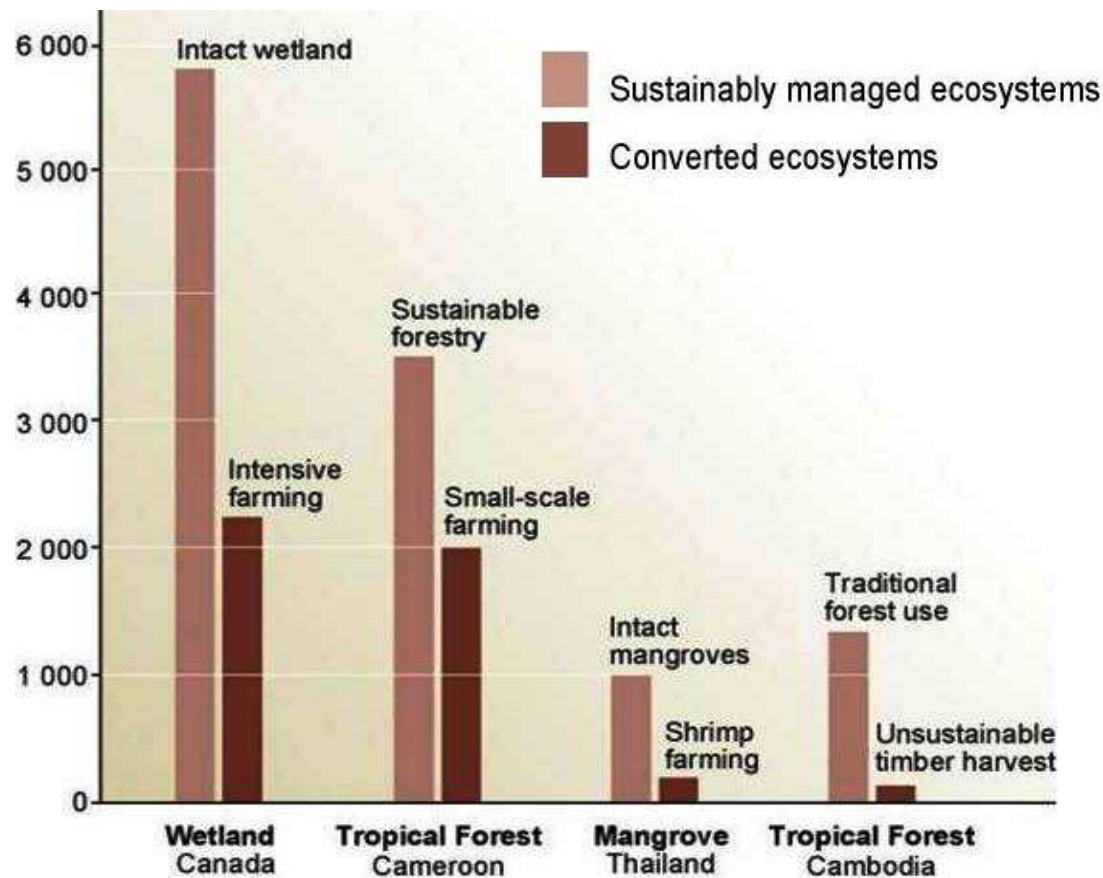


Population index of species

Source: CBD 2006 p.25

# Sustainable resource management pays!

Net Present Value in dollars per hectare



Economic Benefits under Alternate Management Practices

Source: MEA 2005, p.10

Asia's ecosystem undervalued



Unsustainable management further undermines Asia's ecosystem value



**Vital to shift from unsustainable to sustainable resource mgt**

# Sustaining Ecosystem Services entails substantial costs.

- US\$8-10 billion invested annually in biodiversity conservation globally,
  - US\$28 billion may be required annually over the next 30 years to expand IUCN priority habitats to 10% of the area of all countries,
  - Protection investment could yield US\$5 trillion value in protected areas → benefit-cost ratio of 100:1!
  - Costs of conservation vary widely (US\$ 0.01 per hectare/yr in remote areas up to US\$ 1,000 per hectare/yr in densely populated areas) (TEEB 2008).
- **Measures are needed to spur investments in sustaining ecosystem services and conserving biodiversity.**

# Payments for Ecosystem Services (PES):

## What They Are, What They Do

- Economic instrument to provide incentives to land users (resource stewards) for their conservation activities, on behalf of service beneficiaries (FAO, 2008).
- Reduce degradation of ecosystem services by rewarding conservation activities in areas where ecosystem values are high.

# PES: Key Action Pillars

- **Identify** Ecosystem Services (ES) and potential buyers in a particular area.
- **Estimate** economic value of ES and assess capacity of different stakeholders for designing fair and efficient agreement.
- **Manage** (with a policy or market mechanism to capture this value), and reward people for conserving ecosystem services.

Co-benefits for  
**Biodiversity  
Conservation**  
&  
**Human  
Welfare**

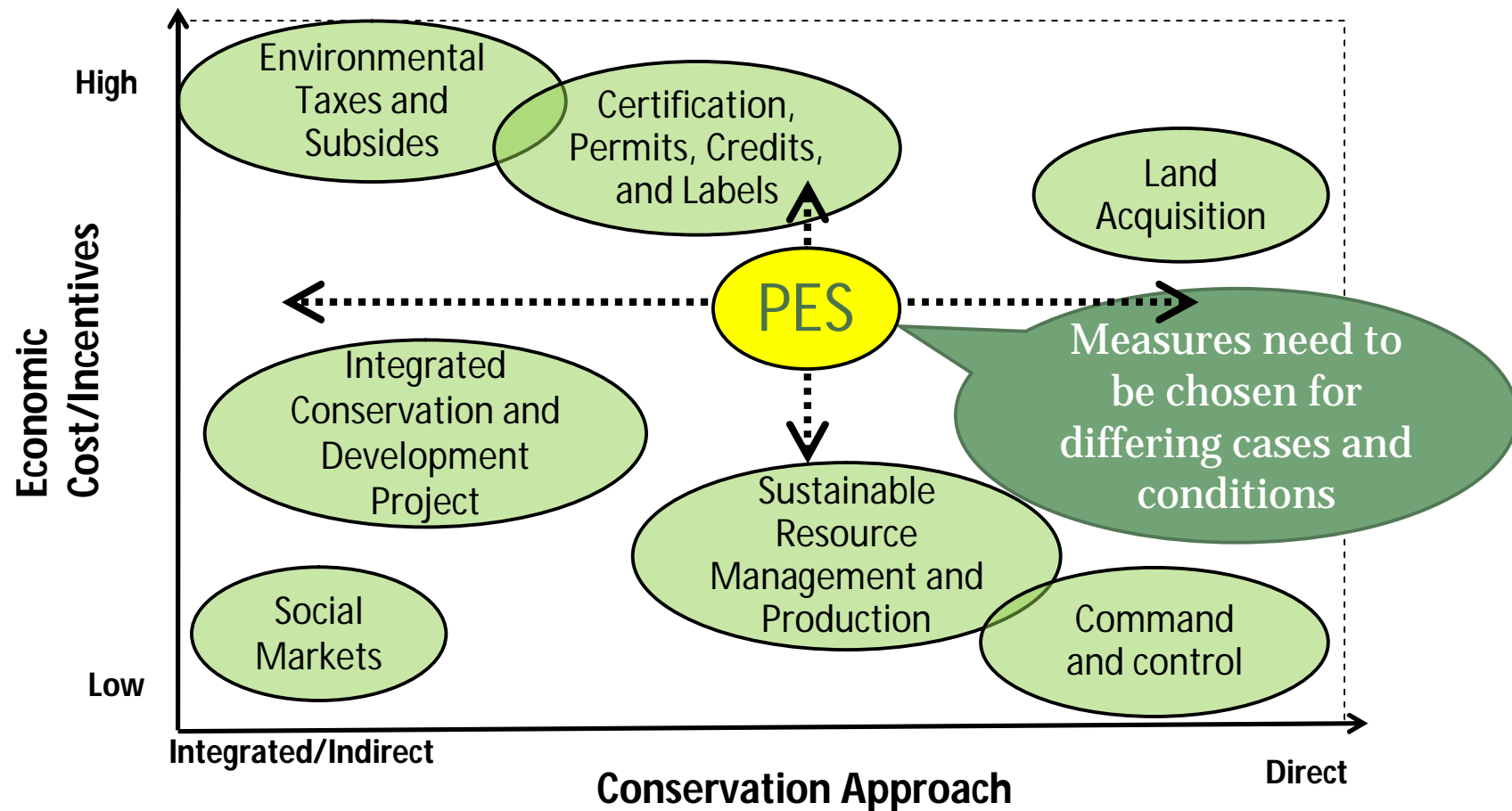
**WIN-WIN!**



# PES: Economic Tools

- 1. Direct Public Payments**
  - Governments pay land owners
- 2. Direct Private Payments**
  - Private organizations pay landowners
- 3. Tax Incentives**
  - Individuals receive tax breaks from government
- 4. Cap-and-Trade Markets**
  - Government or regulatory body sets a limit in a given area and controls individual activities
- 5. Voluntary Markets**
  - Businesses or individual consumers engage in voluntary markets
- 6. Certification Programs**
  - Consumers buy environmental products

# Matrix of Measures



Comparing PES to other conservation approaches

Source: Developed from Wunder 2005 p.6

# Types of Payment Mechanisms:

## Some Illustrations



- Land Acquisition
- Beneficiary Payments
- User Fees
- Farm Land Support Systems
- International Financing
- Cap and Trade Mechanisms

# Land Acquisition



Purchase of biodiversity-rich land to prevent conversion to industrial or housing use

## Acquisition by Government

### Lake County, Florida, USA

- County prepared US\$36 million in bonds for the acquisition,
- Citizens can sell high-valued lands to the county,
- The county protects land and water through providing recreation areas.

## Acquisition by Private Entity

### BP's Cooper River plant in South Carolina, USA

- BP uses 450 acres for its plant; reserves 5,550 acres for conservation purposes,
- Site certified by Wildlife Habitat Council; more than 10 thousand people participated in environmental activities.

→ **Conservation entails high costs; requires capital funds**

# Beneficiary Payment Scheme



## Costa Rica's Pioneering PES Program

Hydroelectric power producers and water bottlers (beneficiaries of water-related ecosystem services) pay for watershed protection by upland residents

Company	Watershed	Area Covered (Hectares)	Payments for Conservation (US\$/ha/yr)
<b>Hydroelectric Power Producers</b>			
Energia Global	Rio Volcan	2,493	10
	Rio San Fernando	1,818	10
Platanar S.A.	Rio Platanar	1,400	10
La Manguera S.A.	La Esperanza	3,000	10
<b>Water Bottlers:</b>			
Florida Ice & Farm	Rio Segundo	1,000	42

Source: FONAFIFO, Costa Rica

# User Fee Scheme

## Forest Protection

**Mt. Rinjani in Lombok Island, Indonesia (WWF):**  
Villagers who use water from mountains pay for reforestation costs (Water spring support)



<b>Background</b>	The forests in the region provide up to US\$50 million ES to agricultural sector, supply \$14 million for domestic water, and they also promote tourism industry.
<b>Organizer</b>	WWF
<b>Buyer</b>	Nearly 43 thousand households
<b>Payment</b>	Inhabitants pay up to US\$0.60 per month for provided services.
<b>Provided services</b>	Conserve watershed forest

Indirect payment (not for water itself) - beneficiary/use payment principle, low cost through community participation; requires designing and consensus building skills and management capacity .

# User Fee Scheme

Marine Biodiversity Protection

(*Satoyama* is about **seascapes** too!)



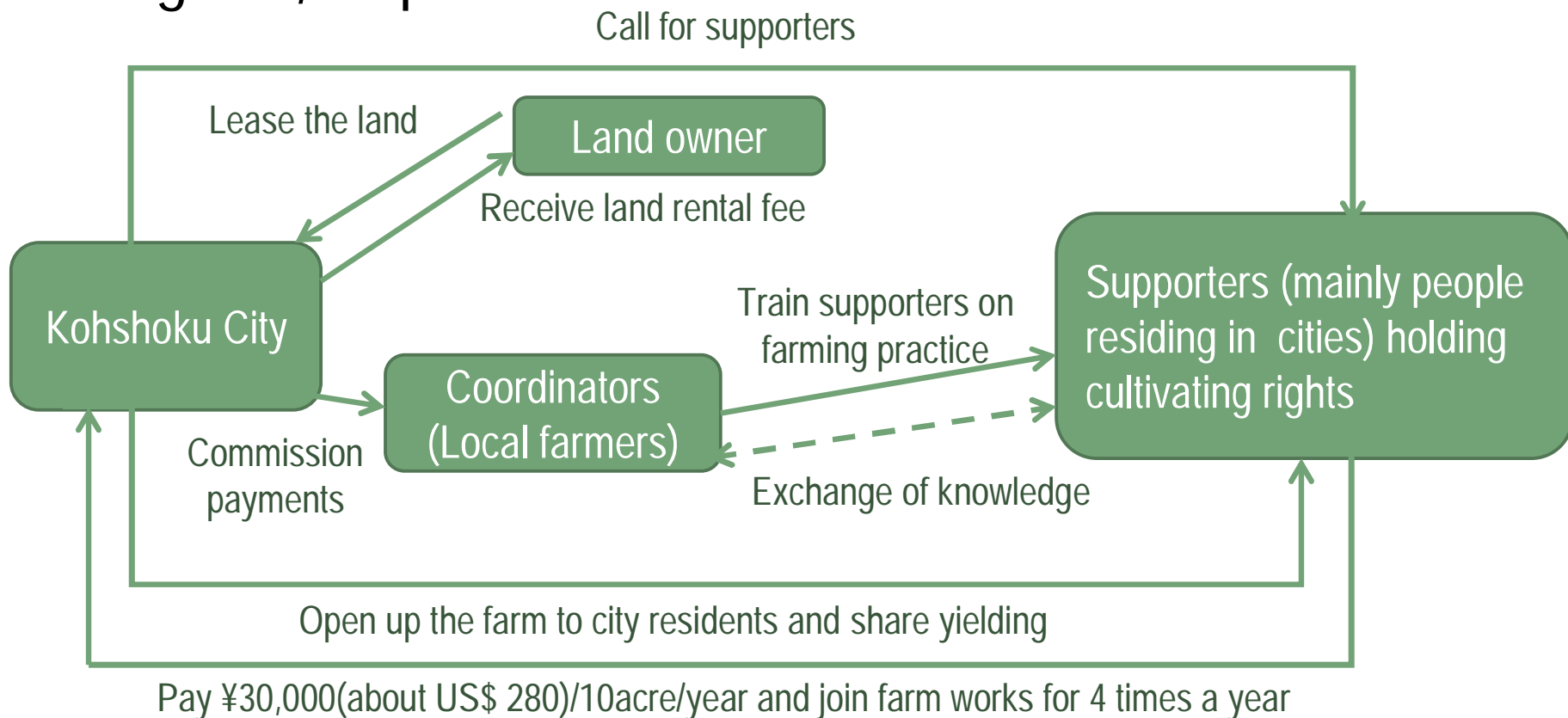
## Mabini & Tingloy municipalities (aka Anilao) in Batangas province, Philippines (WWF)

- Prime scuba diving area closest to Manila
- Recreational divers required to pay PhP100 (\$2)/day or PhP1,800 (\$36) for an annual pass, which allows access to all Anilao dive sites
- Collected funds are split between the two municipalities; independently managed to support costs of conservation efforts



# Farm Land Support Systems

## Rice terraces owner system in Kohshoku City, Nagano, Japan



Partnership between farmers and city workers with limited direct returns.  
Satisfaction from farming activities and supporting rural landscape management.



# International Financing (for Forest Carbon Management)



## Forest Carbon Partnership Facility (FCPF) by World Bank

- Commenced in 2008 with the announcement on UNFCCC/COP13 in Bali,
- Finances efforts by developing countries to conserve forests and to halt illegal logging
- Now helping 37 developing countries especially for projects on Reducing Emissions from Deforestation and Forest Degradation (REDD),
- Targeted volume: US\$385 million; contribution of US\$107 million from 11 donors.

**International funding unlikely to persist in the long term; need to move to long-term funding mechanism.**

# Cap and Trade Mechanisms



- Fishing permits, CDM (carbon trade), water use permits, tradable pollution permits...

## **New Variation:**

## **Green Development Mechanism (GDM)**

**Obtain credits from conservation or restoration practice that can be used as offset, or sold/purchased**

- Can create concrete and on-going source of finance for biodiversity,
- Generate a well-defined set of suppliers of biodiversity,
- Match-up demand and supply in a structured framework,
- Monitor and enforce the agreement to maintain biodiversity  
(Mullan and Swanson 2009).

**Concept already developed, but needs further elaboration for practical application.**



# Desirable Features for PES Mechanisms

- Decentralization
- Flexible mechanisms
- Tap private sector as provider of public services
- Appropriate design to address biophysical and socio-economic contexts
- Promote corporate self-regulation
- Uphold consumer sovereignty
- Civil regulation (FAO 2007).

# Observations on PES

- Provides useful framework for providing economic incentives to sustain ecosystem services,
- Current efforts still tend to focus on short term benefits; underestimate long term sustainability
- Limited social capacity to assess cost and benefits of ecosystem & biodiversity conservation
- Social considerations important in design of PES, as relation between ES providers & beneficiaries is complex.
- Needs to be designed to protect interests of the poor, who are most vulnerable to environmental degradation

# Recommendations

- Design PES to achieve multiple objectives of biodiversity and ecosystem conservation, poverty reduction, food/fuel/income provision, and improvement of human well-being
- Undertake further research to examine PES mechanisms and their impacts
- Support pilot projects to experiment with more innovative applications of PES
- ***Satoyama Initiative*** should feature support for above research and pilot projects
- Build upon existing mechanisms and networks for undertaking activities under ***Satoyama Initiative***

**Thank you**

**Terima kasih**