



the economic background to payments for environmental services

regional workshop on
Payments for Environmental Services
3-5 April 2008, Hanoi, Viet Nam

the basics



- ecosystems generate economically valuable services
- there are also costs to ecosystems conservation
- the people who manage ecosystems are not compensated for their costs, or rewarded for the important services they provide
- this is both inequitable and inefficient
- it leads to situation where ecosystems are under-conserved (at great cost to society)
- because there is no financial or economic incentive for land and resource managers to do so



why ecosystem values matter

ecosystem services and human wellbeing



ecosystem services

Supporting

- Nutrient cycling
- Soil formation
- Primary production
- etc. ...

Provisioning

- Food
- Fresh water
- Wood and fibre
- Fuel
- etc. ...

Regulating

- Climate regulation
- Flood regulation
- Disease prevention
- Water purification
- etc. ...

Cultural

- Aesthetic
- Spiritual
- Educational
- Recreational
- etc. ...

value
for

constituents of well-being

Security

- Personal safety
- Secure resource access
- Security from disasters

Basic material for good life

- Adequate livelihoods
- Sufficient nutritious food
- Shelter
- Access to goods

Health

- Strength
- Feeling well
- Access to clean air & water

Good social relations

- Social cohesion
- Mutual respect
- Ability to help others

Freedom of choice and action

Opportunity to be able to achieve what an individual values being and doing

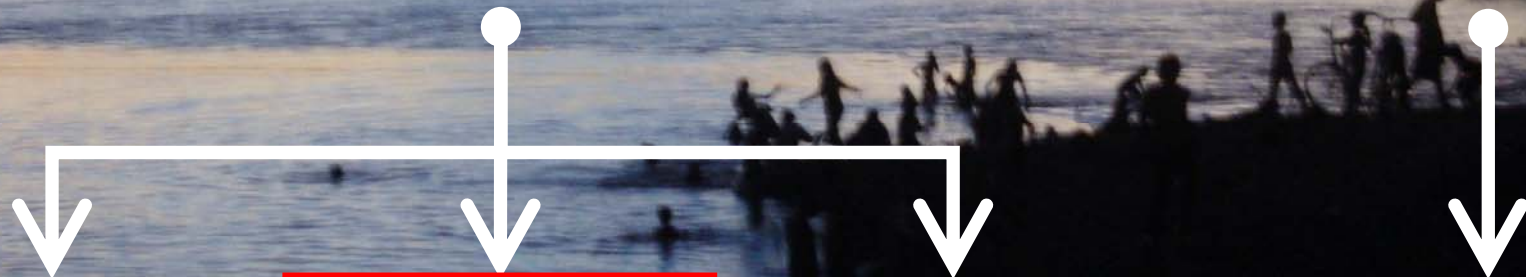
Millennium Ecosystem Assessment 2005

the total economic value of ecosystems



use values

non-use values



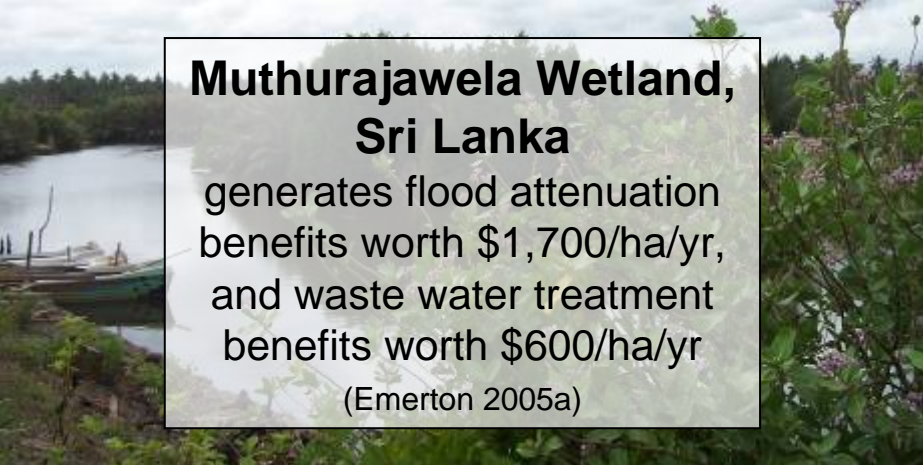
DIRECT VALUES
production and consumption goods such as:
fish, firewood, building poles, medicines, fodder, recreation,
... etc ...

INDIRECT VALUES
ecosystem functions and services such as:
water quality and supply, nutrient cycling, flood attenuation, climate regulation, shoreline protection,
... etc ...

OPTION VALUES
premium placed on possible future uses or applications, such as:
industrial, leisure, pharmaceutical, agricultural,
... etc ...

EXISTENCE VALUES
intrinsic significance of resources and ecosystems in terms of:
cultural, aesthetic, heritage, bequest,
... etc ...

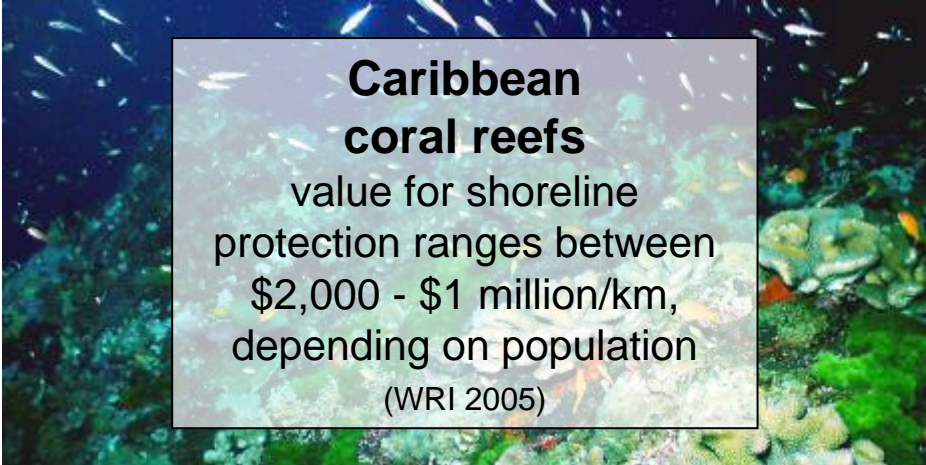
economic values of ecosystem services



Muthurajawela Wetland, Sri Lanka

generates flood attenuation benefits worth \$1,700/ha/yr, and waste water treatment benefits worth \$600/ha/yr

(Emerton 2005a)



Caribbean coral reefs

value for shoreline protection ranges between \$2,000 - \$1 million/km, depending on population

(WRI 2005)



Balochistan mangroves, Pakistan

provide nursery and breeding habitat on which half of off-shore commercial fish stocks depend, worth \$900/ha/yr

(Baig & Iftikhar 2007)



Bokor National Park, Cambodia

forest watershed catchment protection saves \$2 million for downstream Kamchay Hydropower Scheme

(Emerton 2005b)

the total economic cost of conservation



management costs



operational costs of land and resource conservation, e.g.

costs of equipment, capital, wages, buildings, running costs, policing, time spent in planning and meetings

opportunity costs



indirect costs of sustainable land and resource uses, e.g.

alternative land and resource uses foregone or diminished, loss of profits from alternative investments.

costs to other activities



costs arising from conserved species and areas, e.g.

human disease and injury, livestock losses and crop destruction from wild animals, congestion and competition for resources in unprotected sites and resources.

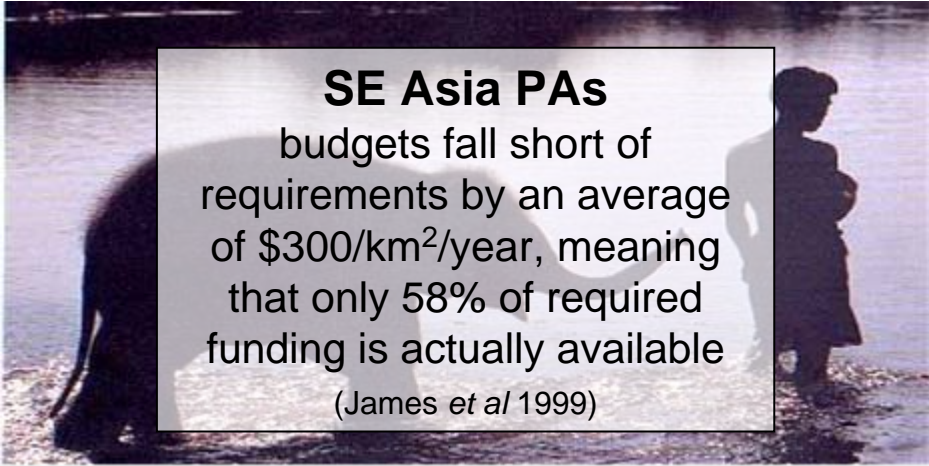
economic costs of ecosystem conservation



Khao Yai NP, Thailand

opportunity costs of local resource use foregone 27 million Baht a year - almost nine times higher than direct management costs

(Dixon 1990)



SE Asia PAs

budgets fall short of requirements by an average of \$300/km²/year, meaning that only 58% of required funding is actually available

(James *et al* 1999)



Shivapuri NP, Nepal

restrictions on forest land and resource use incur net present costs to local communities of \$1.5 million; park management costs are just under \$1 million

(Iftikhar & Emerton 2007)



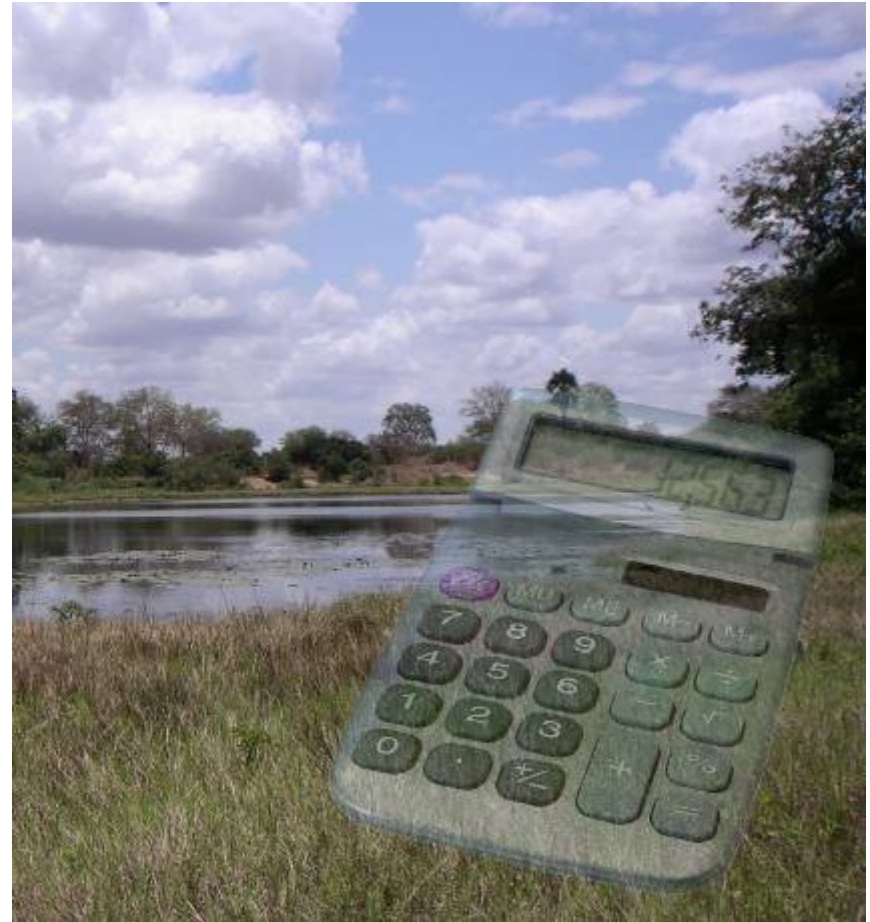
Lao PDR biodiversity

over the last decade donor funding to biodiversity conservation has fallen by 50%, declining from 5% to 1% of all foreign assistance

(Emerton 2007)

how under-valuation is a problem

- ecosystem costs and benefits tend to be underpriced by the market, or not have any market price at all
- yet it is often these goods and services that are the most valuable
- as a result, ecosystem conservation is seen as having little economic benefit, and ecosystem degradation is seen as having little economic cost





why distribution matters

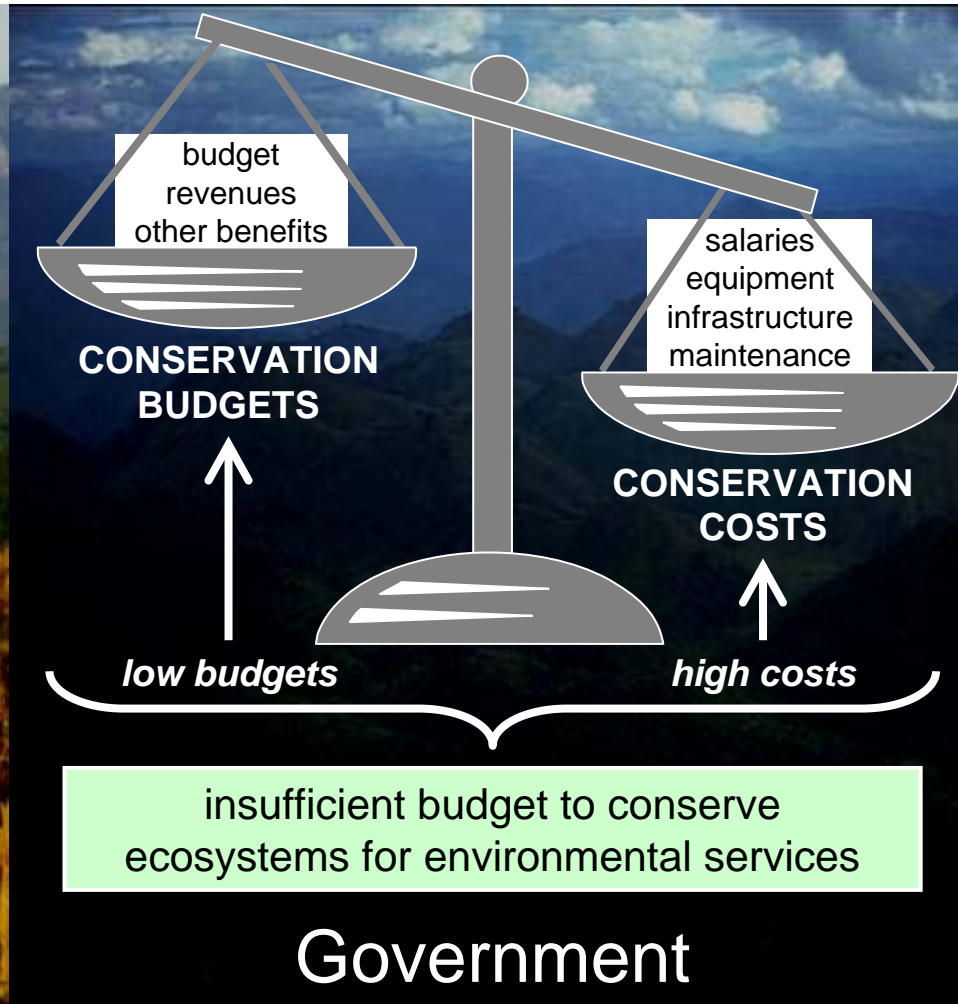
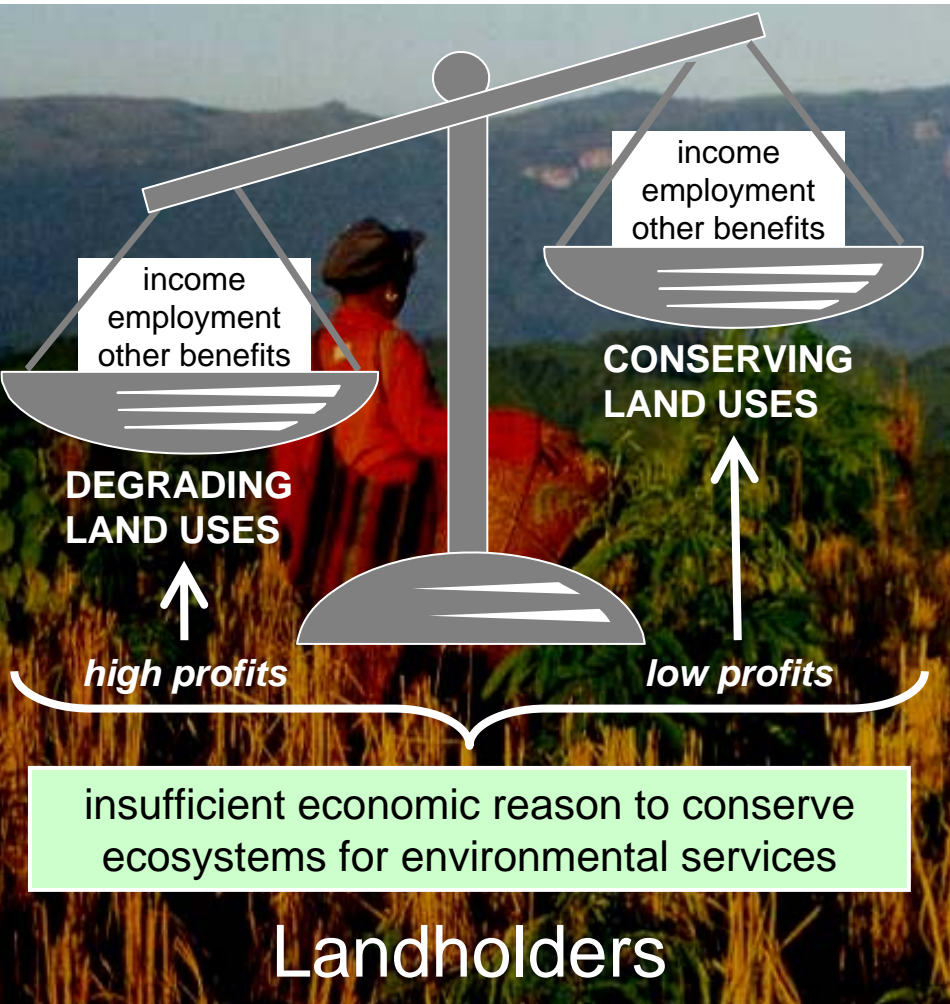
where costs & benefits don't balance



- those who benefit most from ecosystem conservation typically receive these values free, or at very low cost (*e.g. urban, industrial and commercial consumers*)
- those who are responsible for ecosystem conservation typically gain very little reward or return on their actions (*e.g. government agencies and local communities*)
- yet conservation cost-bearers are often those who are least able to afford to bear them (*e.g. because of poverty and low budgets*)



where costs & benefits don't balance





how economic policies, prices and markets
fail as regards ecosystem conservation

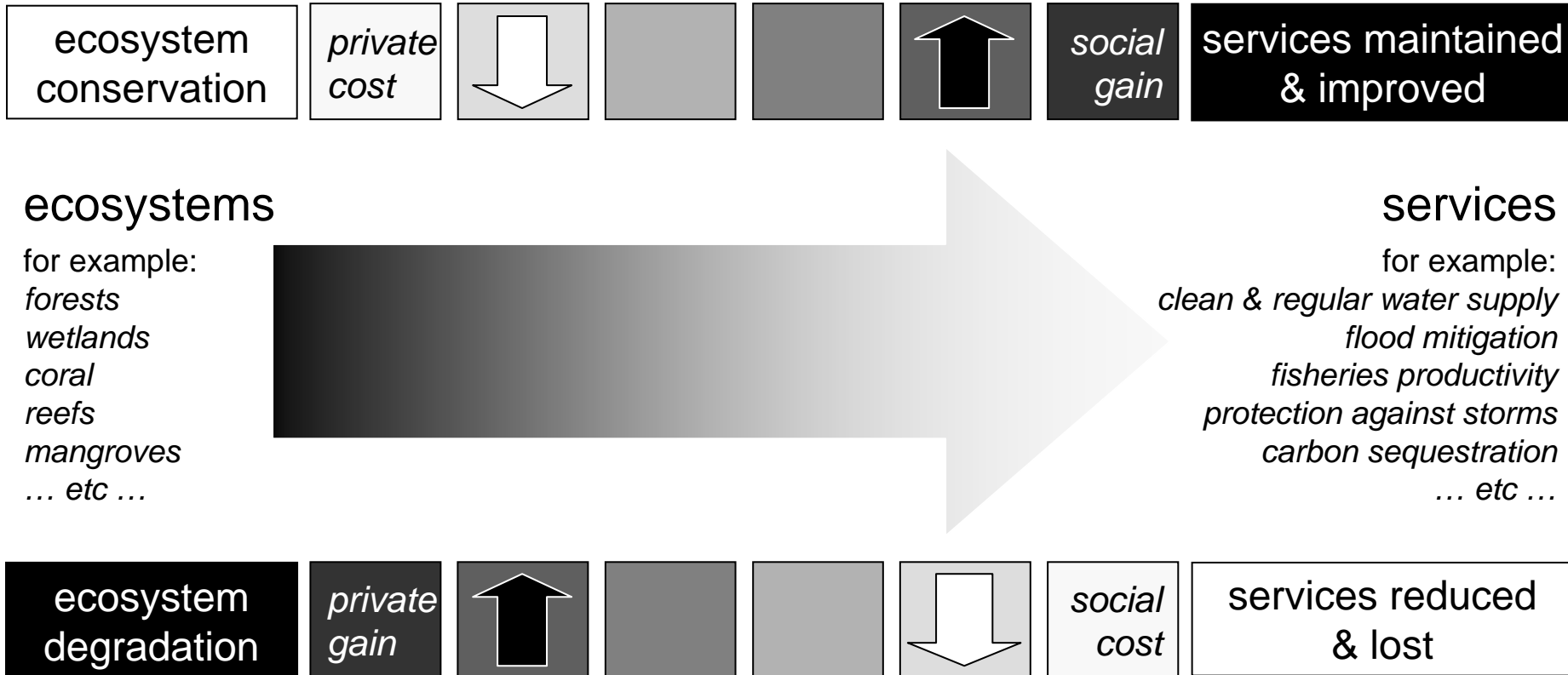
where social and private values diverge



- what is most beneficial from a social viewpoint is unprofitable in private terms, and vice versa
- conservation to generate ecosystem services may be the best option from a social point of view
- but from a private point of view (for land and resource managers) it is often the least profitable or most costly option



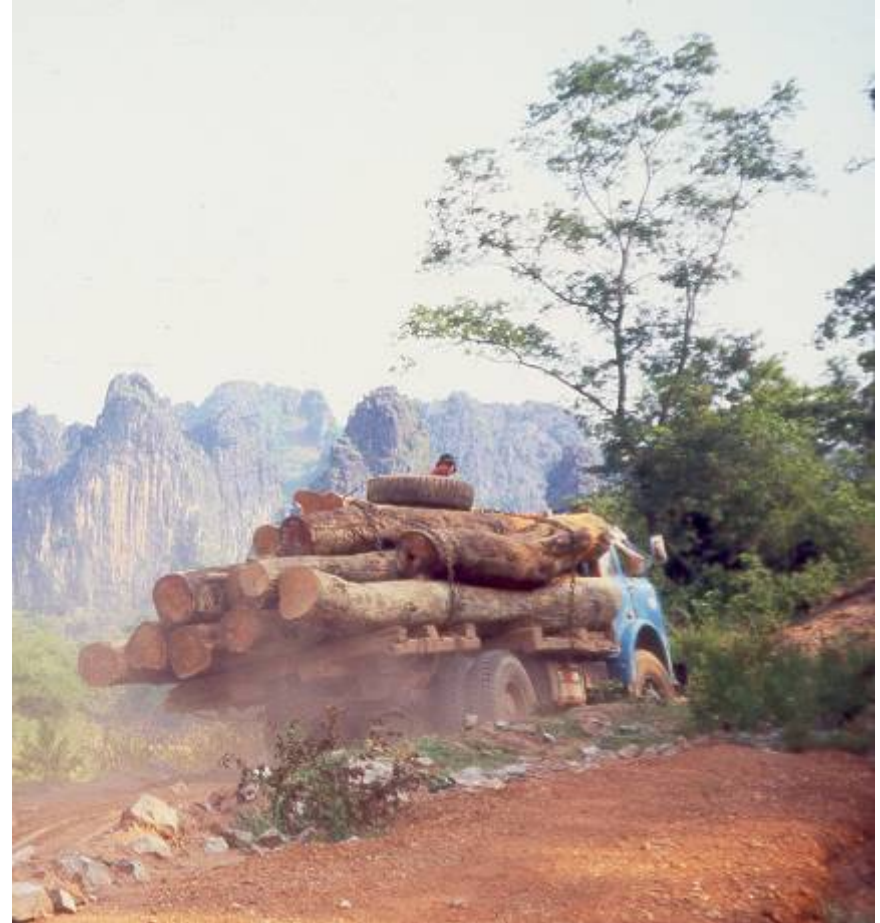
where social and private values diverge



how policies, prices and markets fail



- policies, prices and markets shape people's economic behaviour
- sometimes they are distorted or fail, and send the “wrong” private signals as to the “real” social costs and benefits of different economic activities
- they result in a situation where people are encouraged to produce and consume in ways which give rise to high social losses and costs
- ... such as degrading ecosystems



examples of policy, price and market failures



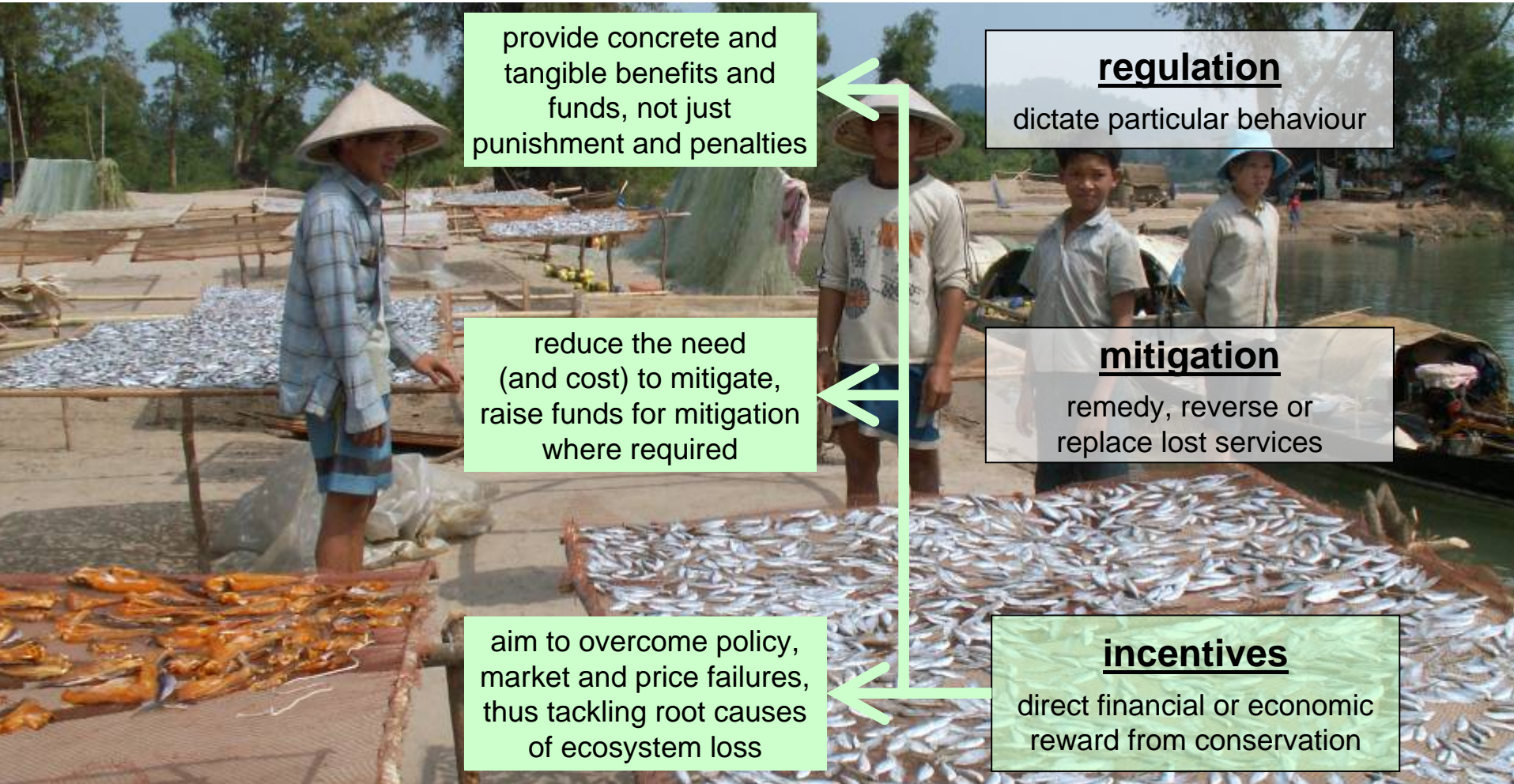
- relatively higher taxes on sustainable land uses, resources and inputs
- “perverse” subsidies to environmentally degrading land uses
- price support to unsustainable products and supply chains
- lack of markets, credit and value-added for sustainable land and resource uses
- lack of realistic environmental penalties and fines





how economic and financial instruments can be used to address the causes of ecosystem degradation

responses to ecosystem loss



provide concrete and tangible benefits and funds, not just punishment and penalties

regulation
dictate particular behaviour

reduce the need (and cost) to mitigate, raise funds for mitigation where required

mitigation
remedy, reverse or replace lost services

aim to overcome policy, market and price failures, thus tackling root causes of ecosystem loss

incentives
direct financial or economic reward from conservation

economic & financial instruments



- wide range of economic and financial instruments which can be used to correct for policy, price and market failures
- they aim to make sure that the prices, markets and other economic signals people face encourage them to take full account of the social costs and benefits arising from their private actions



examples of economic & financial instruments



- fiscal instruments (taxes, subsidies, etc.)
- removal of perverse incentives (such as subsidies)
- financing mechanisms (funds, credit, bonds & deposits, etc.)
- market-based instruments (price & market creation and improvement, fees, charges, tradeable permits, etc.)



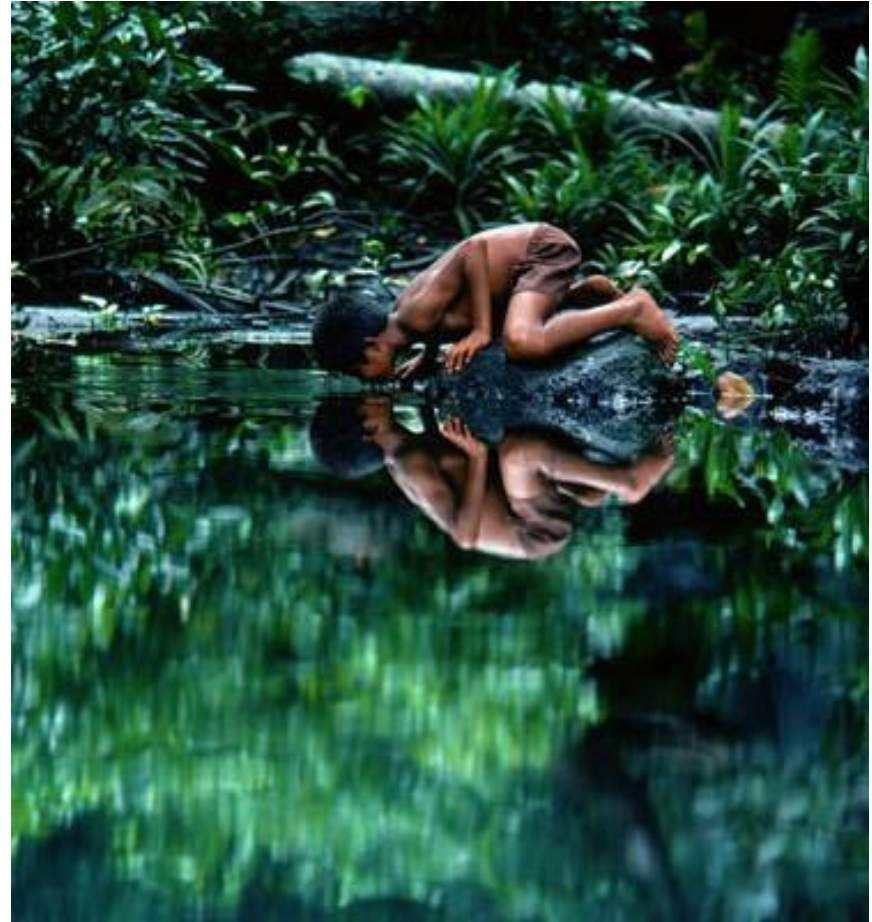


payments for environmental services as market-based incentives for ecosystem conservation

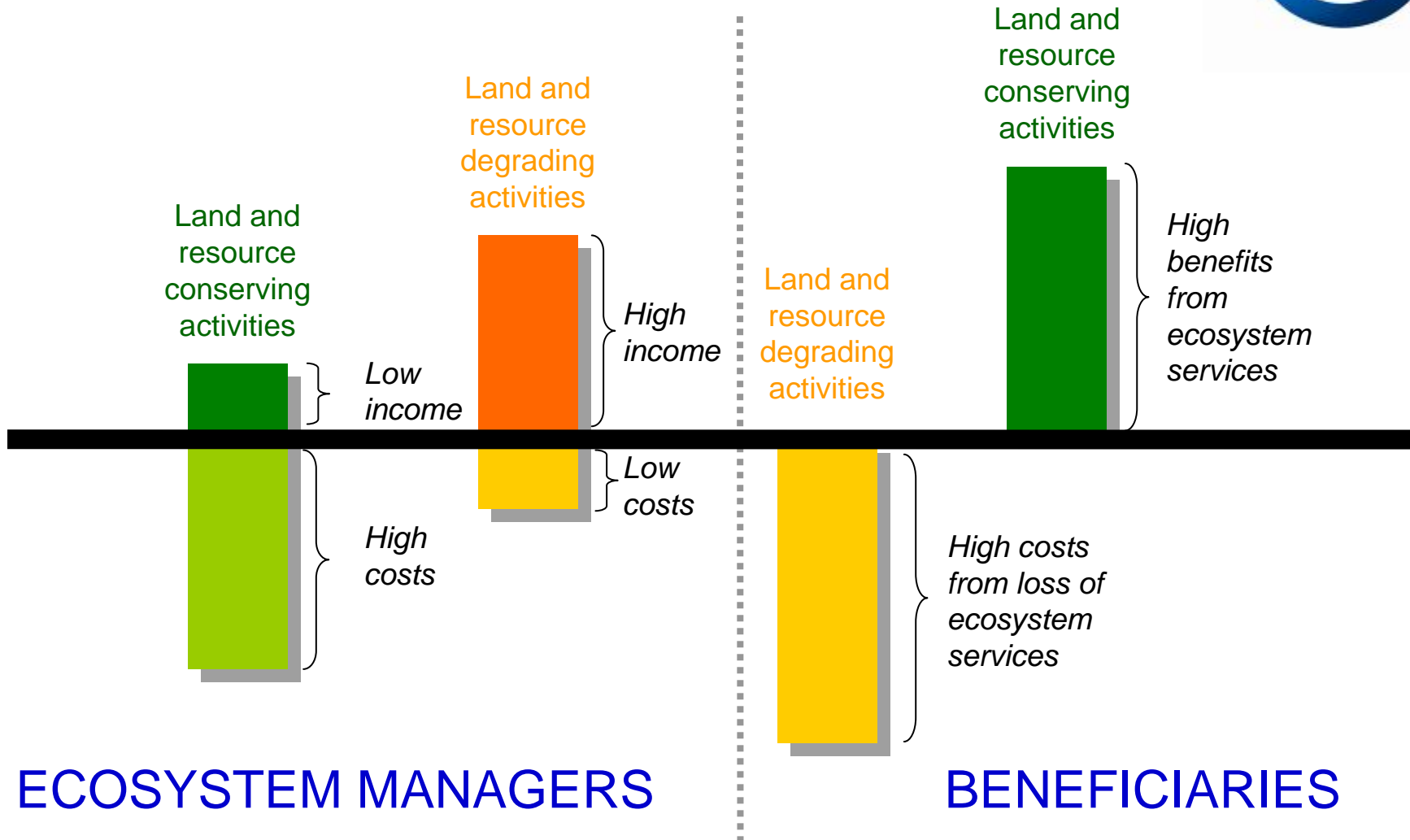
PES as a response to market failures



- the market fails to:
 - reward on-site ecosystem service providers, or to compensate them for their costs
 - charge off-site users for the benefits they enjoy
- PES create a market for ecosystem services, making conservation a more profitable land-use proposition



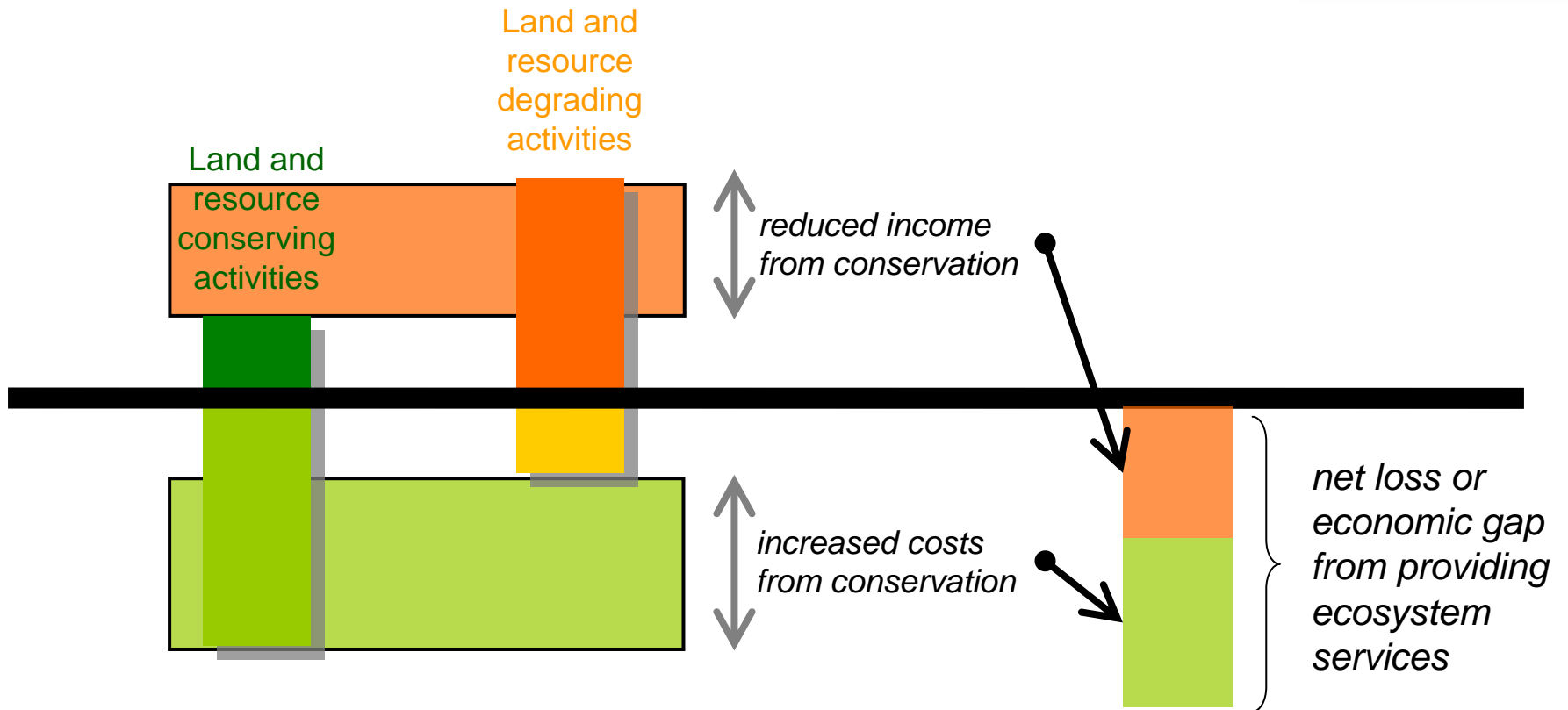
comparing the costs and benefits



ECOSYSTEM MANAGERS

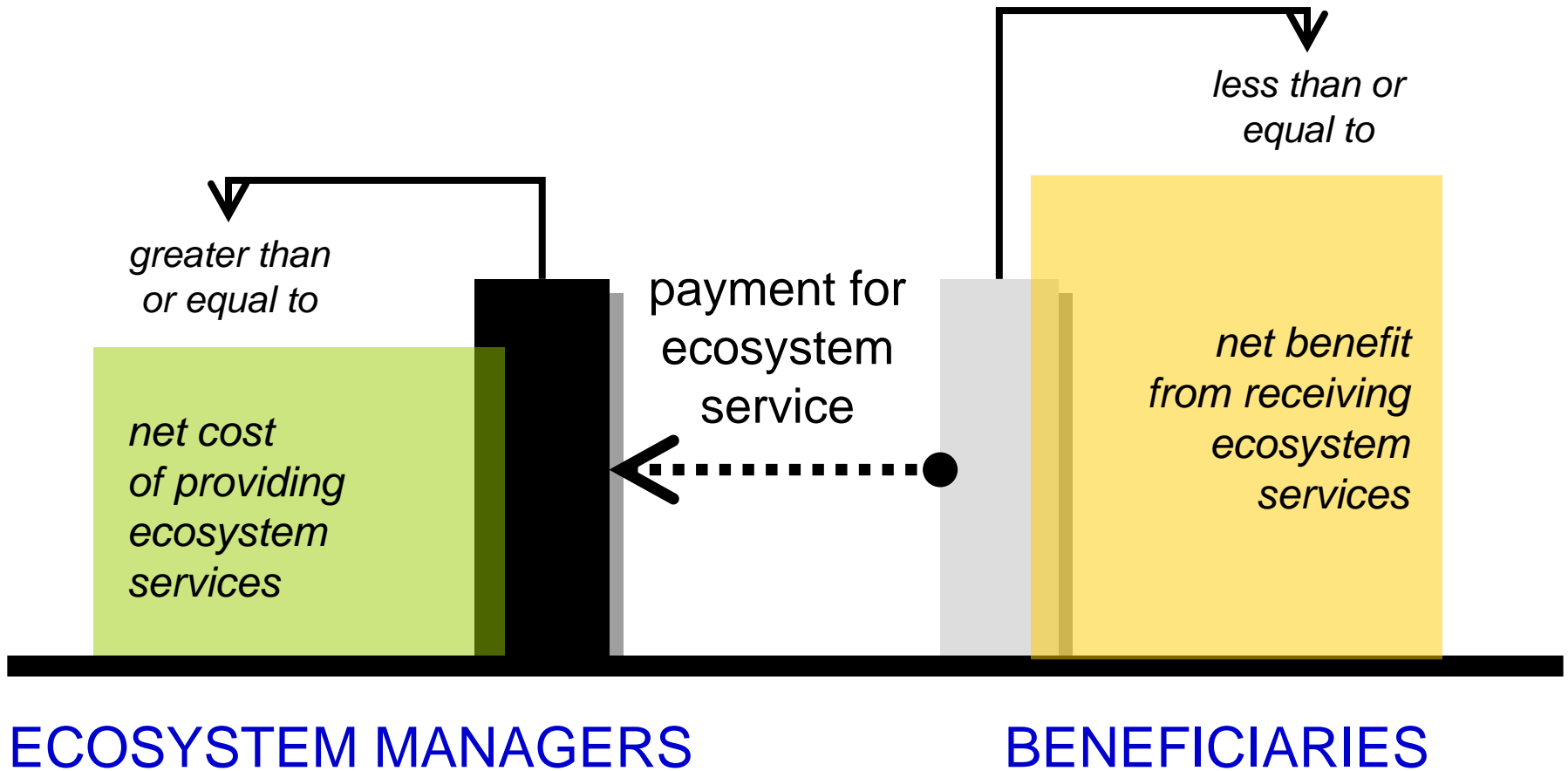
BENEFICIARIES

identifying the economic gap



ECOSYSTEM MANAGERS

PES as a conservation incentive



the workshop ...

- in principle PES are applicable to any ecosystem which generates economically valuable services for which people are willing to pay
- in practice their use has been limited mainly to forest water services and to a lesser extent carbon, primarily in the Americas and Europe
- PES are emerging in Asia as a useful tool for ecosystem conservation
- but as yet there is very limited application, across different countries or ecosystems





thank
you