Principles of economic valuation of ecosystems

IW:LEARN Regional Workshop on
Economic Valuation and Water-Related Decision-Making
Ouagadougou, Burkina Faso
06-08 November 2006

Dr Francis Vorhies
Director
EARTHMIND
earthmind.net

Quick overview of the workshop

Day 1 - Monday, 06 Nov 06
0: Welcome & introduction
1: Principles of economic valuation of ecosystems
2: Application of ecosystem valuations in IWRM

Day 2 - Tuesday, 07 Nov 06
2: continued
3: Methods of ecosystem valuation
4: Using valuations to influence decision-making

Day 3 - Wednesday, 08 Nov 06
5: Designing & implementing valuation studies
6: Development of personal action plans
7: Summary & evaluation

EARTHMIND

Bananas, butterflies & Mt Elgon

Deriving economic returns from conserving Mt Elgon National Park in Uganda …

- Bananas & rain
- Gate fees & villages
- Butterfly farming
- Trekking – nature & culture
- Turkey shoots

EARTH MIND

Think of an ecosystem as a business

Who are its customers?

What goods and services are they interested in?

A business-approach to ecosystem management uses economic valuation as a practical tool to assess potential benefits and costs and to identify potential customers and threats.

EARTH MIND

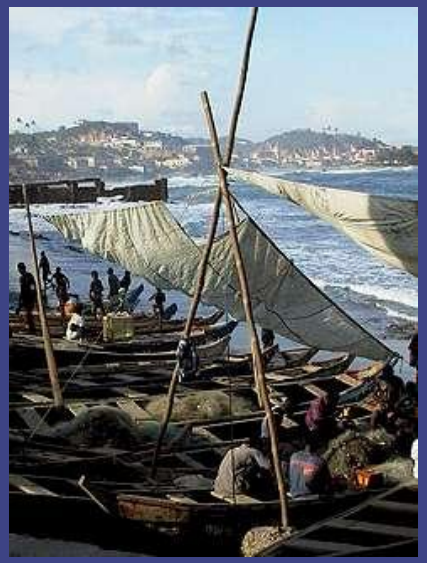
Ecosystem customers

Think of local communities as customers. What goods and services do they want?

Think of actual and potential commercial customers of the ecosystem.

Think of “downstream” or indirect customers. What benefits accrue to more distant communities, to the country or to the region?

Think of global customers of the ecosystem. Think of the “donors” as customers.

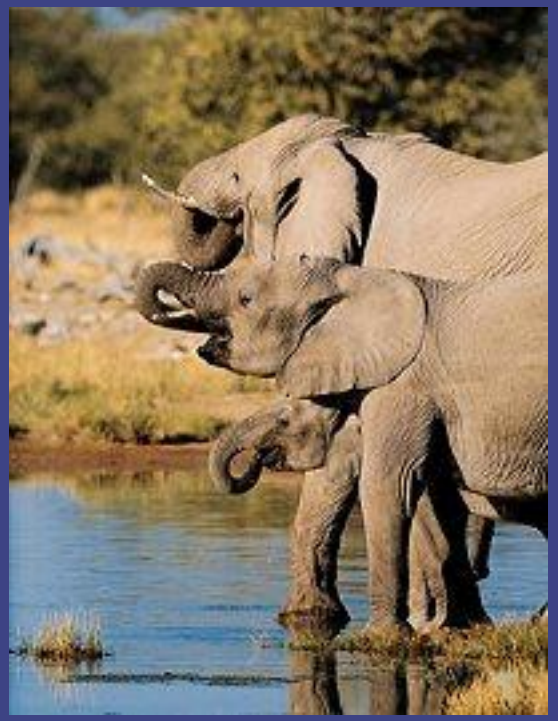


EARTH MIND

Ecosystem benefits/values/services

Economic valuation is one of the tools we can use to assess the benefits of well-managed ecosystems as well as how these benefits are distributed among the stakeholders.

Through an analysis of benefits and costs, we can begin to understand some of the forces which threaten an ecosystem as well as some of the forces which may conserve it.



Full economic value of ecosystems

= Use value + Non-use value

= Direct use

\+ Indirect use

\+ Option use

= Existence

\+ Altruism

\+ Bequest

EARTH MIND

Types of economic values

Box 4. Total economic values of protected areas

Use values			Non-use values	
Direct use value	**Indirect use value**	**Option value**	**Bequest values**	**Existence values**
Recreation	*Ecosystem services*	Future information	Use and non-use values for legacy	*Biodiversity*
Sustainable harvesting	*Climate stabilisation*	Future uses (indirect and direct)		Ritual or spiritual values
Wildlife harvesting	*Flood control*			Culture, heritage
Fuel-wood	Ground-water recharge			Community values
Grazing	*Carbon sequestration*			Landscape
Agriculture	Habitat			
Gene harvesting	Nutrient retention			
Education	Natural disaster prevention			
Research	*Watershed protection* Natural services			

Source: Adapted from Barbier *et al.*, (1997)

Full moral value of ecosystems

= Anthropocentric + Intrinsic

= Human well-being (economics)

\+ Higher order well-being

= Eco-centric

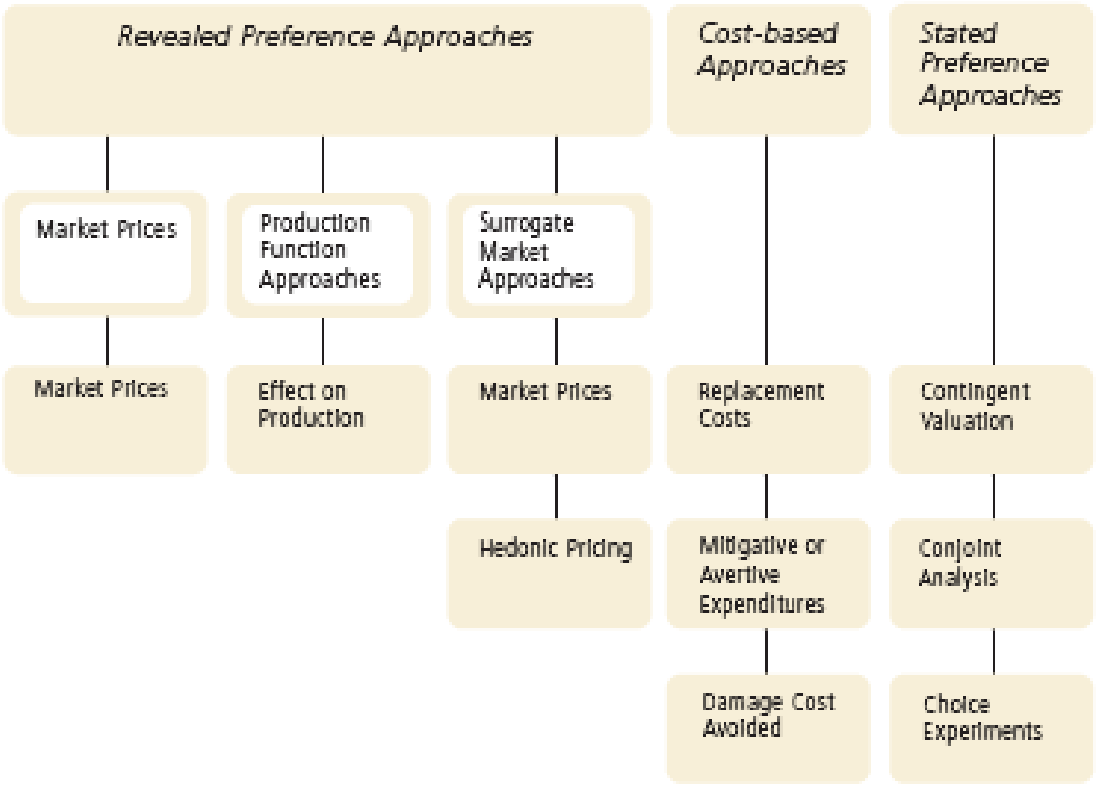
\+ Ethics

Importantly, economics is only one part of a greater understanding of the values of ecosystems.

EARTH MIND

Measuring economic values

Figure 1: Categories of commonly-used ecosystem valuation methods



EARTH MIND

Economic contribution of ecosystems

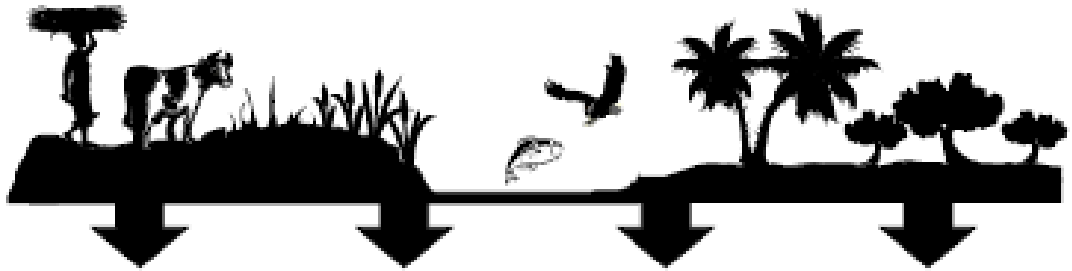
Table 1: Main ecosystem types and their services

Ecosystem service	Ecosystem									
	Cultivated	*Dryland*	*Forest*	*Urban*	*Inland Water*	*Coastal*	*Marine*	*Polar*	*Mountain*	*Island*
Freshwater			•		•	•		•	•	
Food	•	•	•	•	•	•	•	•	•	•
Timber, fuel, and fiber	•		•			•				
Novel products	•	•	•		•		•			
Biodiversity regulation	•	•	•	•	•	•	•	•	•	•
Nutrient cycling	•	•	•		•	•	•			
Air quality and climate	•	•	•	•	•	•	•	•	•	•
Human health		•	•	•	•	•				
Detoxification		•	•	•	•	•	•			
Natural hazard regulation			•		•	•			•	
Cultural and amenity	•	•	•	•	•	•	•	•	•	•

EARTH MIND

Economic contribution of water ecosystems

Figure 1: Total Economic Value of Wetlands



DIRECT VALUES	INDIRECT VALUES	OPTION VALUES	NON-USE VALUES
Production and consumption goods such as: Water, Fish, Firewood, Building poles, Thatch, Wild foods Medicines, Crops, Pasture, Transport, Recreation, … *etc* …	Ecosystem functions and services such as: Water quality and flow, Water storage and recharge; Nutrient cycling; Flood attenuation, Micro-climate, … *etc* …	Premium placed on possible future uses or applications, such as: Agricultural, Industrial, Leisure, Pharmaceutical, Water use, … *etc* …	Intrinsic significance of resources and ecosystems in terms of: Cultural value, Aesthetic value, Heritage value, Bequest value, … *etc* …

From Emerton 1999

EARTH MIND

Ecosystem values & the MDGs

Box 2.2 Environment and the Millennium Development Goals[15]

Environmental Management Measure	Dimension of Poverty	The MDGs
Sound and equitable management of biodiversity and ecosystems		1 – eradicate extreme poverty and hunger
—		2 – achieve universal primary education
Ensure access to safe water and sanitation	Enhance livelihood security	
—	—	3 – promote gender equality
Improve air quality and exposure to toxic chemicals	Reduce risks to health	4 – reduce child mortality
—	—	5 – improve maternal health
Mitigate natural disasters and resource-based conflict	Reduce vulnerability	6 – combat major diseases
—		7 – ensure environmental sustainability
Reduce and mitigate climate variability and change		

EARTH MIND

Ecosystems & sustainable development

"Achieving the MDGs will require expanding per capita endowments of capital assets, especially the environmental assets used by the poor to earn their livelihoods and increase their well-being."

"Investments in protecting and restoring natural ecosystems can produce substantial net benefits, especially for the poor."

"The best available evidence suggests that US$60-90 billion per year will be needed to address poverty-environment goals over the next 10-15 years."

David Pearce, 2005

EARTH MIND

Valuation as a tool for ecosystem management

It is critically important to:

1. Define the audience.

2. Determine the scope of the study.

3. Choose the appropriate analytical techniques.

EARTH MIND

Valuation & ecosystem leadership

Management is doing things right; leadership is doing the right things.

- Peter Druker

Ecosystem valuation can provide information which is critical to not only to doing things right, but also to doing the right things for both people and the ecological resources on which their livelihoods depend.

EARTH MIND

Summing up …

Aim: Establish a conceptual framework for ecosystem valuation

Learning objective 1: Principles: understanding the principles of economic valuation of ecosystems

Key concepts & skills:

✓ ecosystem goods & services
✓ full economic value & components
✓ measuring economic values; market & non-market values
✓ contributions of ecosystem goods & services to the economy
✓ contributions of ecosystem goods & services to water-sector economics
✓ linkages between ecosystem values, sustainable development & the MDGs
✓ valuation as a tool for environmental management

EARTH MIND

Take-home message

If we are serious about conserving ecosystems, we must understand and manage their economic values.

fvorhies@earthmind.net

EARTH MIND