



# Principles of economic valuation of ecosystems

Dr Francis Vorhies

Director

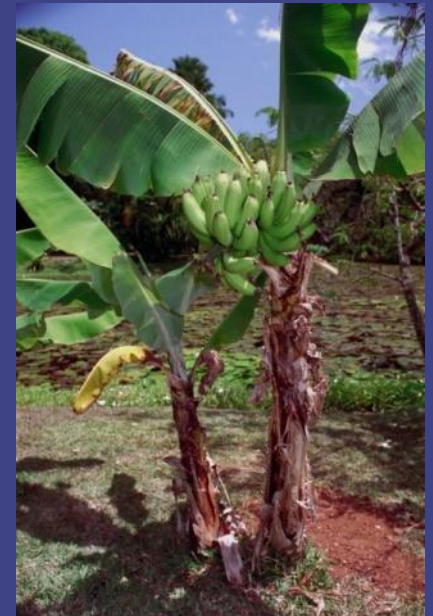
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# Bananas, butterflies & Mt Elgon

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

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



# 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.



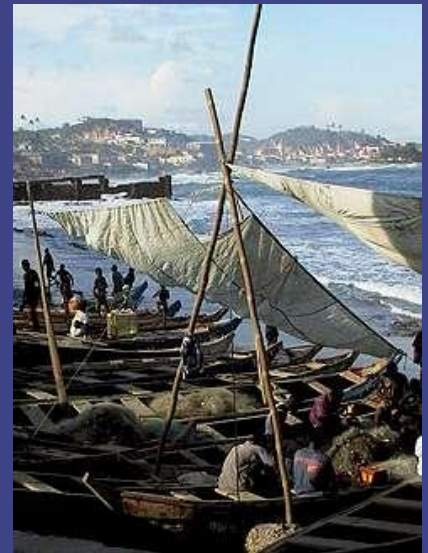
# Ecosystem customers

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?

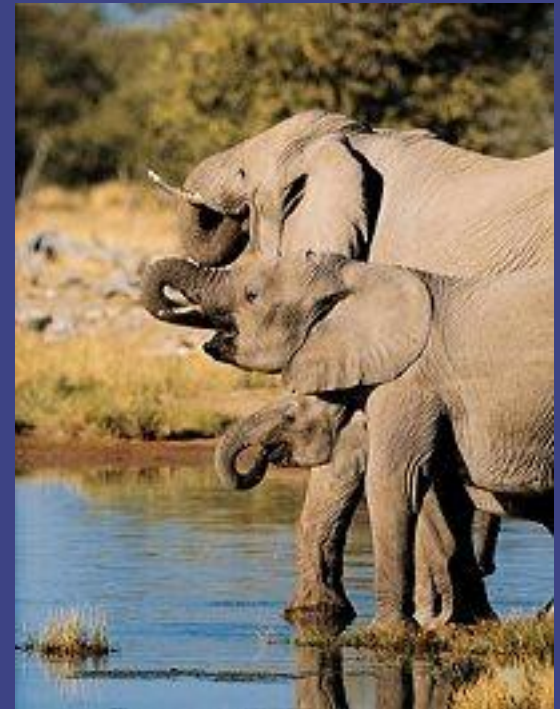
Think of global customers of the ecosystem.  
Think of the “donors” as customers.



# 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

$$= \text{Use value} + \text{Non-use value}$$

$$= \text{Direct use}$$

$$+ \text{Indirect use}$$

$$+ \text{Option use}$$

$$= \text{Existence}$$

$$+ \text{Altruism}$$

$$+ \text{Bequest}$$



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

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

# Full moral value of ecosystems



$$= \text{Anthropocentric} + \text{Intrinsic}$$

$$= \text{Human well-being (economics)}$$

$$+ \text{Higher order well-being}$$

$$= \text{Eco-centric}$$

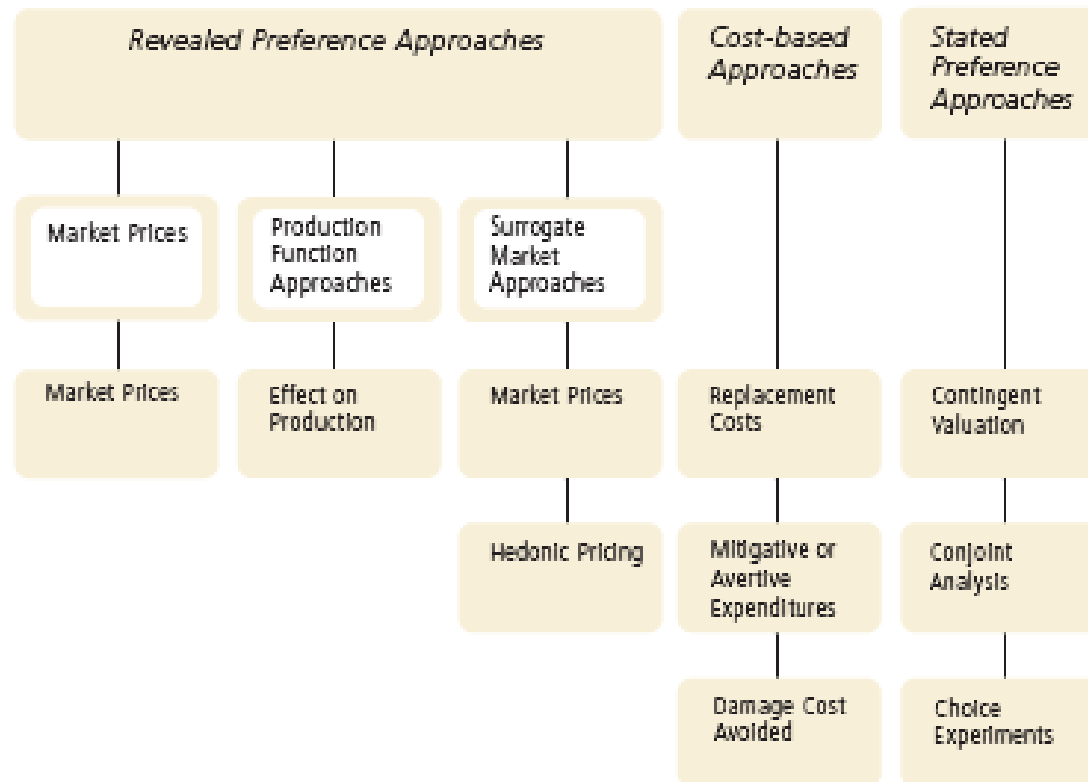
$$+ \text{Ethics}$$

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



# Measuring economic values

Figure 1: Categories of commonly-used ecosystem valuation methods



# 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	*	*	*	*	*	*	*	*	*	*



# Ecosystem values & the MDGs

**Box 2.2 Environment and the Millennium Development Goals<sup>15</sup>**

Environmental Management Measure	Dimension of Poverty	The MDGs
Sound and equitable management of biodiversity and ecosystems —		1 – eradicate extreme poverty and hunger
Ensure access to safe water and sanitation —	Enhance livelihood security —	2 – achieve universal primary education 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
Reduce and mitigate climate variability and change		7 – ensure environmental sustainability



# 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.”



# 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.



# Valuation & ecosystem leadership

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

- Peter Drucker

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.



# 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 marine economics
- ✓ linkages between ecosystem values, sustainable development & the MDGs
- ✓ valuation as a tool for environmental management





# Take-home message

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

[fvorhies@earthmind.net](mailto:fvorhies@earthmind.net)

