

# Valuing Biodiversity

18 December 2000



Economics Unit

# Why should we bother ?

Biodiversity has long been undervalued.

- Biodiversity conservation seen as having few benefits
- Biodiversity loss seen as having few costs
- Economic management seen as commercial extraction
- Little effort to demonstrate or capture biodiversity values
- Biodiversity cannot compete with other land uses
- Biodiversity conservation is not economically viable to people

Valuation puts biodiversity into the picture.

# What is its economic value?



## USE

### Direct values

Outputs that can be consumed directly, such as timber, medicines, food, recreation, etc.

### Indirect values

Ecological services, such as flood control, storm protection, carbon sequestration, climatic control, etc.

### Option values

The premium placed on maintaining resources for future direct & indirect uses, some of which may not be known now.

## NON-USE

### Existence values

The intrinsic value of resources, irrespective of their use such as cultural, aesthetic, bequest significance, etc.

*Harder and Harder to Quantify*

*More and More Often Ignored*

# How do we measure values?

What does it cost to buy or sell  
- what is its price?

- What is the cost of replacing it with something else?
- What is the cost of mitigating its loss?
- What is the cost of averting the costs of its degradation?
- What is its contribution to other income or production?
- How much do people spend to get or use it?
- What do people say they would be willing to pay for it?

# So What?

- Valuation is frequently a **complete** waste of time
- It doesn't tell us **anything**

Valuation is only a  
**means to an end:**

It informs economic  
and biodiversity  
policies, planning and  
management

## The Economic Benefits

**Marine:** \$20,949 billion

**Coastal:** \$12,568 billion

**Forests:** \$4,706 billion

**Rangelands:** \$906 billion

**Wetlands:** \$4,879 billion

**Rivers:** \$1,700 billion

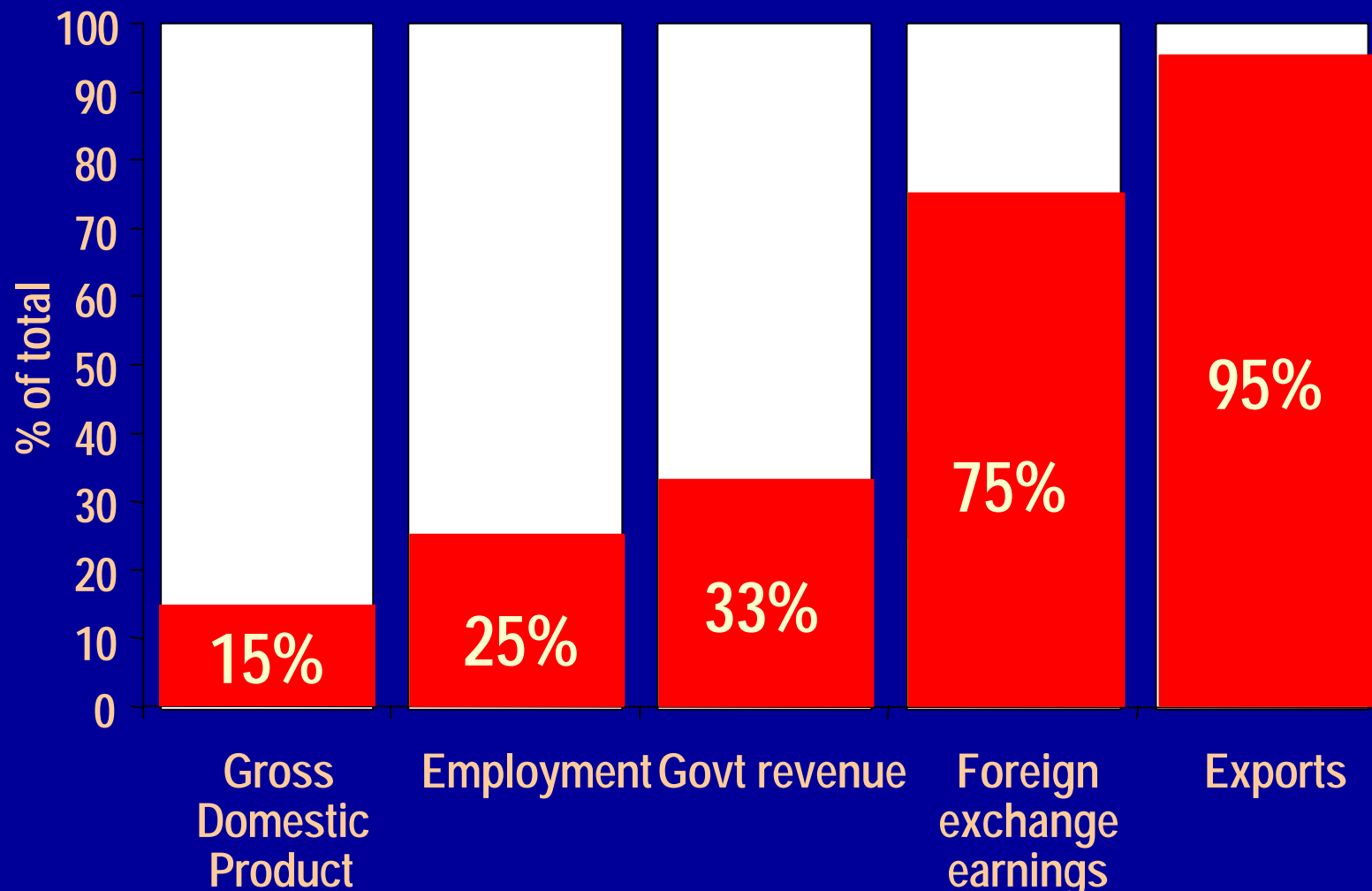
**Croplands:** \$128 billion

## The Economic Costs

US\$ 33,000,000,000,000

# Demonstrating its Importance

## The Seychelles National Economy



# Justifying its Conservation

## Nakivubo Wetland

Rapidly being  
reclaimed for  
industry and  
settlement

**Because is a  
waste of  
valuable land  
for  
development**

But Nakivubo  
treats 75% of the  
city's domestic  
and industrial  
wastes and  
maintains quality  
of water supply

**US\$ 2.5-3.0  
mill/yr**

**The wetland as an  
economic asset**

Management for  
water supplies:  
saves costs, and  
also generates  
higher  
development and  
social welfare  
benefits

# Extending Economic Analysis

## Tana Hydropower Scheme

- Kenya's biggest hydropower dam
- 5<sup>th</sup> in a chain of dams on the river
- Economic analysis of dam shows large development benefits

- Loss of:
- Floodplain strip
  - Grasslands
  - Ox-bow lakes
  - Riverine forest
  - Coastal wetlands
  - Mangroves
  - Species
  - Diversity

- Management options change
- Project costs and benefits change
- Relative profitability changes

**But downstream  
flooding ceases**

**US\$ 50 mill cost**

**Economic  
justification for  
new dam design**



# Management and Land Use

## Ngorongoro Crater Forest

- Important ecosystem
- Potentially high economic value
- Earns little income
- Timber, tourism, farming, local use?

Analysis of profitability of different land use and management combinations points to multiple existing and new uses

Not logging/farming  
But combination of:

- Grazing
- Subsistence NTFP
- Commercial NTFP
- Ecotourism
- Watershed

**What is the best economic use?**

**US\$ 150,000 p.a.**

**Sustainable utilisation pays the best for all**

# Costs of Biodiversity

## MANAGEMENT COSTS

Costs of equipment, capital, wages, buildings, running costs, policing

## OTHER ACTIVITIES

Human disease and injury, livestock losses, crop destruction, competition for resources

## OPPORTUNITY COSTS

Alternative land uses, technologies and profits foregone



# Costs of Biodiversity

## Uganda Protected Areas

### Protected Areas Management:

Expenditures on  
staff, equipment  
and infrastructure

**\$0.25 million  
a year**

### Wildlife farm damage:

Damage to crops,  
fences and  
livestock

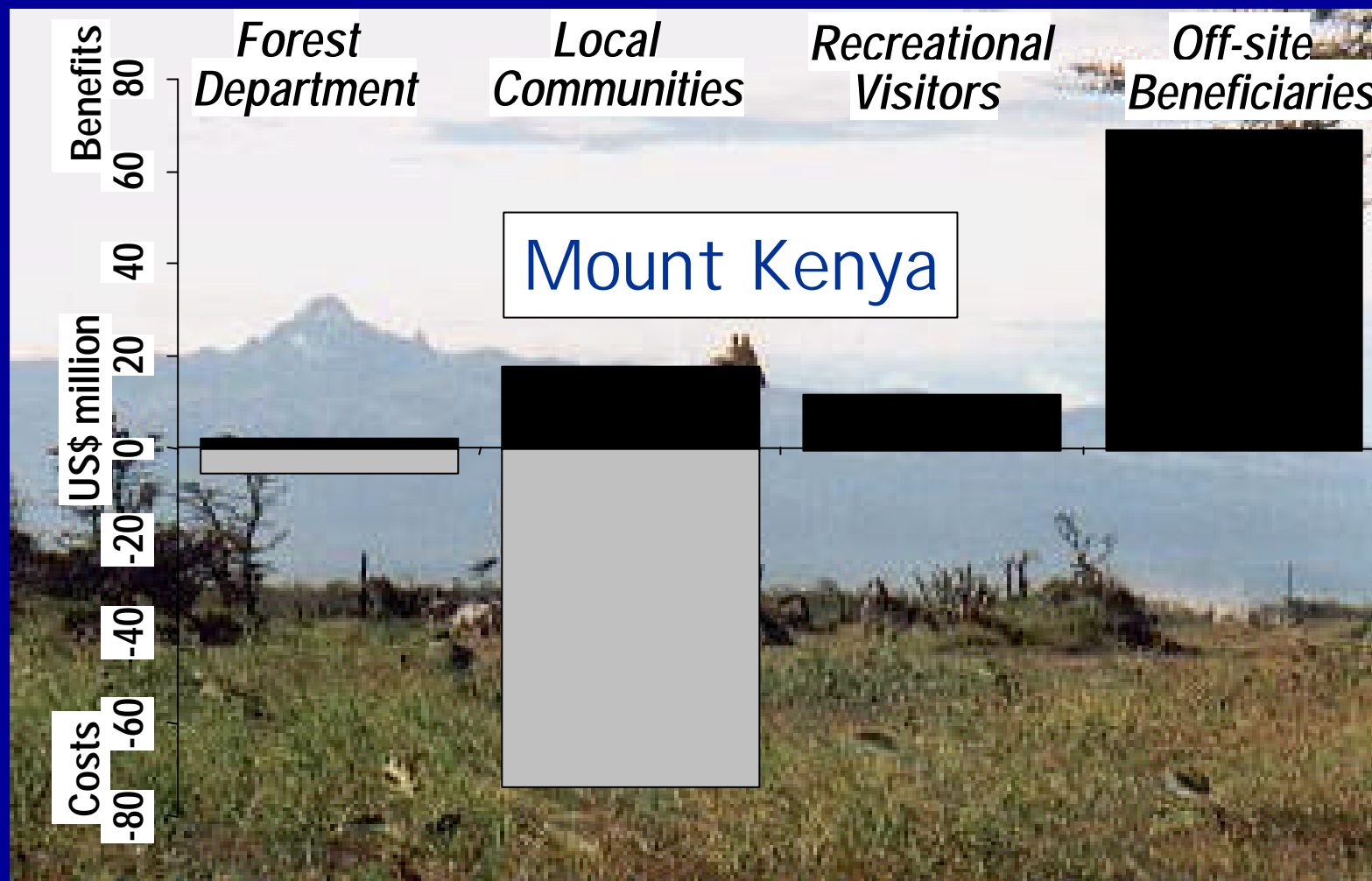
**\$ 65 million  
a year**

### Opportunity cost:

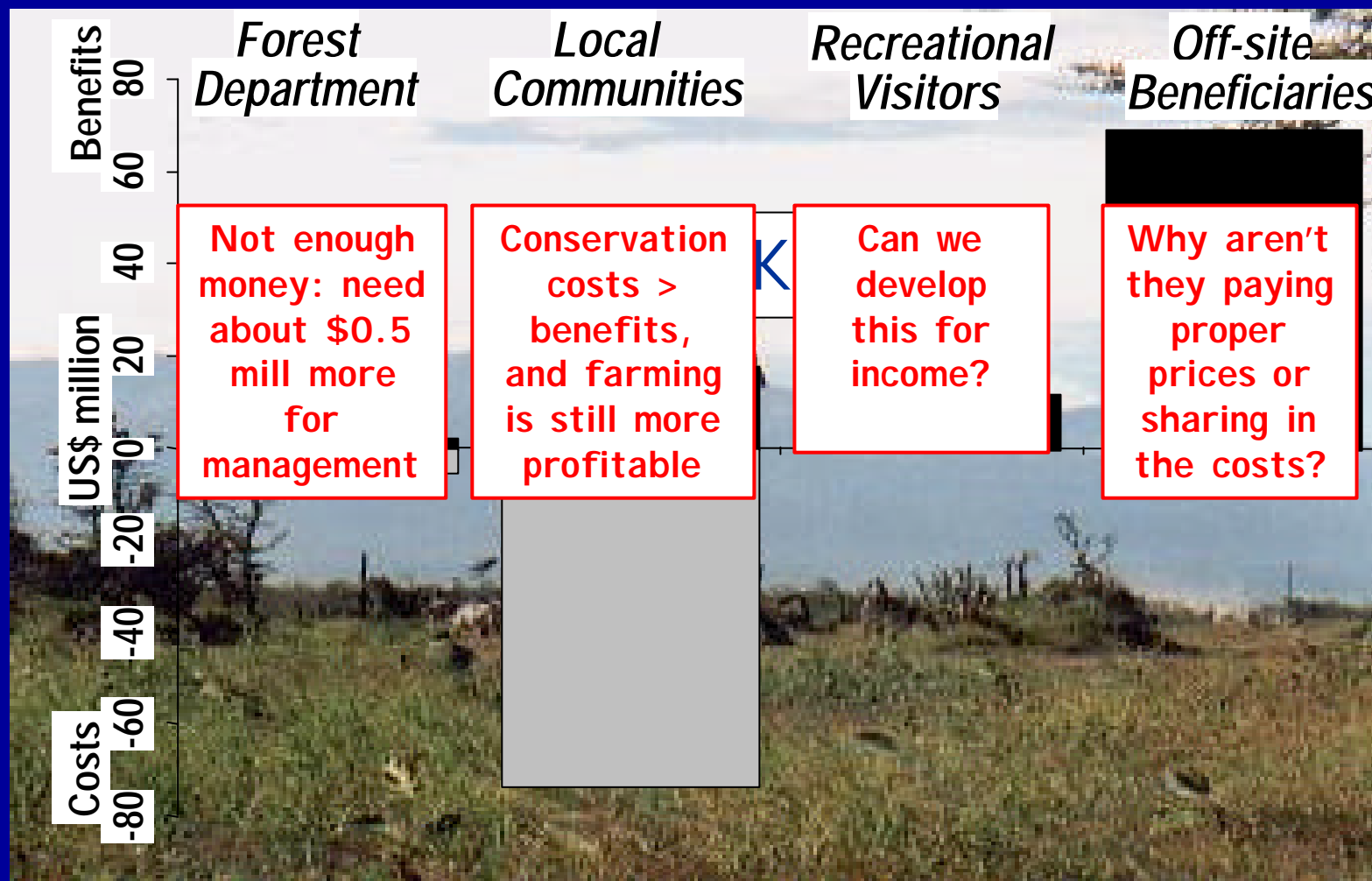
For suitable areas  
of parks, crop  
potential

**\$ 100 million  
a year**

# Costs, Benefits & Conservation



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# Costs, Benefits & Conservation

How much economic benefits and costs are worth

Who gains and who loses

Where and why full values aren't reflected in what  
people choose

**How this influences on-the-ground  
management**

...and what we need to do about it...

# Economic Assessment

## Weighing up the full implications

Assessing Economic Benefits

Assessing Economic Costs

Analysing Economic Distribution

Assessing Best Options

Assessing Profitability

Assessing Mitigation Needs





# Economic Instruments

## Making Conservation Economically Worthwhile

Economic Property Rights

Developing Markets

Improving Charges and Prices

Taxes and Subsidies

Bonds and Deposits

Livelihood measures





# Financial Instruments

## Raising and Allocating Funds for Conservation

Pricing Resources and Goods

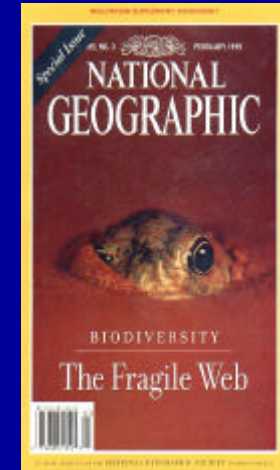
Pricing Ecosystem Services

Public Sector Transfers

Attracting Private Investment

Getting Donor Funding

Soliciting Voluntary Contributions



# What does valuation tell us?

Weighs up the economic benefits and costs of biodiversity

- at different times, for different groups
- for different ecosystems and resources
- under different political, institutional and economic conditions
- under different management, land use and investment options

Identifies where their amount, form or distribution presents

- opportunities for better biodiversity management
- a situation where biodiversity is being degraded and lost

Points to needs and niches for economic instruments