

ENVIRONMENTAL ECONOMICS IN THE EIA PROCESS



Lesson Learning Goals

At the end of this lesson you should be able to:

- Discuss the challenges involved in attaching economic values to natural resources
- Identify failures of classic economic theory in accounting for natural resources and quantifying environmental impacts
- Describe alternative methods of approximating environmental values for decision making purposes

The Role of Economics in EIA

- Economic valuation of the benefits and costs associated with proposed projects or activities is an important aspect of EIA decision making
- Since the mid-1980s there has been growing interest in placing monetary values on environmental impacts but disagreement over valuation methods has limited use
- Ecological economic concepts underlying available valuation methods are gradually gaining mainstream acceptance

Economic Analysis

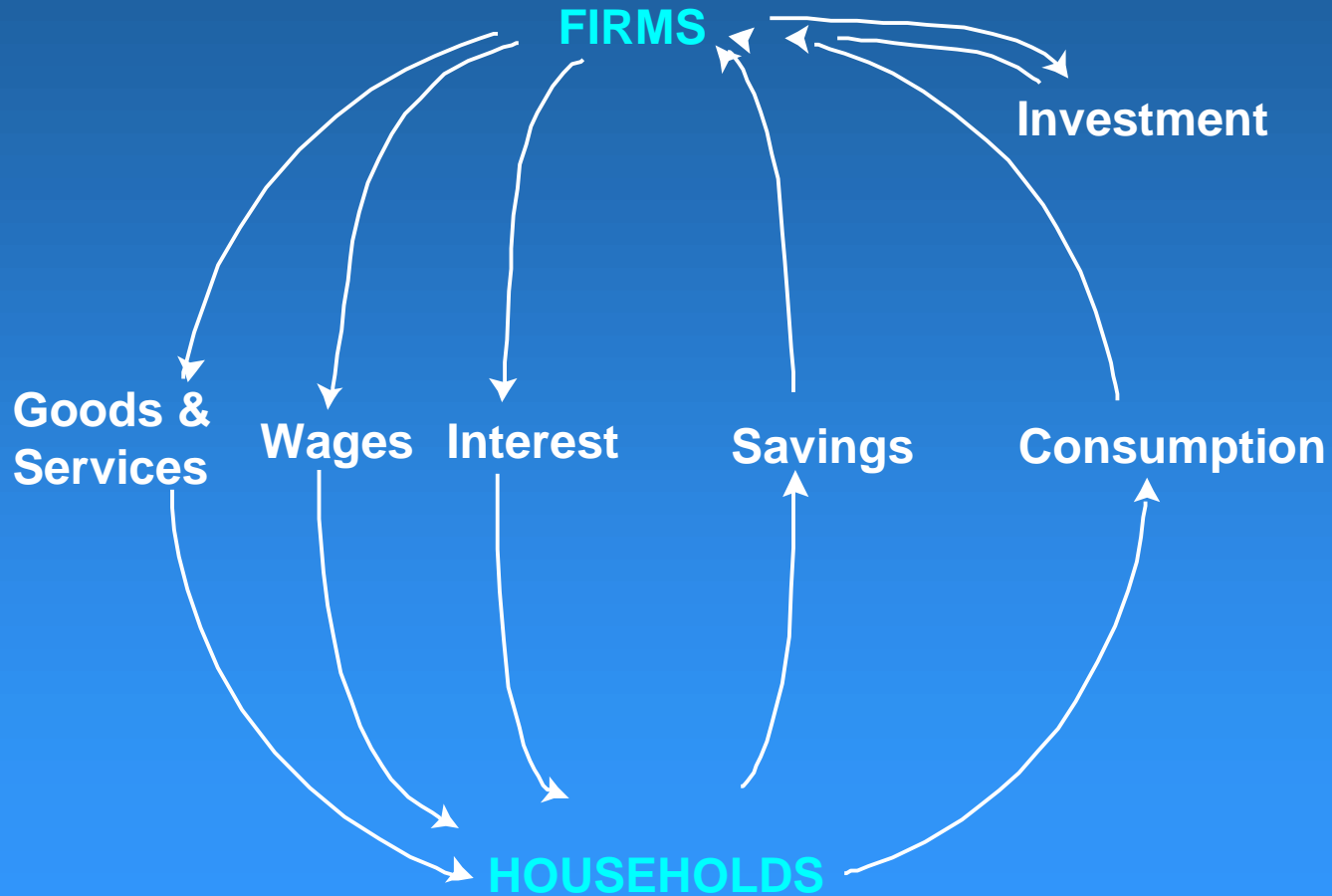
Applications of economic analysis in EIA include:

- Use of cost-benefit analysis to assess whether proposed projects or activities have net benefits for society
- To quantify externalities associated with proposed projects and activities (i.e., full cost accounting)
- To compare project alternatives (i.e., alternatives to and alternatives means of) in deciding how best to proceed

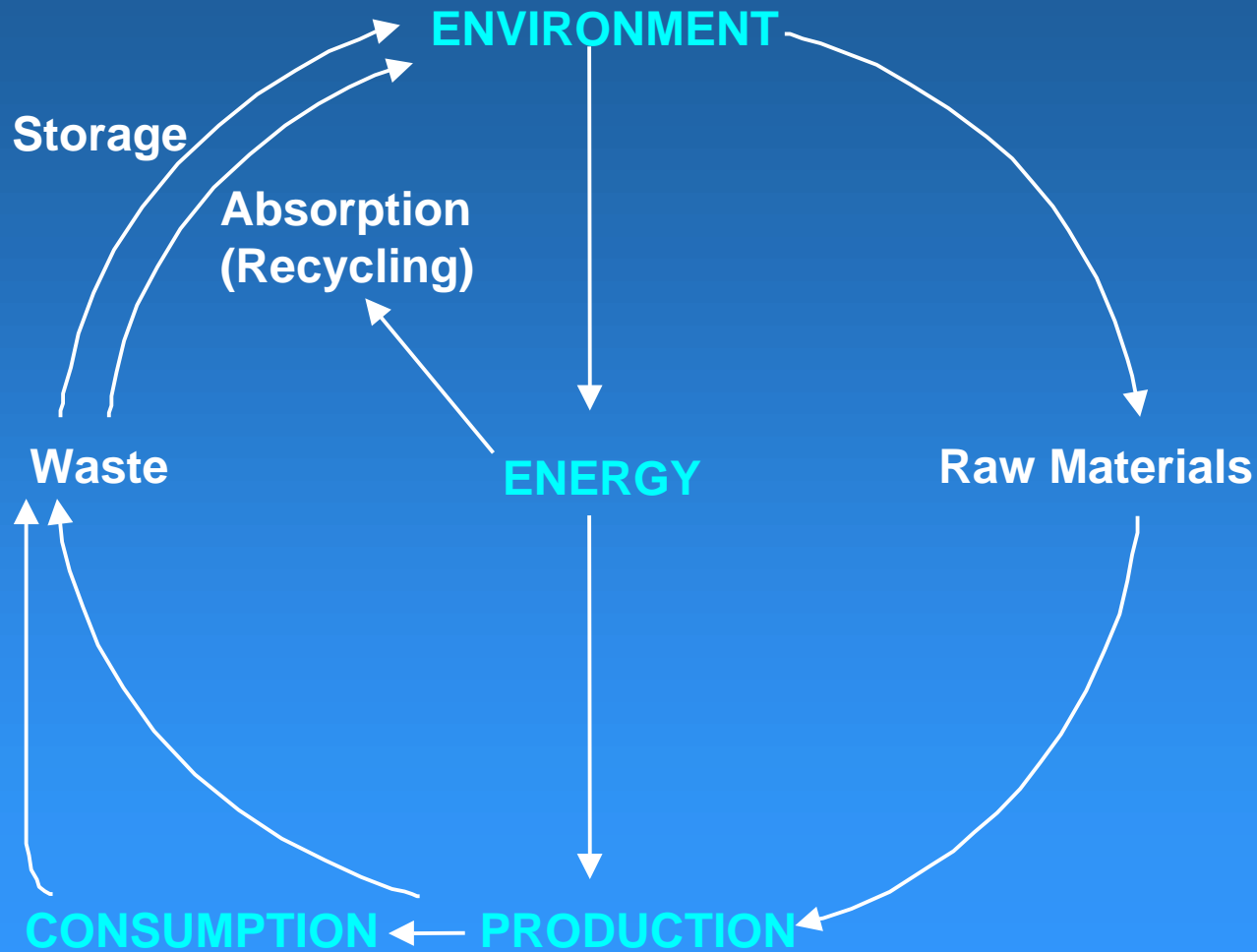
Ecological Economics

- Embrace a new picture of the economy which explicitly recognizes the interdependence of the economy and environment
- Preserve natural capital through sustainable management practices
- Adopt full-cost accounting to accurately calculate costs and benefits of proposed development projects and activities (e.g., green accounting, polluter pays)

The Conventional Model



The Ecological Perspective



Natural Capital

Establish sustainable harvest limits for renewable resources to preserve capital base



Full-Cost Accounting

- Recognize both **use** and **exchange** value
- Address externalities
- Recognize non-market goods
- Protect common and public resources
- Adopt long-term horizons
- Ensure equity

Market Distortions

- Dynamics of market supply and demand and limitations of pricing system can distort valuation of natural resources
- Must recognize and address deficiencies of classic economic theory in applying economic analysis in EIA:
 - » Price versus Value
 - » Discounting the Future
 - » Externalities
 - » Common and Public Resources

Price versus Value

Limitations of the market pricing system include:

- Total use value is ignored (i.e., value of natural resources only recognized when they become scarce)
- Non-market goods are ignored (i.e., excludes natural resources which cannot be easily exchanged)
- Necessitates that all goods be valued based on monetary worth

Discounting

$$NPV = P + \frac{P}{(1+r)^1} + \frac{P}{(1+r)^2} + \dots + \frac{P}{(1+r)^n}$$

Where:

NPV = Net Present Value

P = Stream of profits, benefits or costs

r = Rate of Return

n = Life of project

Discounting (Cont'd)

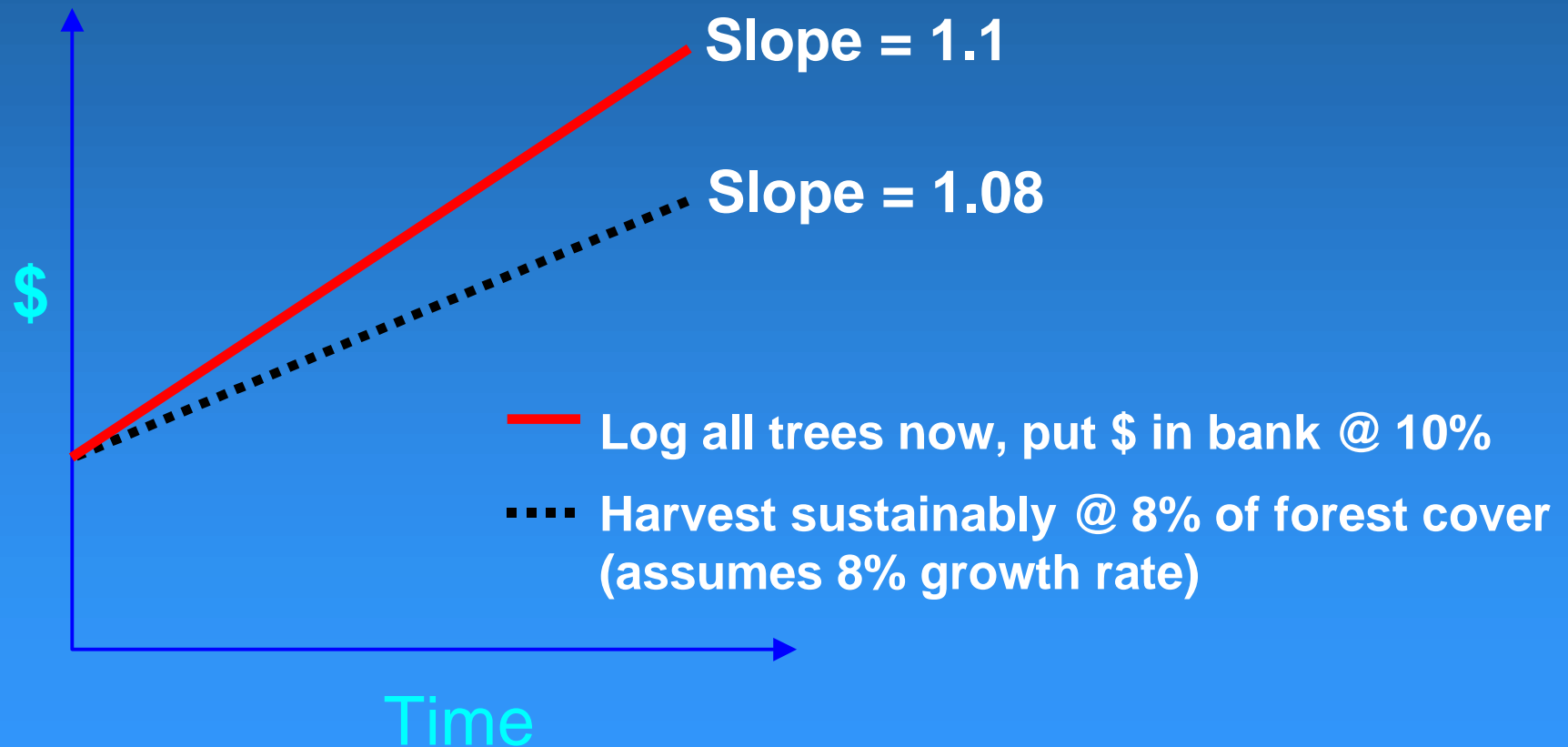
Net Present Value:

- The present value (P) of a future sum of money is the amount which, if invested today, will grow as large as that future sum, taking into account the rate of return that it will earn
- The sum of the present values of installments spread over several years is the net present value

Rate of Return:

- The interest earned on an investment; the percent of every dollar invested that is returned (or lost) through the success or failure of the investment

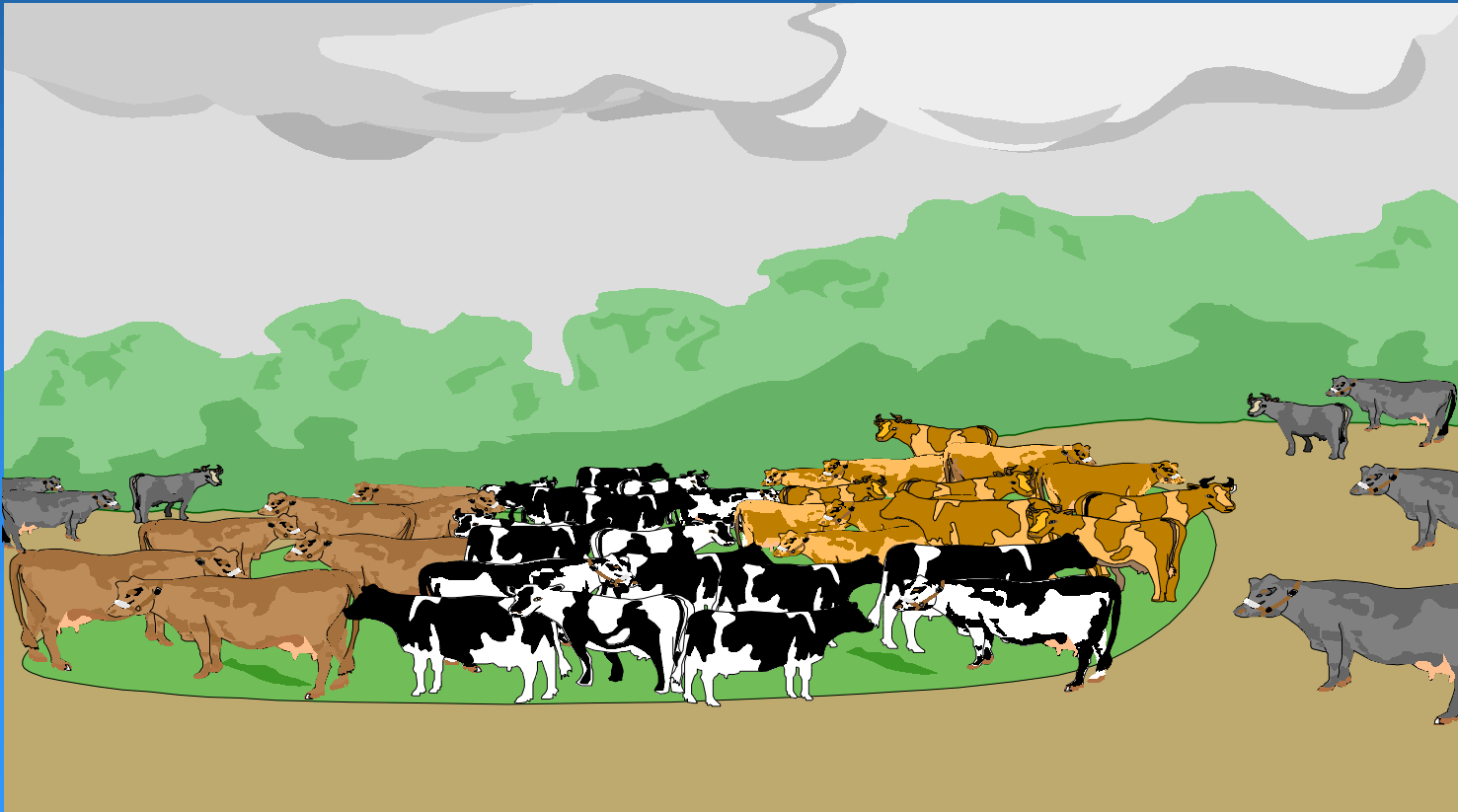
Discounting the Future



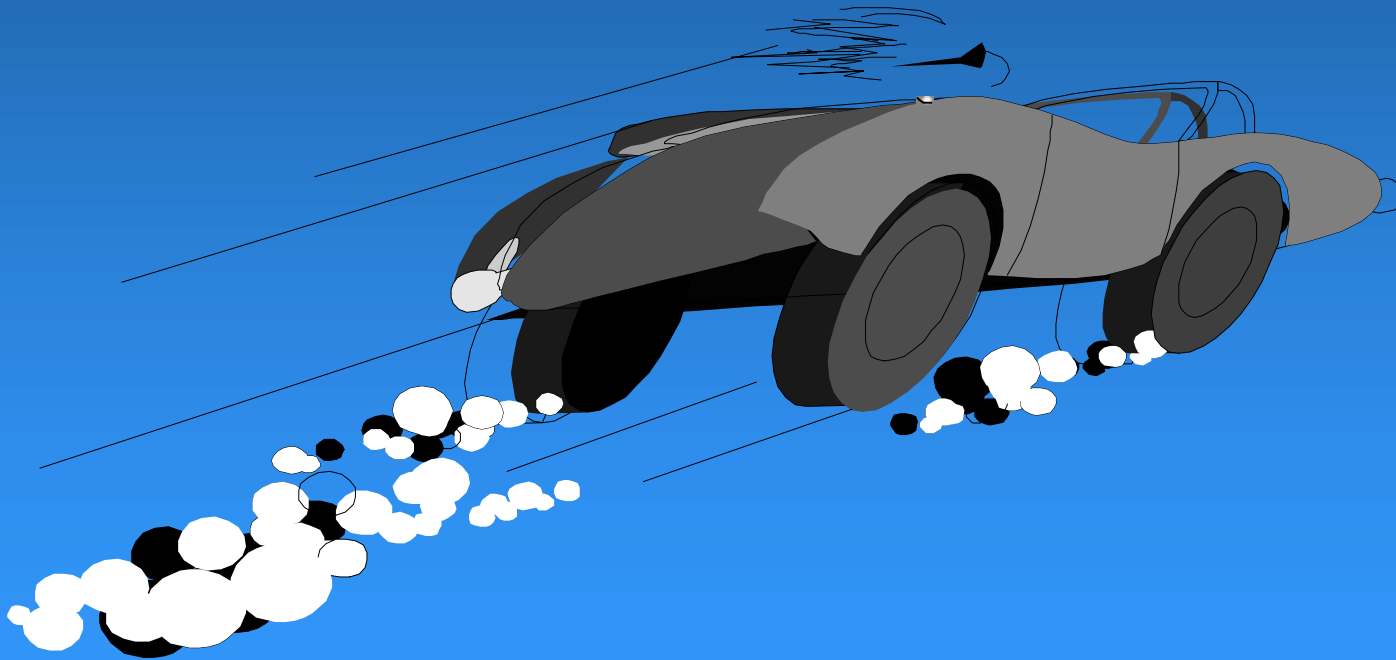
Externalities

An effect of one economic actor's activity on another's well-being that is not taken into account in the price system

Common Resources: Tragedy of the Commons



Public Resources: The Free Ride



Concluding Thoughts

Important points to remember are:

- Assumptions and practices of classical economics are often incompatible with sustainable management of natural resources
- Ecological economics recognizes the interdependency of the economy and environment
- Emerging methods for placing monetary values on costs and benefits associated with development projects and activities are increasingly being applied in EIA