Environmental Economics
Lecture 4

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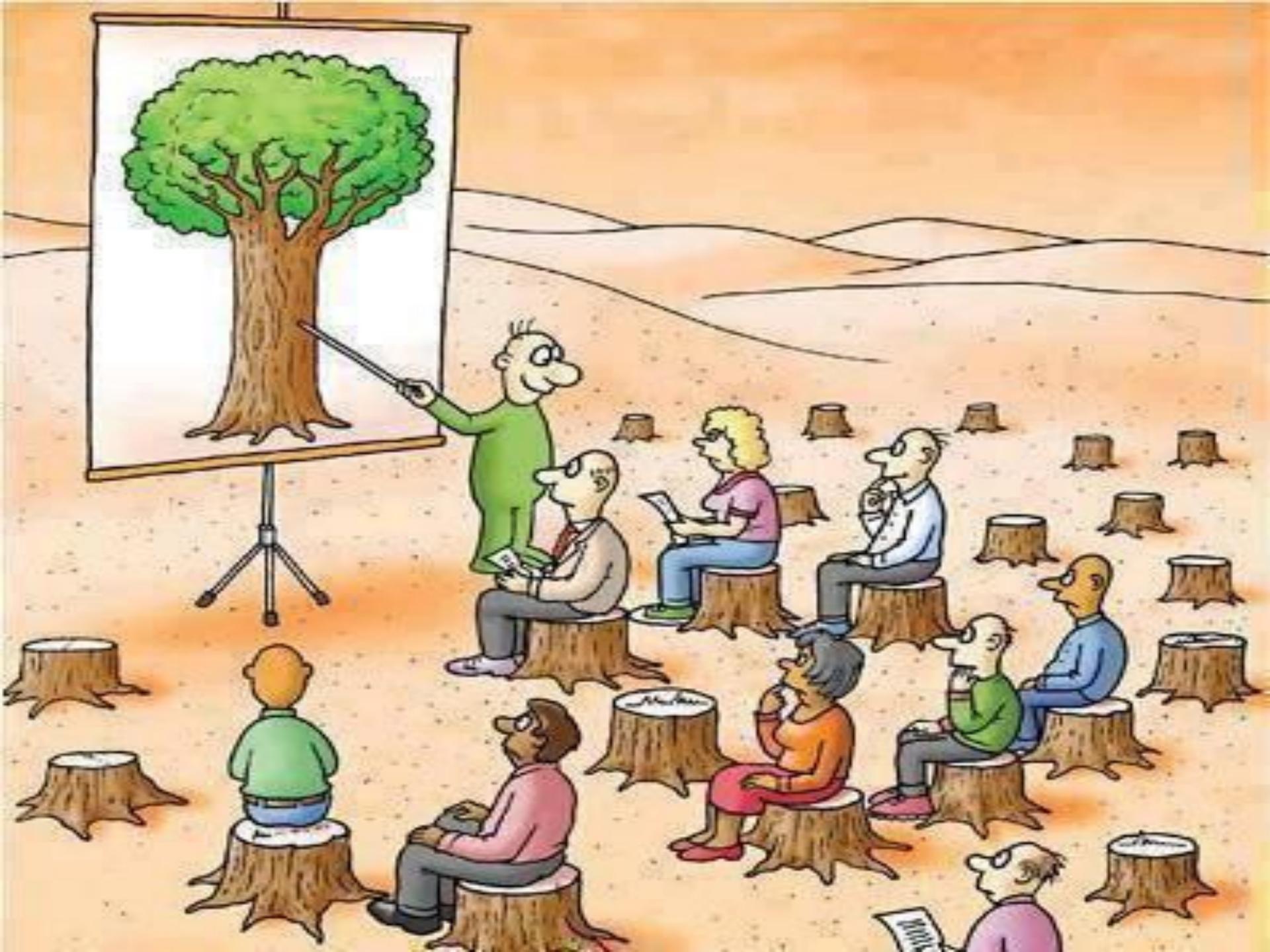


This Lecture Focus on

- How can we calculate the cost and benefits of environmental outcomes?
- Can we put a value on ecological system, or on human health and life?
- How can we weight the interests of future generations?

What is Cost-Benefit Analysis?

Is a well-documented tool for assessing the net economic effects of policies. CBA provides a systematic process for calculating, monetizing, and comparing the economic benefits and costs of a particular action, process, regulation, or project by putting benefits and costs in a common metric.

Why Cost-Benefit Analysis?

In some cases, however, governments must make specific **decisions** that have both economic and environmental implications.

In such cases, decision makers use Cost-Benefit Analysis (**CBA**) to balance the positive and the negative consequences of a proposed action.

CBA for An Dam Construction

Cost	Benefit
Farmland and wildlife habitat will be flooded	Hydro.electric Power
Communities will have to relocate	A Stable water supply for irrigation
Certain fish species may become extinct	Flood control
Reduce scenic white water rafting and hiking	Create new recreational opportunities for lake boating and fishing
others	Others

(Ex. construction of large Dam).

How?

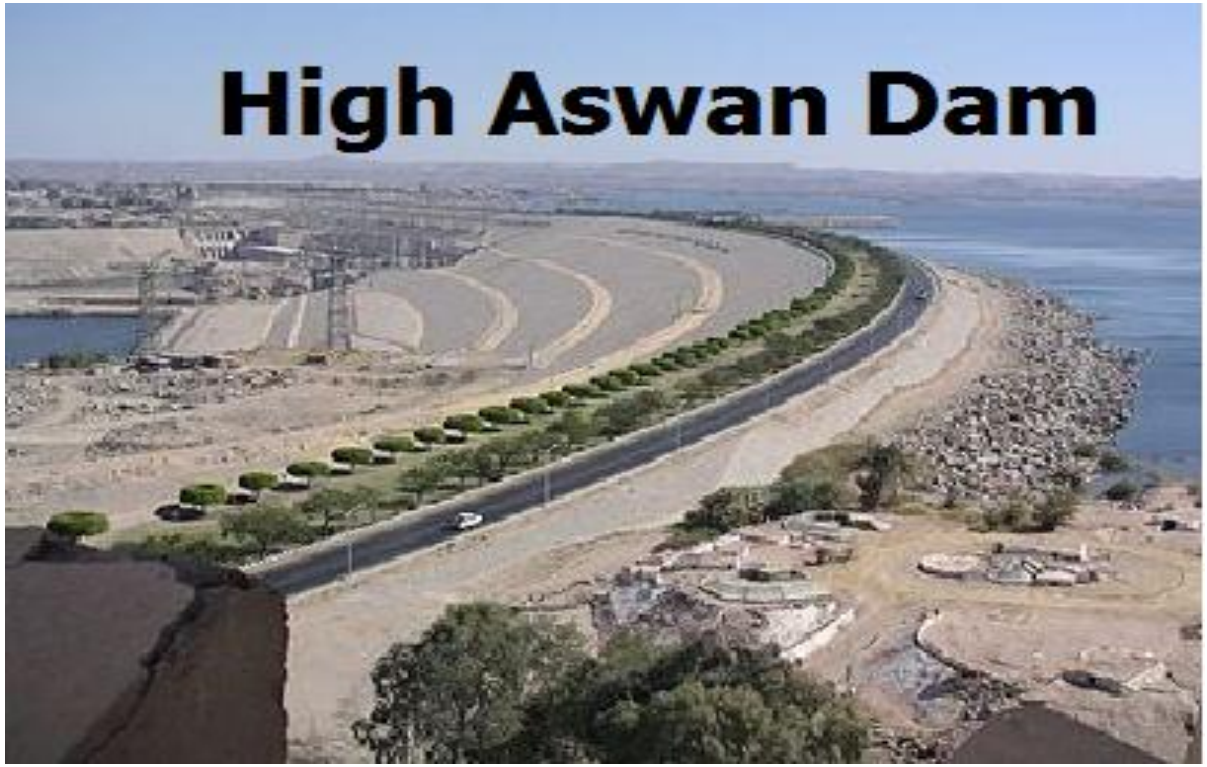
How can we evaluate whether or not to build the dam?

How can we put a dollar value on the social and ecological losses that will result?

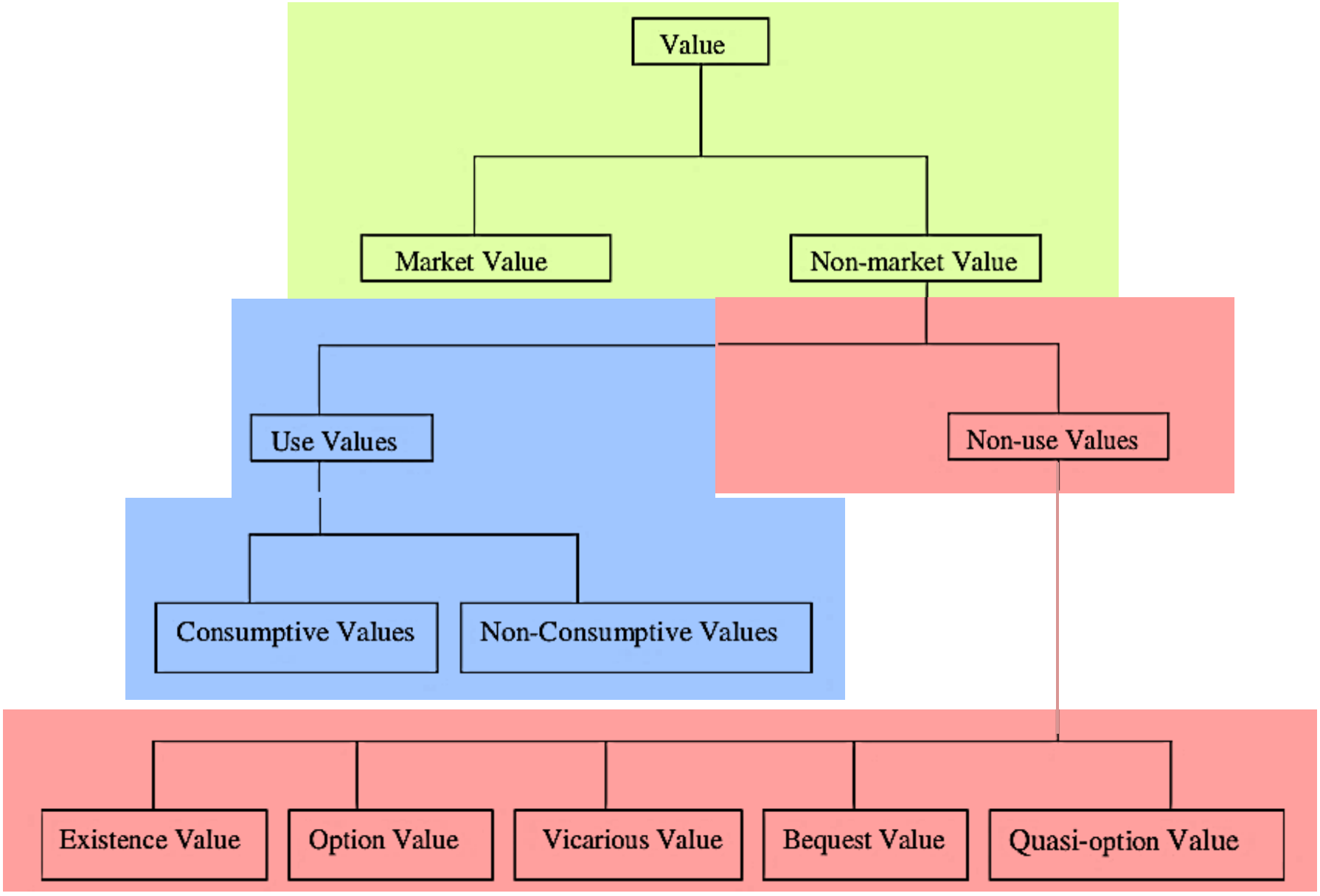
Estimating Value

For Dam Construction Case

Economists use various techniques to estimate different kinds of values.



Types of value



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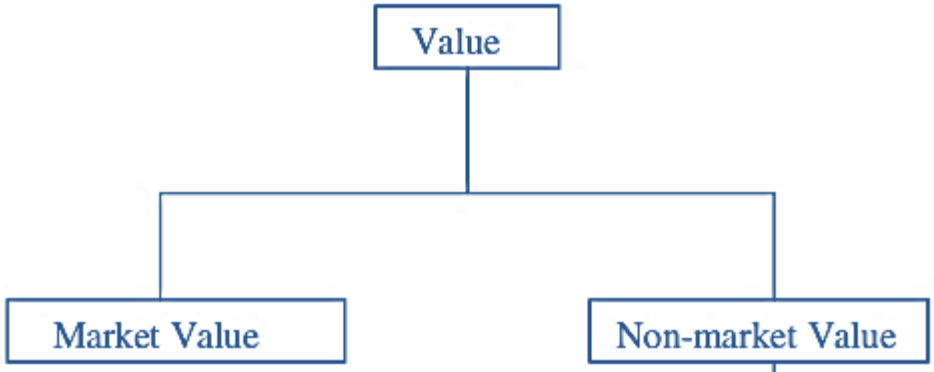
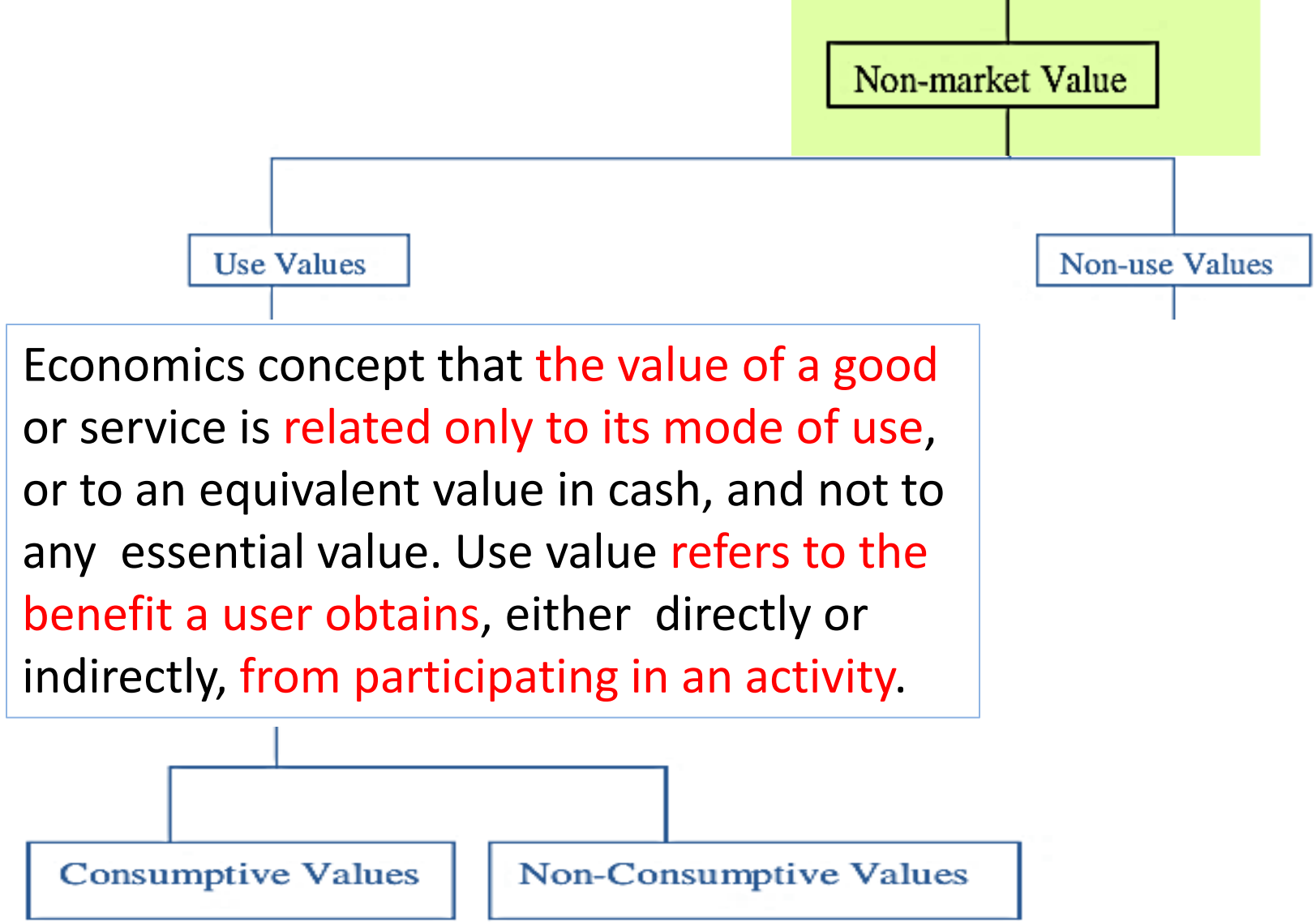
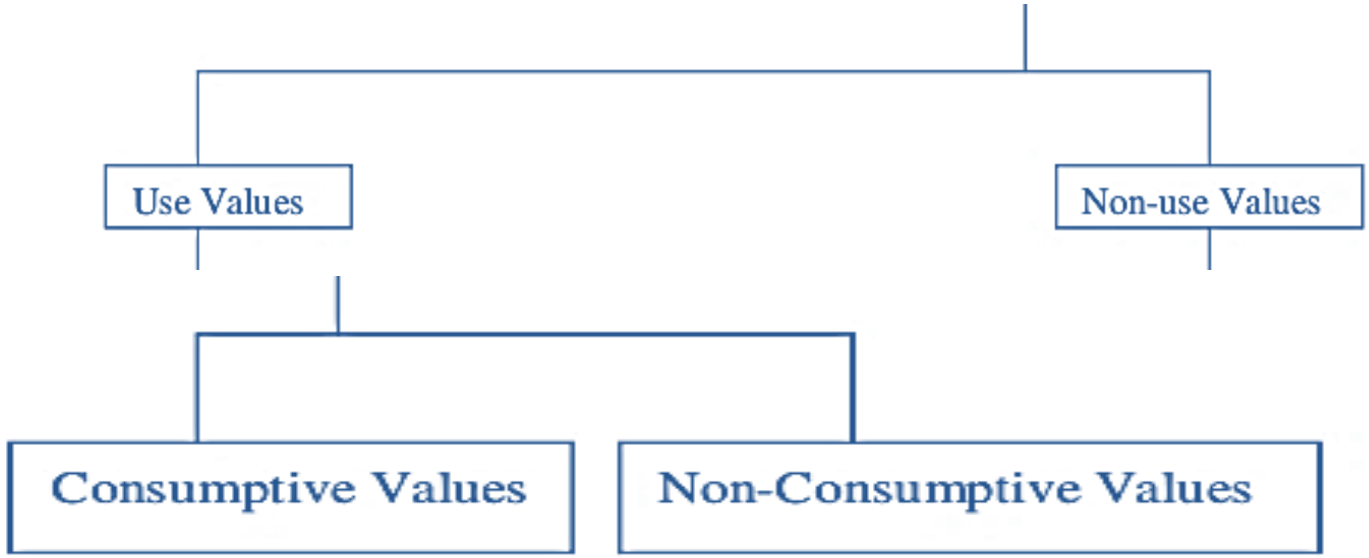


The price an asset would fetch in the marketplace

Or .. It is the price at which an asset would trade in a competitive auction setting.

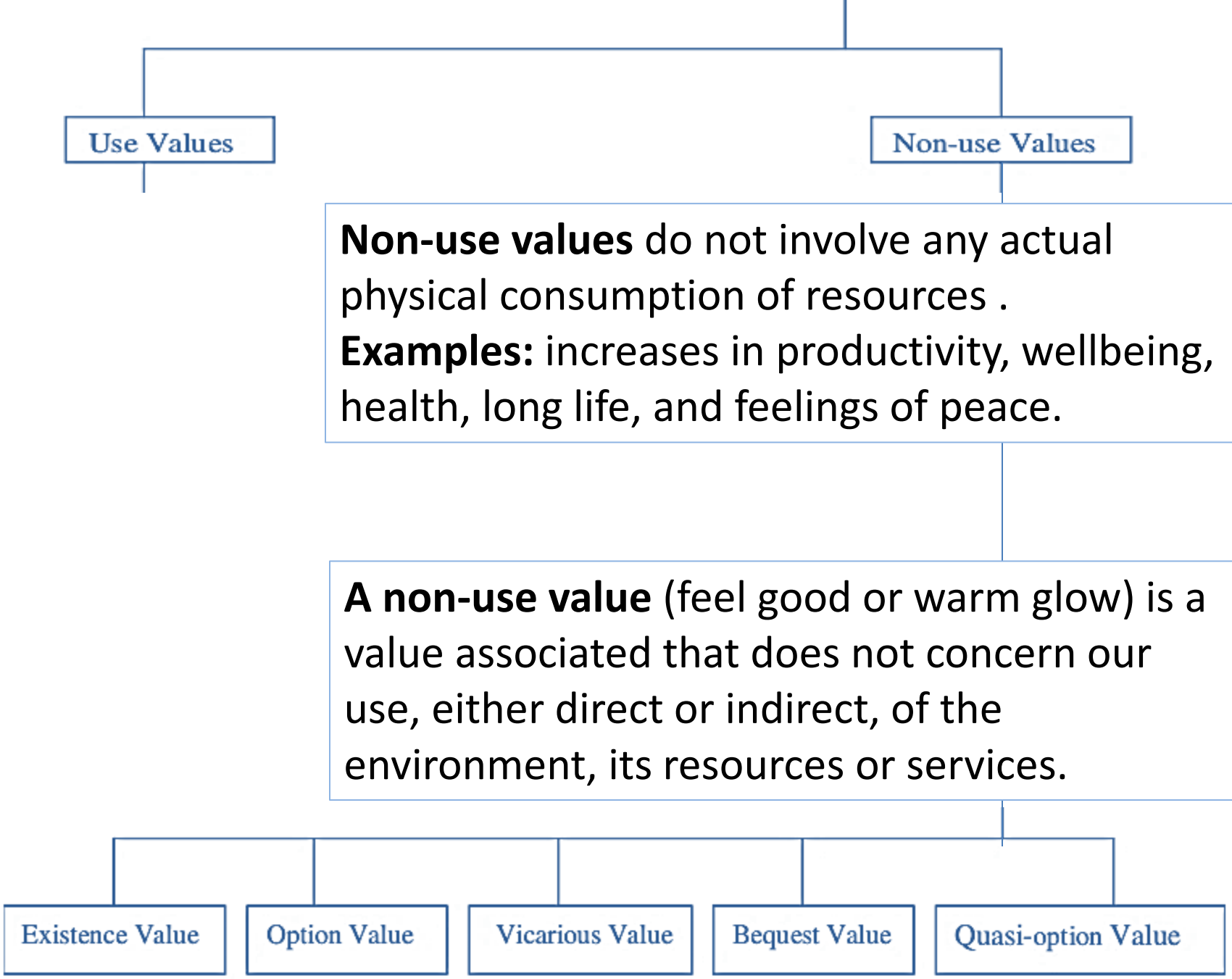
Most environmental goods and services, such as clean air and water, and healthy fish and wildlife populations, are not traded in markets. Their economic value -how much people would be willing to pay for them- is not revealed in market prices.


Non-market Value
Use Values
Non-use Values
Economics concept that the value of a good or service is related only to its mode of use, or to an equivalent value in cash, and not to any essential value. Use value refers to the benefit a user obtains, either directly or indirectly, from participating in an activity.
Consumptive Values
Non-Consumptive Values



= Consumptive use: can be described as participation in activities that utilize and possibly deplete the resources (e.g. hunting, fishing and tree cutting); while

= non-consumptive uses: activities that do not affect the resource (e.g. bird-watching in a national park).



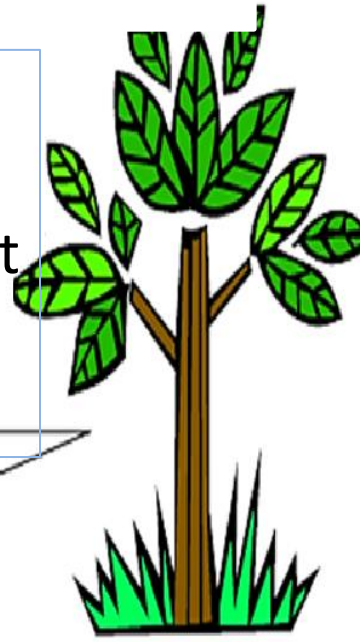
Non-use values do not involve any actual physical consumption of resources .
Examples: increases in productivity, wellbeing, health, long life, and feelings of peace.

A non-use value (feel good or warm glow) is a value associated that does not concern our use, either direct or indirect, of the environment, its resources or services.

Non-use values

Existence Value

Existence values are those benefits that are derived from the knowledge that non-timber amenities and resources will continue to exist regardless of the fact that the amenity or the resource may never be used, seen or visited.



reflecting the benefit people receive from knowing that a particular environmental resource, such as Antarctica, the Grand Canyon, endangered species, or any other organism or thing exists.

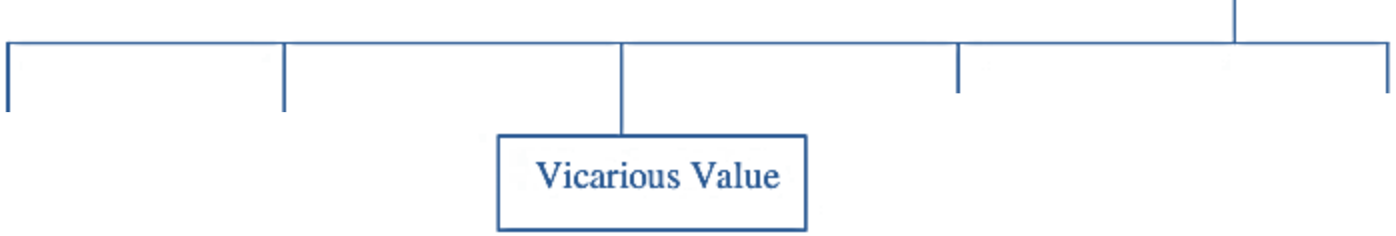
Option Value

Option value relates to the willingness to pay for an option to have the resources or services available in future when there is uncertainty attached to its supply.

Difference between the actual value of an option and the intrinsic value. The option value reflects the probable value of the option in the future.

Option values
Pharmaceutical products

intrinsic value : The actual value of a security, as opposed to its market price or book value. The intrinsic value includes other variables such as brand name, trademarks, and copyrights that are often difficult to calculate.



Vicarious value deals with the value placed on a resource that may have never been used or planned to be used like Pine Martens, pérégrine façons, etc.

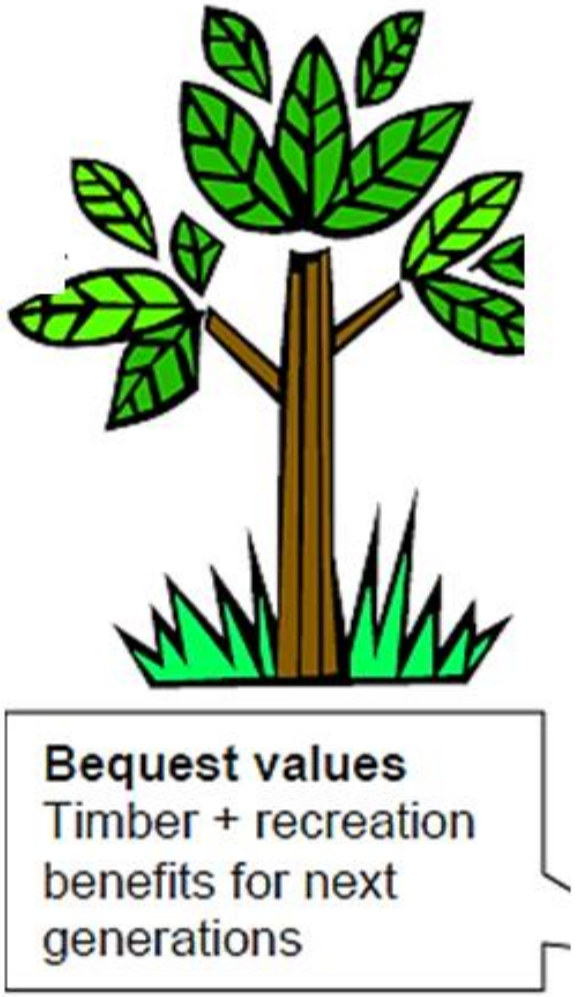
benefit may be derived from mere pictures, descriptions and other representations of the resource.

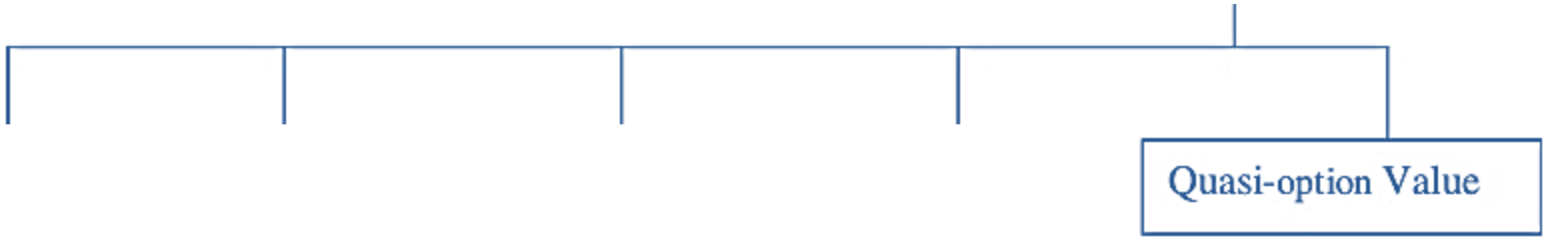
vicarious

If something is vicarious, it delivers a feeling or experience from someone else. If your child becomes a big star, you might have a *vicarious* experience of celebrity.

Bequest (= a legacy ***) value*** is the value assigned to preserving a resource for use by future generations.

In a forestry context, a bequest value could occur if an individual is willing and able to pay for the preservation of a forest resource so that his children and grandchildren find the resource in an intact (not damaged) state





***Quasi-option* value** is slightly complicated, it relates to the willingness to pay to avoid an irreversible development given an expectation that knowledge about the impact is in the offing.

The value of the future information made available through the preservation of a resource.

If you choose not to decide today, You still have made a choice in the future.

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WEBSITES

1. **http://www.rff.org/** Homepage for Resources for the Future, a nonprofit organization that conducts policy and economic research on natural resource issues. Many RFF publications available on their website use nonmarket techniques to value environmental services.
2. **http://cnie.org/NLE/CRSreports/Risk/rsk-4.cfm** A paper by the Congressional Research Service discussing the use of cost-benefit analysis as a basis for government regulations.
3. **http://www.epa.gov/safewater/arsenic.html** The EPA's 2001 cost-benefit analysis of the arsenic drinking water standard for public water supplies in the United States.