



The Regional Training Workshop
Economic Valuation of the Goods and Services of Coastal Habitats
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Samut Songkram Province, Thailand



Overview of economic valuation: value classification and valuation method

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Ecological aspect

Socio-cultural aspect

Characteristics of coastal habitats

bio, chem, physical interactions

Social, cultural, institutional interactions

Four ecological functions: regulation, habitat, production, information

Ecology-economics

Human connection to habitats (ecosystem services: ES)

Goods (inputs & output)

Services

Economic valuation

Economic values of natural resources & environment

Direct use value

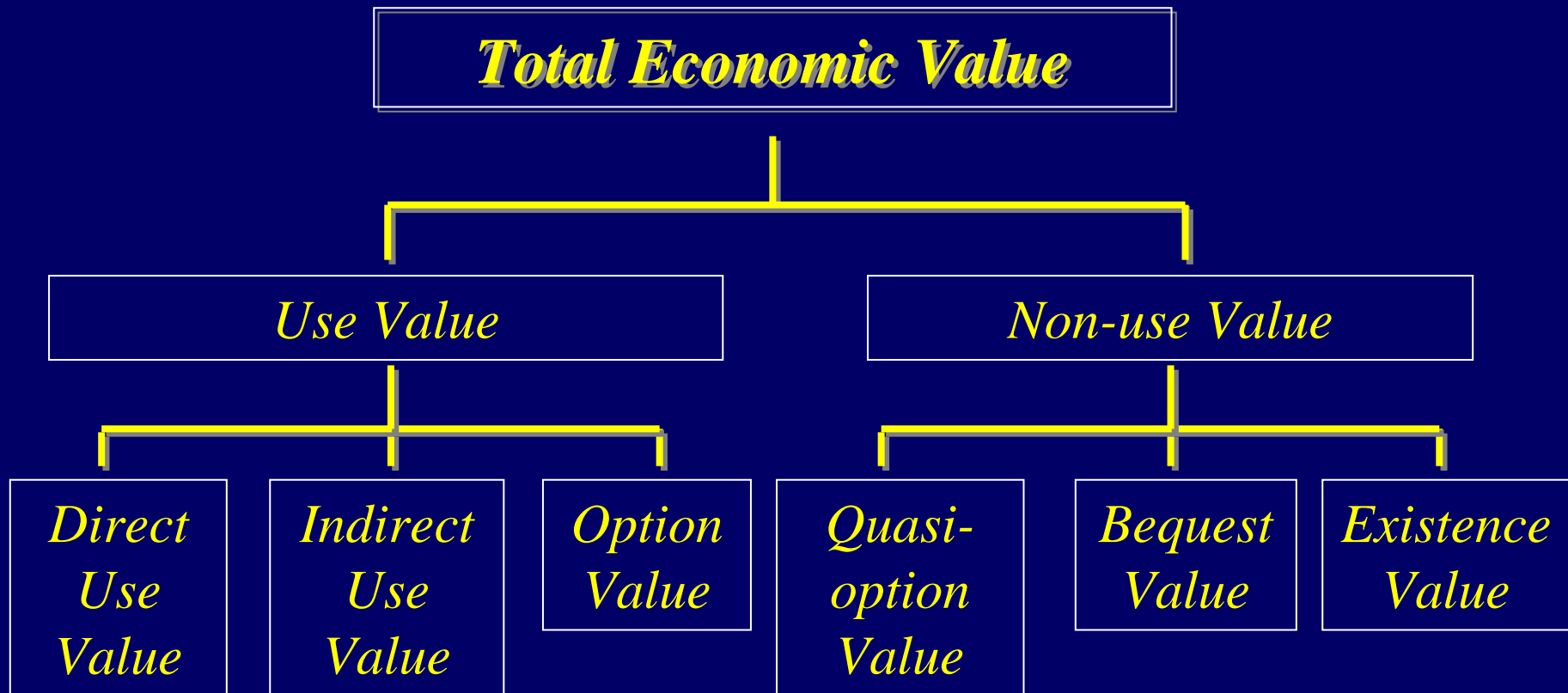
Indirect use value

Non-use value

Option

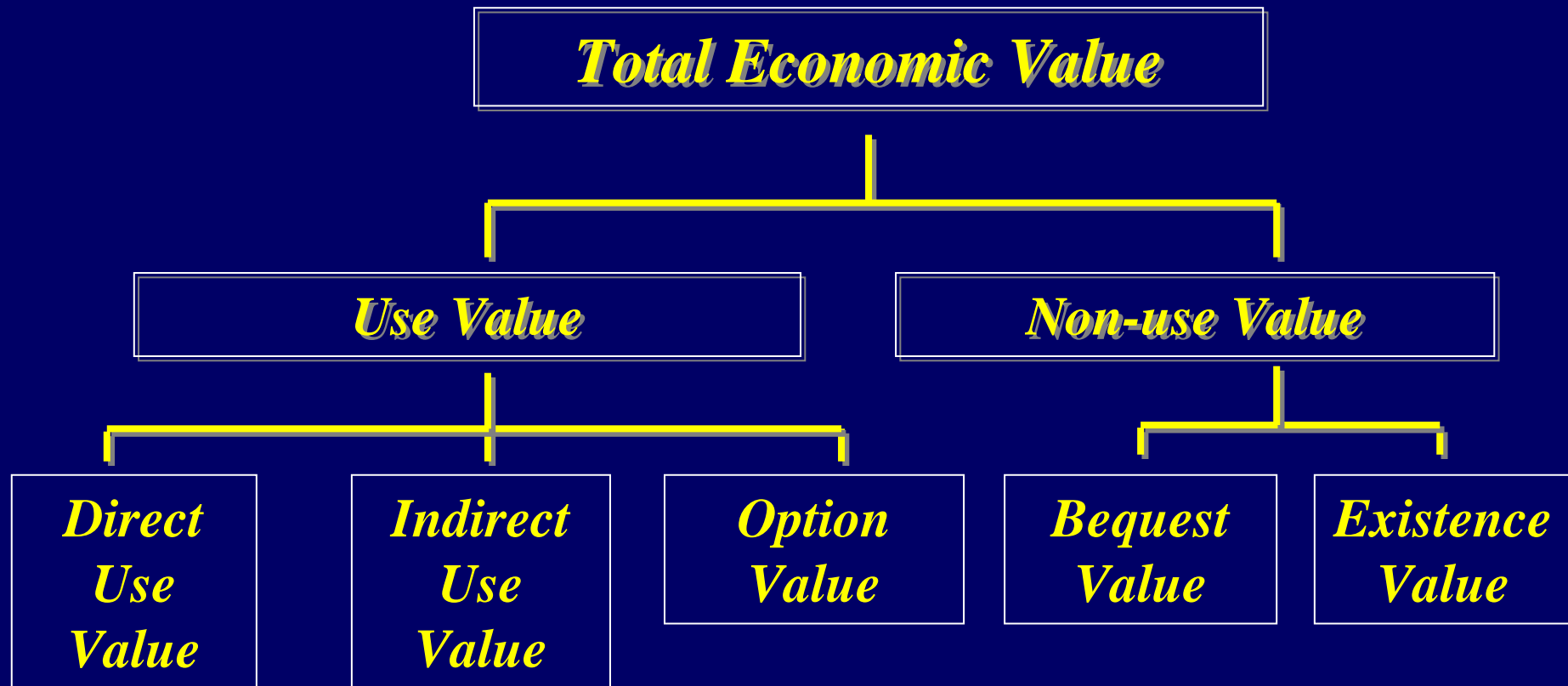
Total Economic Value

Component of "Total Economic Value"



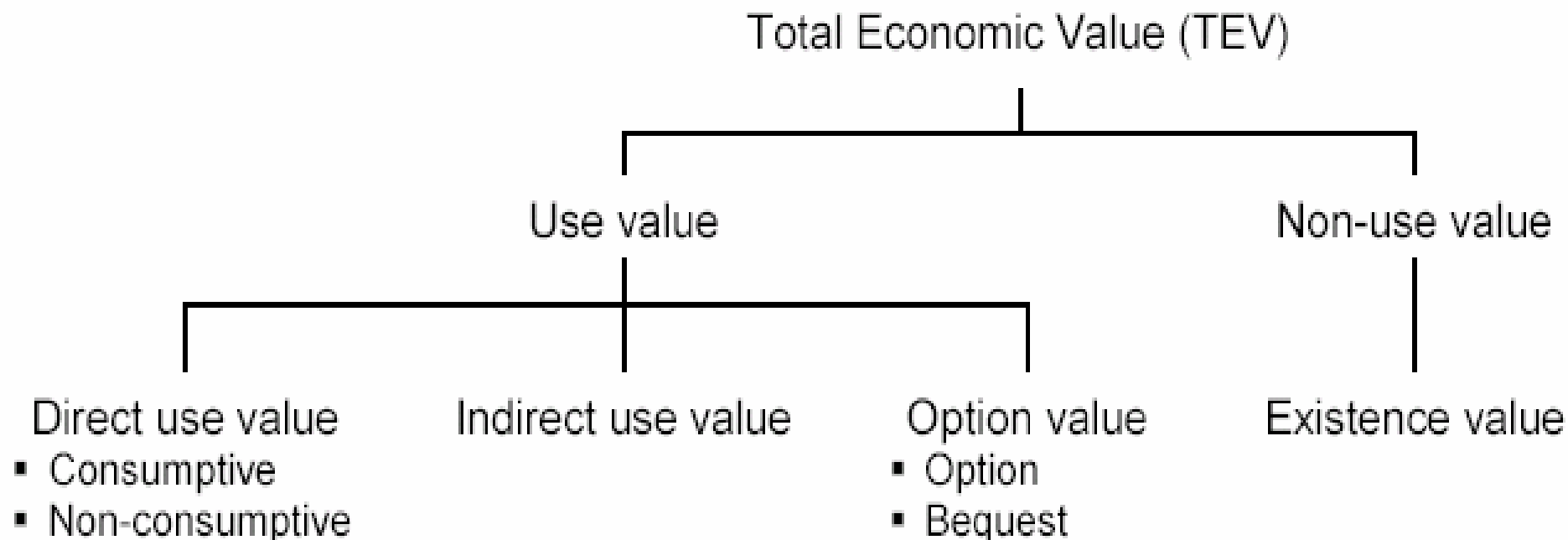
Note: this classification of value is used in UNEP/GEF/SCS guideline

Component of "Total Economic Value"



Note: this classification of value is found in many text books.

Figure 3.1: Typologies of ecosystem services: Total Economic Value



Source: Pagiola, Stefano, Konrad von Ritter, and Joshua Bishop. 2004. *Assessing the Economic Value of Ecosystems*. The World Bank Environment Department, Environment Department, Paper No.101

Here: Conservation value is the same as existence value or non-use value or sometimes “passive use value”.

Total Economic Value (TEV)

Use Value

Non-use Value

DIRECT USE VALUE
(consumptive, and non-consumptive)

INDIRECT USE VALUE

OPTION VALUE
(incl. bequest value & quasi-option value)

EXISTENCE VALUE

Provisioning function
-Water
-Food -etc.
Cultural & amenity (information function)
-Recreation
-Spiritual use

Regulating function
-Climate regul.
-Flood prev.
-Soil retention
-Air & Water purification
-Nursery

Estimated potential *future benefits* of **ALL** goods and services (including **Supporting function**)

Supporting function
i.e. the intrinsic value placed on natural habitats and wildlife

TEV categories

Examples of associated values

Total Economic Value

Total economic value (TEV) is the sum of the use value (UV), option value (OV), and non-use value (NUV).

$$TEV = UV + OV + NUV$$

Use value

$$UV = \text{direct use value} + \text{indirect use value}$$

Non-use value

$$NUV = (\text{bequest value}) + \text{existence value}$$

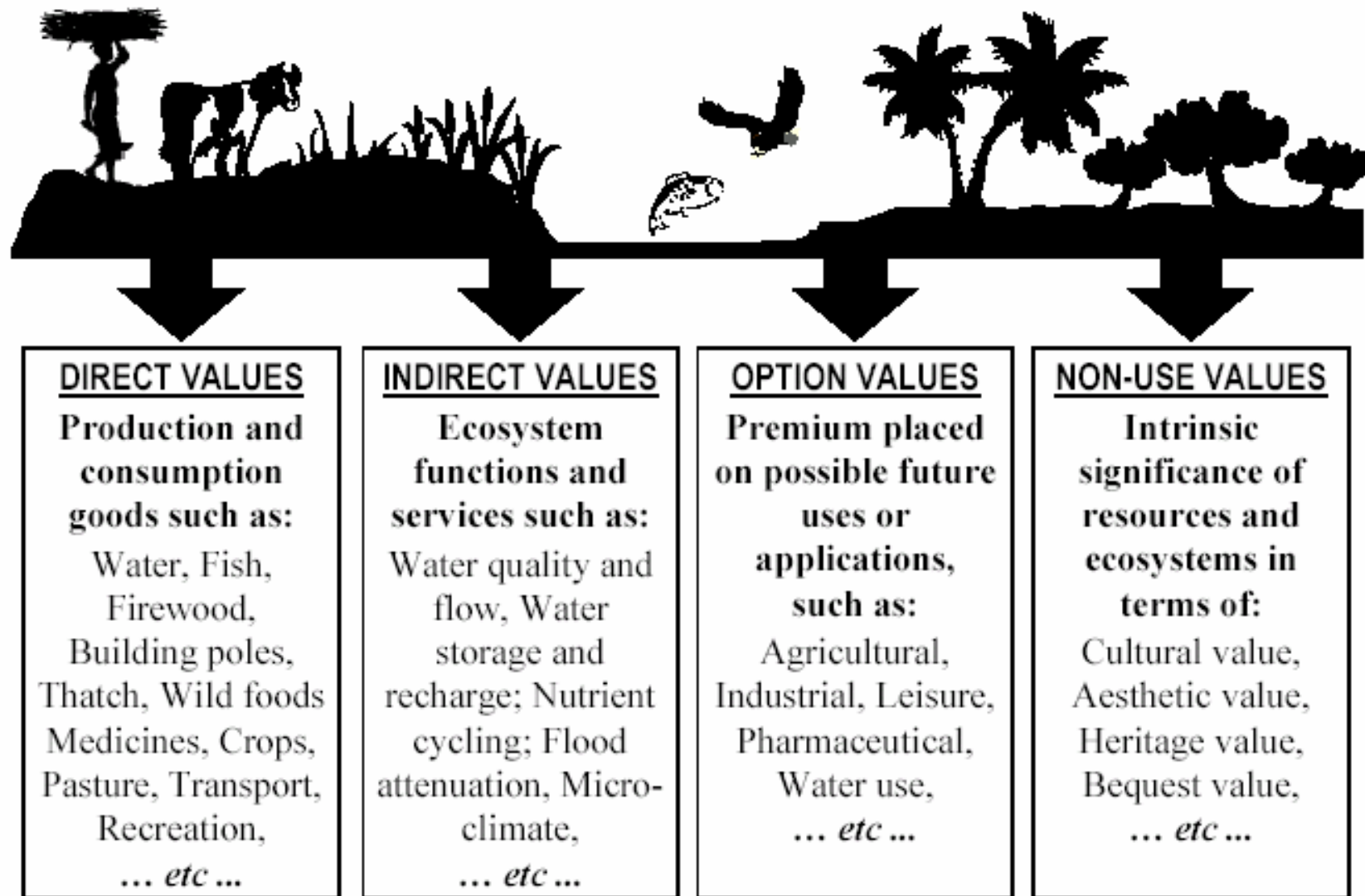
Simple description of total economic value

<u>Type of values</u>	<u>Description</u>	<u>Example</u>
Direct use value	Goods/services that can be consumed directly	Food, medicinal plants, fuel wood, ecotourism
Indirect use value	Functional benefits	G &S derived from regulation function, ie, flood control, storm protection
Option value	Future direct and indirect use values.	Pharmaceutical products, biodiversity, conserved habitats.
Bequest value	Value of leaving use and non-use values for next generation	Habitats, irreversible changes.
Existence value	Value from knowledge of continued existence, e.g.. based on aesthetic, cultural, & moral aspects	Habitats, endangered species.

Economic Value of Mangrove Forests

Direct Use Value	Indirect Use Value	Option Value	Non-use Value
Timber, firewood, woodchips, charcoal Fisheries Forest resources: food, medicine, construction materials, tools, dyes, Wildlife Agricultural resources Water supply Water transport Genetic resources Tourism and recreation Human habitat, Educational, historic and scientific Information	Shoreline / riverbanks stabilisation Groundwater recharge and discharge Flood and flow control Human waste and pollutants storage and recycling Biodiversity maintenance Migration habitat provision Nursery and breeding grounds for fish Nutrient retention Coral reef maintenance and protection Saline water intrusion Prevention	Future use as per (1) and (2)	Cultural and aesthetic Spiritual and religious

Figure 1: Total Economic Value of Wetlands



From Emerton 1999

Valuation Method

(theoretical approach – *typically taught in economic class*)

Methods based on economic approaches of BENEFIT MEASUREMENT (measuring change in human welfare or “UTILITY”)

1. Reveal preference approach (SP)

=>> observation of people acting in the market

2. Stated preference approach (RP)

=>> people's responses to hypothetical questions on their WTP/WTA for a change in goods & services of ecosystem

(Mitchell & Carson, 1989)

Other methods are considered non-econ. approaches

Valuation Method

(practical approach- *different from economic class*)

Methods based on types of data availability

1. Valuation using conventional market price

1.1 direct market based value (actual value)

1.2 indirect market based value (value of other goods with related type of services)

2. Valuation using surrogate market

2.1 travel cost

2.2 hedonic price

Valuation Method

(practical approach- *differs from economic class*)

Cont.

3. Valuation using hypothetical/simulated market

=>>survey of "willingness to pay/willingness to accept" value

3.1 contingent valuation

3.2 attribute-based or choice modeling

4. Valuation using other techniques, i.e.,

4.1 benefit transfer

4.2 participatory economic valuation

Market prices

Direct market based value

=>> Market prices can be used to value products with established markets.

=>> Typically, local market prices (on-site sale value) can be a good approximation of environmental values, where such prices are available.

=>> This approach is the most obvious means of establishing a value for extractive uses of an environmental good.

Example.....

Prices of related goods and services

Indirect market based value

=>> G & S that have no immediate market values

=>> Products that are home-consumed and have never reached market (Cost of substitutes)

firewood => kerosene price

=>> Services derived from regulating function (Substitute cost/replacement cost/preventive expenditure)

shoreline protection of mangroves => man-made sea defence

Prices of related goods and services

Cont.

=>> Change in environment services derived from provisioning function cause a change in production of human activities

(Change in productivity)

loss of mangroves => change in captured fisheries

=>> To use this approach we need to identify the "LINK" between G&S derived from ecosystem and "marketed goods" to be considered.

Other examples.....

Surrogate Market

Travel cost method (TCM)

=>> We estimate the "demand curve" for an environmental resource

Note: a very cruder version of travel cost method can be based on average travel cost to get to an ecotourism area, accommodation, entrance fees and other charges.

Hedonic price (HPM)

=>> We estimating the influence of environmental attributes on **property value**, usually houses.

Hypothetical Market

(survey based)

Contingent valuation method (CVM)

=>> We construct a hypothetical market in which users are asked to express their willingness to pay (WTP) for the benefits or willingness to accept (WTA) compensation for losing them

Choice modeling (CM)

=>> We construct/design the choice set that involves with the price attribute along with different resource attributes/change in G&S then ask people to rank/rate/choose alternatives rather than explicitly express a WTP or WTA.

Other techniques

Benefit transfer (BT)

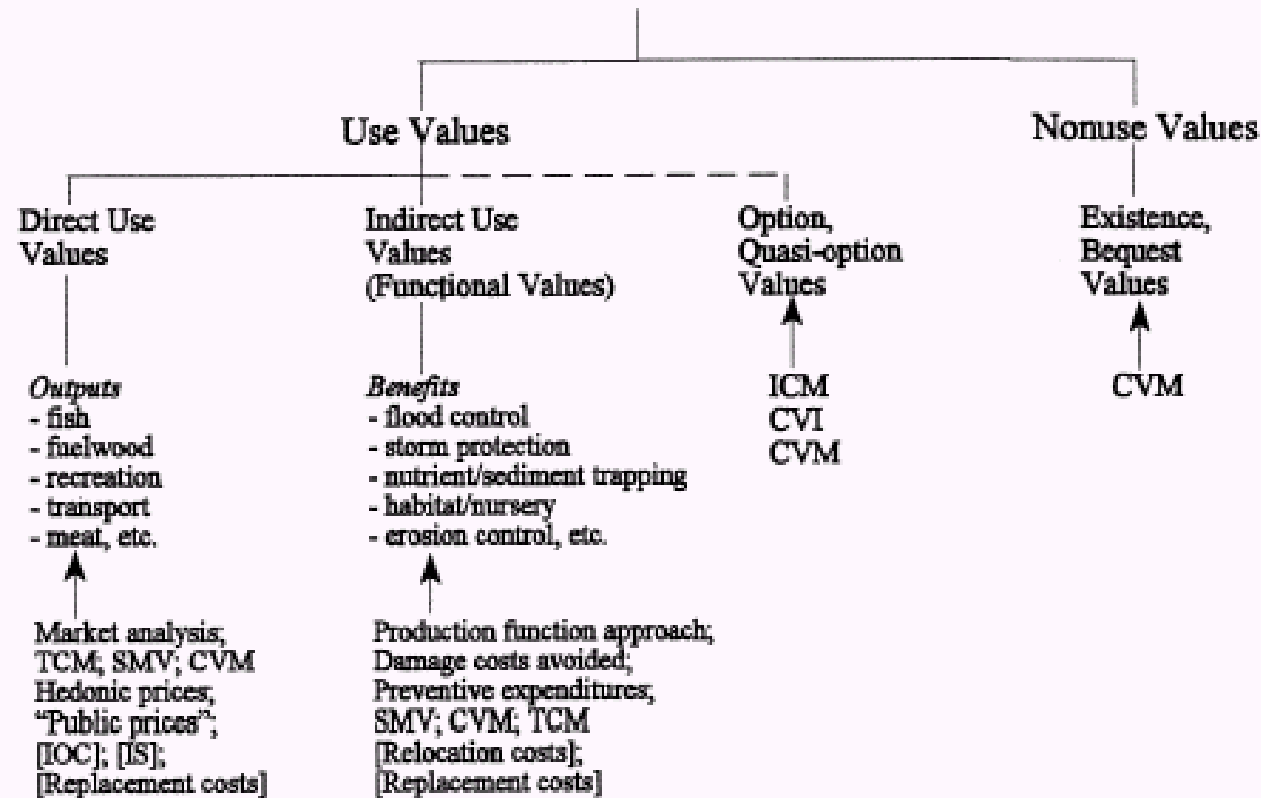
=>> We take the results of one or more primary (original research) studies that estimate values for similar projects and impacts then modify and transfer the values to the project being evaluated

Participatory economic valuation (PEV)

=>> We allow people to define the values of resources within the context of their own

=>> The method is used when other standard methods are not applicable and when cash prices have little relevance as an indicator of values.

Classification of Economic Values



- Notes:
- ICM = individual choice models
 - CVI = conditional value of information models
 - CVM = contingent valuation method (including contingent behaviour/ranking methods)
 - TCM = travel cost method
 - SMV = surrogate market valuation (household production function models)
 - IOC = indirect opportunity cost approach
 - IS = indirect substitute approach
 - [] = valuation methodology to be used with care

Source: Based on Barbier (1994).

Source:
E.B. Barbier
:Ecological
Economics
35 (2000) 47–61

Fig. 1. Valuing wetland benefits.

Remarks:

1. All the market value approaches give you only "*the use value*" of the environment. Non-use value is not included
2. With limited time and budget, start with a simple approach.
3. Always take into consideration of your research objectives and theoretical validity in selecting the valuation approach.
4. If time and budget allowed, proceed with >1 methods for value assessment, ie., preventive expenditure vs. CVM, replacement cost vs. change in productivity.
5. Method such as cost of illness, replacement cost, etc. do not use economic approach (we don't measure change of people's benefits).