

Course Natural Resource Management
Environmental Public Policies
UniLaSalle Rouen

Carmen Cantuarias-Villessuzanne, PhD

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Part II

- 1 Valuation of environmental goods
 - Chapter 3. Principles of valuation
 - Chapter 4. Valuation methods

Objective of the chapter 3

- To understand the principles of valuation, and the total economic values of environmental goods.
- To underline the difference between the use values and the non-use values.

Chapter 3. Principles of valuation

Types of evaluation :

- Ex-ante valuation : used to determine whether proposed actions are desirable (e.g., implementation of an environmental tax).
- Ex-post valuation : used to measure the effectiveness of implemented policies or the damage caused to the environment by damaging incidents (e.g. oil spills, pipeline rupture).

Initially, the environmental risk control process is divided into two parts :

- Risk assessment : designed to identify the magnitude of risks.
- Risk management : examines the value of various available options to risk control.

Risk assessment : 4 steps

- ➊ Hazard identification : indicates whether exposure to an agent can cause adverse effects on humans or the environment.
- ➋ Dose-response relationship : characterizes the link between the intensity and duration of exposure to the agent and the appearance of harmful effects on health.
- ➌ Exposure assessment : allows to estimate the intensity, taking into account its duration and its frequency.
- ➍ Risk characterization : consists of estimating the general effects of an agent on a given population based on the dose-response relationship and the exposure assessment.

France : National Health-Environment Plan 4 (PNSE 4), "Mon environnement, ma santé" (2020-2024)

Evaluation of benefits related to risk managements

The evaluation techniques can be used to evaluate :

- damage caused by pollution and
- the services provided by the environment.

Attention ! Each context is associated with specific issues.

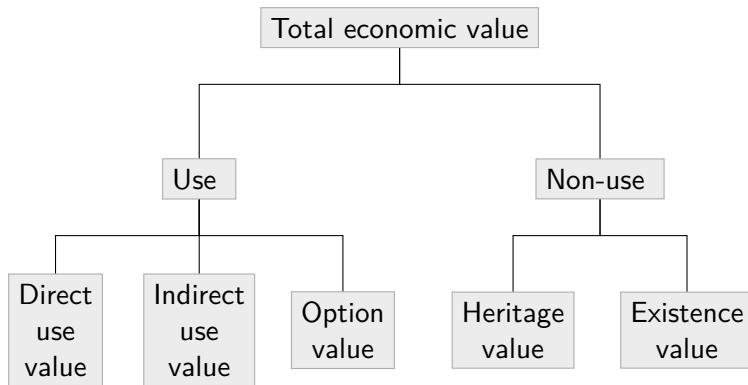
Types of values

Major categories :

- ① use value,
- ② option value,
- ③ non-use value.

(Tietenberg et al. 2013)

Total economic value



Source : Sterner, 1993.

Use value

Use value

This value refers to the direct use of an environmental resource.

For example : fish caught at sea, wood cut in a forest, water drawn from a river for irrigation, and even the beauty of a natural landscape.

Pollution can cause a loss of use value.

For example : when air pollution increases the risk of health problems, when an oil spill degrades a fishing area, or when polluting fog obscures a landscape.

Non-use value

Direct use value

The direct use value corresponds to the value of goods taken or services rendered directly by the environment.

It is the value we place on the air we breathe, the lumber we use, the park we visit.

Indirect use value

Indirect use value refers to the value that can be created through the indirect use of the environment.

It is the value given to a landscape that generates tourism.

Option value or option price

Option value

Option value refers to the willingness to pay to protect an aspect of the environment for the future.

This value reflects the desire to protect some potential for future use.

Survey



Video Questions

Are you planning to visit the Camargue Regional Nature Park next summer ?



Would you be willing to pay now to have the option to go there one day ?

Quasi-option price

Quasi-option price

The quasi-option price refers to the holding of an asset for which it is not known whether it will be of interest for a potential future use.

For example, deforestation threatens species that could have a use, particularly in medical matters, that is still unknown.

Non-use value

Non-use value

Non-use value refers to the general observation that people are willing to pay to enhance or protect resources they will never use.

- Pure non-use value is also called existence value.
- Bequest value is another type of non-use value and it refers to the willingness to pay to preserve resources for future generations.
- These values derive from motivations other than personal use, and are of course less tangible than use values.

Willingness to pay

All value categories can be combined to estimate the total willing to pay (WTP) :

WTP

$$WTP = V_u + V_o + V_{nu}$$

where V_u is the use value, V_o the option value and V_{nu} the non-use value.

Environmental liability regime

- The law on environmental liability (ELR) adopted on August 1, 2008 and its implementing decree of April 23, 2009 transpose the European Directive 2004/35/EC (DRE) into French law.
- The ELR establishes a framework for environmental liability based on the polluter-pays principle, thus creating a new liability regime.
- An operator responsible for damage covered by the ELD must restore the environmental damage in nature, i.e. by identifying and carrying out the repair operations itself on the ground, at a "reasonable cost" to society.
- Any financial compensation is explicitly excluded.

Ecological damage

Ecological damage

It is defined as any significant damage of the components or functions of ecosystems or of the collective benefits derived by humans from the environment.

It is henceforth reparable, in priority in nature.

(MTES, 2018).

Ecological damage is recognized by case law in the Erika case (September 2012), it is now included in Article 4 of the law for the reconquest of biodiversity, nature and landscapes of August 8, 2016.