

ENVIRONMENTAL GOODS VALUATION: THE TOTAL ECONOMIC VALUE

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1. Introduction

Environmental deterioration can be defined as "the loss of capital- nature". "Environment accounting" becomes the paradigm of the conservation and preservation of such capital by the same standards of an enterprise patrimony. Environmental goods valuation can be a prerequisite in order to control and contain the damages caused by man to the environment (Bishop and Woodward, 1995).

From the cowboy economy attitude, according to which the natural environment had to be conquered and civilized in conformity with the idea of the open system and that of continuing economic growth (abundance of resources, expensive use of energy), we have passed to a different perception of the environmental problem, the spaceman economy. The Earth-Spaceship metaphorie the consideration of a circular economic system, has given prominence to the typical limited aspect of environmental resources. Environmental deterioration main artificer is the industrial and commercial "criminal development", permitted by the incessant technical and scientific acceleration. Nevertheless the deterioration accomplice is often "the missing awareness and determination of the total economic value of resource and natural functions" (Barbier 1989). The environmental conceptual apparatus is that of the Economy of Wealth. In contrast with some of these theoretic presuppositions, a second discipline has been delineated: the ecological economy, whose epistemological principles are different (Stellin and Rosato, 1998). The ideological visions concerning environmental problems can be summarily assembled into two general categories: "technocentrism" and "ecocentrism". The former category includes the positions considering, on different levels, the natural patrimony whose aim is the satisfaction of human needs; the category of ecocentrism enlarges the ethic reasoning and arrives at ascribing rights, moral interests to non-human species, even to environmental a biotic components. The environmental patrimony protection is by now a prerogative of developed countries. But its effective accomplishment is hampered by a conjunction of factors deriving from the difficulties in valuating the shocks undergone by the system; from the rapid and sufficient realization of their presence, so to prearrange appropriate countermeasures; from the achievement of a difficult balance between misuses containment and pollution from one side, and stimulation of the industrial production from the other. According to the contemporary economic perspective, environmental goods such as air, water, fauna are valuable goods, since they offer a flow of services to the individuals. In the service economic value the measuring process of services, supplied by natural resources, is a part of the benefit/cost approach. In conformity with this statement an enlarged point of view should be adopted, so to make the services real flow supplied to society and economy in natural resource readable: before all as an input source (fossil fuels, lumber, minerals, etc.), secondly as an indispensable element for human life (breathable air, livable climatic condition, etc.), then as a supplier of a series of reconstructive and landscape opportunities and finally as a system capable to receive and waste the surplus coming from the human activity. Consequently, the environmental economic value can be defined as the sum of flows discounted net values deriving from all the offered services: the benefits of an increasing support of any environmental service flow are given by the increase of the service discounted value. Likewise pollution damages correspond to the reduction in the service flow. The used value concept is founded on the economy of wealth: the individual wealth/utility dose not depend only on consumed - public or private- but even on the quantity and the quality of non-market goods and services supplied by natural/environmental resources system (e.g. health, recreative opportunities, landscape services, etc.). It follows that the reference for the economic value derivation measures of changements in the resources/environment system is the effect on human wealth.

If society wishes exploiting the equipment of natural resources in the most efficient way, the values of goods/services flows coming from the resources use itself (i.e. the benefits) and

enjoyed by every member, should be compared to the values they renounce deterring environmental goods/services from other employments (i.e. the costs). Since the benefits and the costs are valued according to their effect on the individual wealth, the “economic value” and “economic value” concepts correspond. The economic theory maintains that the individuals have proper preferences among goods/services alternative bundles - of market or not- and that preferences enjoy the replace ability property among such goods/services. Some observers are critical towards the attempt of expanding the economic measure process to elements such as health, human security, environmental features, landscape values and synthesizing its value in a monetary measure. Substantially the economic approach to the environment, whose quantification is presumed and its specify dispersed in the homogeneous measure of currency, has been under discussion.

2. Genesis of the total economic value

Environmental values are supported and reinforced in their informative content by the economic evaluation in confront of other values present in decisional process. In this condition of inferiority it risks to take the decision of altering the environmental resource irreversibly. If the development benefits can be easily monetized, those of preservation/conservation are not the same because it needs to consider interests and aims of the individuals, who are not necessarily direct consumers of goods. An unbalanced exploitation directed to market values runs the risk to put in danger the considered environmental goods in a medium-long period.

If risen to a unique evaluative criterion, exchangeable values can irreversibly compromise the elements forming the social cultural value of a resource and schematically connectable to its quality. The Total Economic Value has made the idea of plausibility natural: direct use values refer to the economic dimension, those of indirect use refer to the ecological dimension. The vicarious and legacy values are linked to the social dimension. As the sustainable development aims at reaching a compromise among its three distinguishing dimensions, the total economic value should consider the trade-off of its parts. For example the total economic value of a wood cannot include factory lumber and that for burning obtained by a smooth cutting of existing trees, otherwise other use values, even non-use values, would be excluded, so that the total value would exclusively correspond to the cut lumber use value; on the contrary following and occasional cuttings are compatible with other expressions forming the total economic value. The total economic value of an environmental resource may assume two connotations: if sustainable use benefits are prevailing there will be a total value concerning the development; if non-use benefits are favorite there will be a total value concerning the preservation. Between the two shades the prevailing one depends on various factors. The principle one are the features of unreproduceability, rareness, singleness typical of the considered resource, the purer or pureless public goods, the location of the resource, its property rights, the diffusion level of the sensibility on environmental themes.

2.1.Criticism to environmental goods monetary evaluation

It refers essentially to three problems:

- a. The problem of knowledge
- b. The problem of incongruity
- c. The problem of composition

a. The first problem is linked to what has previously been said about primary and secondary values. According to the authors the “functional transparency” is the range of services supplied by an ecosystem, and the expression underlines the difficulty of identifying and evaluating some eco-systemic functions which remain transparent and unknowable until when they paradoxically stop to be active and environmental damages are so outlined. In presence of environmental goods whose functional transparency is not a basic element, the evaluation task would be easier, but it runs into the comparison among different scales, always concerning the problem of knowledge. In other words it deals with the difficulty of translating into monetary terms the environmental goods attributes running the risk that the preferences concerning goods are influenced by the format and context survey (disputes on contingency evaluation mistakes) (Bishop and Welsch,1992).

b. The problem of incongruity refers to a situation in which there is a trade-off between the economic calculation and the moral aspect of the choice. For example, essays by many authors underline how in front of certain environmental problems the individuals act more like “citizens” than like “consumers”. Statements like “all wild species have the right to live apart from every benefit or damage for people” registered during application of a contingent valuation method, expresses the rejection and the unavailability of people to consider market transactions as choices concerning resources seen as public. Two dimensions coexist in the value attributed to a resource: the former represents the individual utility, the latter the social utility which reflects altruistic motivations concealed under a lot of choices. In the traditional psychology, a similar idea is “the pyramid of needs.” According to this interpretation of the human behavior, at the basis of the pyramidal structure there are material needs, first of all the psychological ones (food home etc.) and those of security.

Once satisfied the first need, the social needs arise the sense of belonging, love, self-fulfillment, being esteemed. At the hierarchical top there are moral needs like justice. The satisfaction of the need that occupies a higher hierarchical position derives from a self-fulfillment process and a development of individual potentialities.

Self-fulfilled people could be so pressed for the behavior through motivations of high environmental responsibility and show value expressions considering the non-use aspect of the resource.

c. The third problem concerns the total economic value directly, and exactly its forming element. The distinction between use-value and non-use value implies a kind of “reduction to items” of goods, environmental services, though they do not exist in moderate units like any market goods.

So it would be necessary a holistic approach that gives prominence to the uniqueness or not of the environmental goods to evaluate not in relationship with human beings, but with the whole system of which they are part.

3. Environmental values and Environmental Economic values

In economy, the expression “environmental values” means essentially two relationships, which are not at the basis of the decisions concerning the environmental politics broadly speaking. None of these two meanings has to be confused with that of the “economic value”.

Inside the category of environmental values, expressed through preferences, a first distinction is done between held values and assigned values (Boulding, 1966). The first ones are the values that influence constantly choices and individual actions and represent advisable behaviour. The second ones express the relative importance of an object in a certain context for an individual or for a group. The assigned value is not a feature of the object but it represents the situation in which the object is in front of other objects; it is the concept of the relative value, not absolute as the held value. The ways in which held values and assigned values express themselves are different; they depend on the presence or not of individual or collective environmental values. Considering the private individual preferences, the assigned values are expressed in terms of willingness to accept and in presence of market failures, it is possible to remedy thanks to surveys and questionnaires (contingent valuation method) and proxy variable price (travel cost method, hedonimetric prices). On the contrary, with collective preferences, the held values should influence individual preferences and form norms operable through laws and regulations.

An assigned value, concerning the individual preferences, is the total economic value, while we approach to collective preferences in terms of fixed standards.

Various factors concur to form the valuating process: the existing information in the previous moment than that in which we are pushed to decide about influences either held values, with that complex group of inclinations generally allotted and relatively stable in time, or the knowledge itself of the object (direct or indirect).

At the moment of the valuation, new information can be given about the object and this interacts with relevant convictions (e.g. the importance of biodiversity) and perceptions concerning the object to evaluate (e.g. the continuing decrease of a wild specimen). Consequently, according to

the individual value perspective it emerges the importance of the motivations concealed under the unobservable sensation of value (utility) that takes the form of assigned value. The role of the pre-existing or new information and of the reasons concerning the use and the non-use are of great interest because of their significance in explaining how an individual assigns a value to a certain object.

For example, in the surveys that point out the willingness to pay or the willingness to accept, the differences between a measurement and another one can be explained by the motivations involved in the decision, in the same way the result of the valuation is influenced by the information supplied during the survey.

4. Aims of the environmental goods economic evaluation

Until the 60s and the 70s natural goods economic valuation had been a typical American practice; in the following years and till today it has assumed an increasing importance in Asian, Latin American and African countries and, in minor measure, even in Europe. As witness of such a diffusion, it can be considered the proliferation of guides to evaluate natural resources written by the main international organizations (UNEP, WHO, World Bank), concerning most of all developing countries and plenty of manuals edited for U.S.A.

The economic analysis of the natural environment can be employed according two main ways inside evaluative processes of environmental effects. Such ways are:

- calibration of public works;
- analysis of ante-post of resource natural damages;
- Public works: the non-market goods evaluation, such as the environmental ones bears as a part of public works evaluative process in the first half of the 20th century in the United States aiming at incorporating systematically the intangibles in the economic analysis.

The monetary values attributed to the benefits deriving from the natural resource exploitation through the definition of economic methods, occurred between the 50s and the 60s, represent an important further qualitative leap.

From the 60s, the economic analysis has become the usual instrument supporting public plans (from the hydraulic ones to transportation, health and education/formation).

In Europe the identification of the potentialities, both theoretic and applicatory, of the economic analysis is more recent in confront of what has happened in the U.S.A. and the methods development has proceeded more slowly. In certain countries the economic analysis has been used as a supporting instrument for public choice mostly for what concerns road infrastructure, but environmental impacts have not usually been considered.

- Environmental resource damages: the environmental externalities quantification is relevant to value natural resource damages. To this purpose, in U.S.A. the most controversial and deepest inter-relationship between environmental evaluation and public choice occurred when the Congress promulgated the Comprehensive Environmental Response Compensation and Liability Act in 1980. It foresaw the creation of a super-fund to finance the drainage of the existing dumps of dangerous waste materials and established the responsibility of the involved parts to indemnify the damages caused to natural resource because of these sites.

The regulations aims at allowing the damaged resource return to the previous condition and compensating the involved parts for each natural resource service loss through the recovery, rehabilitation, replacement or the acquisition of equivalent services. The regulations define the evaluative process in three phases:

- pre-evaluation: to establish how the recovery can be achieved;
- planning: to identify the needs and the aims of recovery activities;
- accomplishment: to make the planned activities effective.

In Europe the concept of responsibility in the evaluative processes of "natural resource damages, conducted through non-market evaluative methods have not been considered by the same dignity until yet.

5. The total economic value

The expression of total economic value bears as an attempt to overcome the traditional evaluation of environmental goods, exclusively based on the use value attributed to goods considering direct benefits enjoyed by final consumers. It seems that the expression “total economic value” appeared for the first time in an essay by Peterson and Sorg in 1987, “Toward the measurement of total economic value”. Then the term was more and more used by other environmental economists, among whom Turner and Pearce (1996). The use value derives from a concrete use of environmental goods. Even the value attributed to goods to individuals is included in the use value, because they enjoy to see a landscape or the can swim in a lake; even those ones can be considered users of environmental goods, even if in a unappropriate and under-destructive manner. Every use, in any moment and by anyone are realize to create use values, which are more or less measurable since they derive from their current use.

But the total economic value is not only use value; it is given by the sum of use and non-use values referring to intrinsic benefits, i.e. those deriving from the mere existence of environmental goods. The first economist, who identified the total economic value double feature, was Kutrilla (1995). After Kutrilla the scholars interested in this topics have not been limited to theoretical analysis of the total economic value and of its components, but their attention is centred on an empirical analysis which allows them to identify the main features especially of non-use value and the different methods usable for their measurement.

The uniqueness and irreversibility play a central role considered that, according to these features, certain individuals, even uncommon users of goods express the willingness to pay a tax so to allow goods to remain in such a way (in the case a park is being closed). The particularly innovative element is the explicit reference to economic subjects who, without using the goods, can be interested in its conservation. In this context it is the first time that the so-called “option value” has been delineated, i.e. the maximum amount that the non-users are willing to pay so that the park can stay open. In particular a central role about these subject matters was played by John Kutrilla. At the end of the 60s he conducted an analysis in which in contrast with the use value, he identifies a larger concept of non-use value, which includes, besides the option value, other two components: the existence value and bequest value. The existence value is defined as “the value attributed to environmental goods by the economic subject without a link to a real or potential use, but exclusively to their mere existence”. An economic subject is willing to pay a certain sum in order to avoid the destruction of any environmental goods, such as a park or a forest, that is not why he intends to visit such goods in the future, but he simply wants the goods continue to exist. The other component of non-use value is the “bequest value”, defined as the value that an individual attributes to goods considering the use of the goods in the future by his heirs”. The bequest value originates from the third motivation identified by Krutilla, i.e. the one that is linked to the individual’s willingness to pay so that certain goods can be conserved for the posterity. Consequently such value becomes a non-use value if we refer to the contemporary generation, which is not interested in the fruition of goods and results to be a potential use value for future generations.

5.1. Direct and indirect use values

Direct use values are produced in consequence of an immediate or mediate contact with the resource, the environmental goods. The access and the use are of two levels: the primary one, where the physical and immediate contiguity to the resource is a necessary condition to gain benefits, and the secondary one, where the fruiter has not a direct relationship with the resource.

Consumption use value refers to “extractive” activities, whose object is a precise resource “consumable” in the primary manner (e.g. through hunting, picking and gathering wild fruits) or in the secondary manner entering other goods (natural substances present in some medicines; the ivory of elephants’ tusks)as a productive factor.

Non-consumption use values refer to all those activities that exploit the resource for recreative and amusing purposes, without its material consumption. A walking tour in the mountains and the bird watching are some examples of these activities which do not cause any

damage to the resource, obviously excluding episodes of congestion; on site research activities are considered among non-consumption primary values.

The vicarious use value refers to an off-site resource fruition, an example can be given by the reading of an article about a dying species or watching a documentary on nature.

Some research values are included among secondary values. In this category there is the information obtained by certain studies on animals or vegetables, as the research on birds in order to survey the store of pesticides in the environment and the use of some vegetables to survey the atmospheric pollution (e.g. the use of tobacco plant as ozone bioindicator or forage grass for heavy metals). Even if the research is often conducted necessarily on the spot, they are considered secondary values, because the obtained data are employed in places farer than those where the resource is normally present.

Indirect use values refer to regulating ecological functions carried out by the system and converged in the general categories of functions supporting life and the pollution control. The indirect use comes from the implicit carried out in supporting or protecting economic activities. For example, accumulation functions of underground and artificially recharged water in some damp areas (flooded plays and beat bogs) are used indirectly, because water is used for domestic and agricultural purposes.

The valuation techniques employed in the indirect values estimation are based essentially on market values given by environmental defensive expenses subdivided into three categories:

1. Preventive expenditures for the environment
2. Avoidance costs;
3. Treatment of damages;

1. Preventive expenditures refer to sustained costs in order to avoid a environmental negative external effects (e.g. the introduction of “clean” techniques and processes, the depurators), repairing expenditures refer to restoration costs of damaged environmental functions (e.g. polluted reclaimed lands).

2. Avoidance costs are those supported to treat negative external effects (e.g. the installation of sound absorbent barriers along the roads which are near the towns to protect from acoustic pollution).

3. Treatment of damages refers to costs supported to compensate individuals or goods for suffered damages (for example, in the first case medical expenses concerning diseases due to environmental deterioration; in the second case restoration and cleansing expenses of the monuments damaged by urban pollution).

5.2. Difference between use value and non-use value

The concept of Total economic value requires a precise distinction between use value and that of non-use. Knowing one of these components it is possible to obtain the other subtracting it from the total value. To illustrate this pattern, two groups of sets are introduced, considered the basic levels of the resource and its costs. In the first set the resource is under its basic level, while the costs are settled. Y_1 is defined as minimum income required by an individual to sustain the utility at its basic level. In the second set, costs and resource are ah their basic levels; Y_2 is the minimum amount of the income to sustain the utility firm in its level

The resource total value can be defined by the difference between the minimum income of the first set and that of the second one:

$$T = Y_1 - Y_2.$$

T represents the minimum income which makes an individual indifferent between a set whose resource is at its usual level and another one whose resource is lowered qualitatively and quantitatively.

A second group of sets is employed to reveal non-use values.

In the third set the resourced is more reduced than its current level and its complementary goods have high costs so to choke prices. In this set the individual is not a non-user of the resource and Y_3 is the minimum income required to keep utility at the basic level of the other sets.

In the fourth set, the costs of complementary products are still choke prices, but the resource is at its basic level; Y4 is the income that sustains the utility constantly. Since in these sets the individual does not use the resource, the difference between Y3 and Y4 represents the component of non-use values.

$$NUV=Y3-Y4$$

So the use value is obtainable:

$$UV=T-NUV$$

Being available an estimation of use values, these ones can be deducted from the total value obtaining non-use values.

5.3. Incidental value and vicarious consumption value

Incidental use means a form of utilization of a resource, mostly referred to non-consumption, that an individual can experience a very occasional way without the necessity to buy additional goods. You may think of an individual who lives in the area of a natural park and sees a deep from the window of his house or going to work. Certainly hedonimetric techniques can be used, as in the second case, or we can consider the time value employed in these occasional uses, but it remains the eventuality that not all incidental uses leave marks in the tendency of the market and in the time allocation. Other methodological unknown factors appear with the vicarious use value, which includes the purchase of books, magazines, or the vision of documentaries about a particular environmental resource. The main one is represented by the fact that out of the resource to evaluate these additional goods often contain information concerning other environmental goods and it is difficult, even impossible, to assign a value quota to the specific resource (Freeman, 1984).

The vicarious use value can be distinguished on the basis of the features of media used to create it. If an individual enjoys the resource through pictures (or taped videocassettes) taken by himself, the use value can be analysed in the relationships between the resource and the input request of photos and videos production. On the contrary, if the resource is used through the vision of T.V. programs or the reading of magazines, the relationship between the resource and the information is complex: it can occur that the information request increases as a consequence of an environmental disaster so to stay in the increasing vicarious use value paradox corresponding to a damage caused to the resource.

5.4. Price option and option value

The price option (PO) is defined as the maximum amount that an individual, without certain preferences, is disposed to pay to gain the option to visit the park in the future. Once solved the doubt and establishing he is one of its fruiters, the consumer surplus is the sum the individual accepts to pay to visit the park. The expected consumer surplus E(CS) is the result of the relationship between CS and the probability of the will to visit the park.

The option value is the result of the difference between price option and expected consumer surplus

$$OP=PO-E(CS)$$

Relying exclusively on E(CS) within the decision to keep open or close the park means undervaluing the resultant benefits of the choice to keep it open. But this deduction is based on two presuppositions: according to the first the price option is the right measure to use with these two kinds of decisions; according to the second the option value is positive for those who are unfavorable to any kind of risk.

5.5. Quasi option value

This second interpretation of option value, called quasi option value (QOV), is centered on inter-temporal aspects of uncertainty giving prominence to the role of irreversible decisions and of information flow available in the time.

The quasi option value represents the benefit connected with the postponement of the decision about the resource irreversible development in presence of the doubts on the benefits deriving from its preservation.

The same conclusion, drawn about the option value, regards the inclusion of this kind of value in the total economic value; in literature according to the prevailing opinion it does not represent a benefit distinct and separated component, but it is shaped as an information value.

5.6. Non-use values and use value

Non-use values are independent from any benefit linked to the use of an environmental goods; these values are connected with the prolonged existence of goods, without any kind of contemporary or planned use.

The non-utility, the sorrow felt by a lot of people in learning that a species is dying or that a wood has been destroyed by a fire, are some examples which witness the presence inside the individuals of this category of values, even if they will not visit the wood threatened by the fire or the dying animal.

Consequently the resource continuous existence is a prerequisite of non-use values, so that in literature the expressions non-use value and existence value are employed interchangeably, as synonyms (Signorello, 1992) or meanings considering the first ones given by the option value and the existence value, generally the last one meant as comprehensive of all values according to the condition of certainty referring to motivations different from those referred to personal use (Bishop and Woodward, 1995).

Other expressions that may be found in literature referring to non-use values are:

- * the intrinsic value given by the sum of option, aesthetic, legacy and existence values;
- * the preservation value made of option, legacy and existence values;
- * the intangibles made of existence, legacy, option values and of vicarious use;
- * non-user values;
- * passive use values meaning the absence of a behavioral evidence;
- * off-site use values (Randall & Stoll, 1980).

The meanings characterizing the use value of an environmental resource are several,

The narrow vision of NUV separates these ones from any relationship with other goods, so that use values are characterized by any complementarity between the resource and market goods (enlarged vision of UV). An alternative method to make a distinction between UV and NUV is not based on the identification of activities and motivations, which can mark them, but on the verification of the individual condition of the resource user and non-user (Sellin and Rosato, 1998).

From the practical point of view the supposition, that the visitors have only use values and the non-visitors the non-use ones, avoids the problems concerning the difference between use and non-use. Such planning is weak on the theoretic level, because the logic does not exclude that even the users refer to non-use values. A close observation of the possible definitions concerning the non-use notions is inconclusive; by definition, if the use value is linked to the on site use of the resource (through the purchase of some additional goods), this definition has the merit to distinguish among situations in which the use of the resource is measurable through the methods of the travel cost and of the hedonimetric price, and among situations in which it is not possible because of the presence of the vicarious or incidental values.

5.7. Existence value

There are two basic definitions of the existence value (EV) found in literature and, if no substantial difference can be noticed between them, a closer observation reveals some meaning shades that develop on the methodological level. A first formulation of the EV goes up to Kutztrilla (1985) (long version), who maintained that environmental resource (specifically the wilderness) can have a value also for those people who gain satisfaction and pleasure by the mere knowledge of the existence of that goods (in a continuous manner).

A second expression of the EV (short version) refers to the willingness to pay for preservation, protection and qualitative and quantitative increasing of natural goods. According to this definition, the information about the resource and that about its existence are interrelated and this relationship explains how the vicarious use value, which is always a use

value, is difficult to distinguish from the existence value (Randall & Stoll, 1980; Pearce, 1989).

The EV itself, appealing to the availability to pay, includes motivations referable to the non-use notion due to altruistic attitudes.

Randall and Stoll makes a list of three kinds of altruism:

- intragenerational altruism;
- intergenerational altruism;
- Q-altruism.

1. The first type of altruism, defined also philanthropic altruism or vicarious value (VV), refers to a resource evaluation not based on personal use considerations, but on the opportunities that other people, contemporary to the examiner, are able to use the considered goods. Through the vicarious value, the altruist can verify if the motivations revealed by the beneficiary about the resource are of use or non-use.

2. The intergenerational altruism, which is at the base of the legacy value (LV) or of the bequest value, moves from the idea that the contemporary generation, motivated by this kind of altruism, wishes to transmit the most possible undamaged equipment of contemporary resource to future generations. According to some scholars, the legacy value is seen as a non-use value, while according to others it is connected with the option use value and with that of non-use.

This classifying variety that may be found in literature is another confirmation of the missing achievement of a theoretic agreement, and consequently terminological, about the total economic value concept, which is still susceptible of new defining contributions.

The meanings of the altruism, which are under the vicarious value and legacy value, are “domestic” altruism and “diffuse” altruism so to include all the people in general. The altruism of the scenery of the legacy and vicarious value is called “paternalistic”. The utility function of the altruist includes, besides the goods consumed directly by the individual, also the environmental goods object of the altruistic motivation.

3. The third and fast kind of altruism introduced by Randall and Stoll (1980) is the Q-altruism, also called intrinsic altruism, and it is based on the knowledge that the Q-resource itself benefits by remaining undisturbed longer than possible and integral in its functions. If in the other two cases the beneficiaries of the altruistic act are contemporary or future people, on the contrary with the intrinsic altruism the beneficiary is the resource itself, and the role played by the human being is that of giving voice to this intrinsic right of existence, the possessory title of the resource. The analytic treatment of the altruism in favor of a resource is difficult. Before all it is difficult to repret economically the environmental goods wealth, and we can add to it the marginal character assigned to the individual in this perspective, that of the spokesperson of the resource interests. In the consideration about the motivations connected with the existence value, the intrinsic value pays particular and special attention to life conditions of non-human species and to the health conditions of whole ecosystems. The Q-altruism is similar to the concepts of sympathy for other living beings and of stewardship.

6. Conclusions

The missing knowledge of the economic value of both material and intangible elements offered to man by nature is an obstacle to the creation and accomplishment of norms which preserve their integrity. It follows that a state of anarchy in the fruition of such environmental goods, whose consequences are the frequent unpunishable abuses, waste and degrading exploitations.

The economic evaluation of environmental goods is based on the idea of using evaluative mechanisms, which are alternative to those of market, through the concepts of utility, wealth variation, consumer surplus and analysis costs/benefits.

A central position in the theory is occupied by the total economic pattern that, derogating from the individual selfishness of consumers, postulates an ethic component of benevolence and altruism and it originates its non-use value components of natural resource.

The methods of monetary evaluation complete its description which represent a powerful and versatile trend instrument for political choices.

Nowadays the level achieved by the studies on the economic evaluation of environmental goods must not induce to the idea that it deals with a closed and complete field of knowledge; this is highlighted by the important contribution to the theory supplied by subjects such as the environmental geography, environmental economy and psychology.

There are several steady and indisputable points, which represent strong elements, but there are others which highlight discordant opinions.

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