



ENVIRONMENTAL ISSUES FROM AN ECONOMIC PERSPECTIVE

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Abstract

The paper discusses some aspects concerning environmental issues considered from an economic perspective, since economic globalization as well as ecological globalization follows new ways of conditioning each other. In the past the most important thing was the impact of the environmental protection pressure - soil deterioration, water system, the atmosphere and the forests - upon economical perspectives. In the recent past years the society had to face the quick growth of the economical interdependency among nations, but also the environmental interdependency among them is being accelerated. Economy and environmental issues interfere more and more with each other - on a local, regional, national and global level - forming a network of cause and effect. The harsh cycles operate at a national and regional level. The deterioration in the arid areas make million of people go over the national borders. Some consideration on water resource scarcity and agriculture and environmental impacts are made from economic perspective. It was highlighted that economic premises and principles play a major role in the shaping of environmental policy.

Key words: environment, globalization, economic perspective.

1. Introduction

In recent decades, growing awareness of environmental issues and their relationship to the economy has seen the emergence three main policy goals in natural resource management: efficiency, equity and sustainability, as parts of sustainable development (Fig. 1) (Turpie, 2008).

An ecological economics view of sustainability is inevitably based in systems thinking (Capra 2002; Costanza et al. 1997; Costanza 2001).

Sustainable development can be defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This requires balancing the demand for natural resources with the protection of ecosystems that also contribute goods and services necessary for economic growth (Greiner and Semmler, 2008; Tănăsie, 1992; .

Certainly, not only does the environmental pollution strongly affect the current generation, but the environmental degradation affects future

generations as well. As for the dependence on natural resources, technical progress has led to a more efficient use of technologies so that emissions of some pollutants have been reduced considerably.

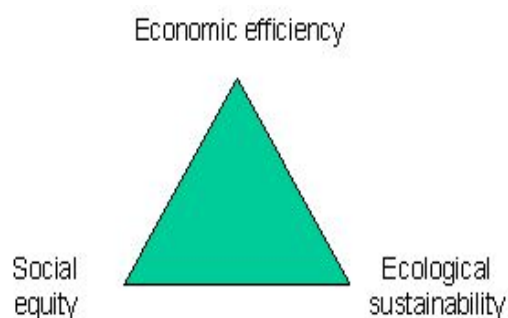


Fig. 1. The three goals of resource management

From an economist point of view, pollution becomes a problem only when it introduces externalities that distort the allocation of resources.

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Distortion occurs when those who cause pollution do not bear its costs but instead impose them on society (Greiner and Semmler, 2008; Raynauld, 2008).

Economic premises and principles play a major role in the shaping of environmental policy. Instruments of environmental policy are traditionally assessed on the basis of efficiency criteria, such as optimal social welfare, Pareto efficiency and cost-effectiveness (van den Bergh et al., 2007).

The European Union defines a Community strategy to integrate environmental issues into economic policy using various instruments such as market mechanisms, Member States' annual reports and the Broad Economic Policy Guidelines (<http://europa.eu/scadplus/leg/en/lvb/l28018.htm>).

2. Development and environmental protection

Even at the beginning of the deterioration of the environment, its protection has worried the developed countries. These have started in the latest years to enterprise certain ecologically efficient actions, the phenomenon spreading afterwards in the developing countries as well.

Numerous areas unpopulated before become now active from an economical point of view, for example by increasing the number of farmers. A population which does not own land looks for living resources in these regions.

Developing countries possess little resources for ecological objectives, but what they have or get from the developed countries is not sufficient to solve at least the development issues. It must be observed that the economic inequality between the developed countries and the developing countries becomes in the same time an ecological inequality among them. Between the North and the South it exists a fundamental difference regarding the environment deterioration. Introducing the causality issue, it becomes evident that in the developing countries the main cause is poverty. In the industrial countries the cause is the growing consumption and the way of living based on mass production, by using a lot of energy and by exploiting the natural resources on a large scale (Tietenberg, 1996).

In the last 20 years, the global awareness of the humanity regarding the problems of the environment has evolved rapidly - especially emphasizing aspects such as: reducing the ozone layer, devastation of equatorial forests, deterioration of water quality, global warming of the planet. The more developed knowledge and the acquired experience about the environment issue during this period have led to a reconsideration of the role and responsibility of the leaders as well as of the economic entities.

Especially in the developed countries, in the last two - three decades, as far as this topic is concerned, some fundamental changes have been introduced, such as:

- extension of settlement regarding environment protection at a central and local level;
- the growth of the environment protection cost, both for the public sector as for the private one. The resources used by both sectors for the pollution control have increased and the government entities, as well as the productive ones, are searching for more efficient ways of conforming the existent settlements;
- the financial - national and international - institutions have also become aware of the environment problems. The attentive pressure and supervision exerted by these institutions stimulate the authorities but also the business companies to pay more attention to environment problems;
- as a result of the United Nations Conference about the environment, held at Rio de Janeiro, the governments and corporations from all over the world have started to pay more attention to lasting development.

3. Environmental context initiatives and events

Deterioration of environment quality state has direct and long term consequences from an economic, social and ecological point of view. The natural capital resources are consumed in a rhythm which surpasses their regenerative capacity and, at the same time, they suffer the devastating action of certain activities.

In this context, it can be pointed out that even UNO has been called to initiate, organize and support co-operation within the environment domain by forming a system of international co-operation in order to protect the environment which takes action in the following main directions:

- elaboration of principles and programmes for international co-operation regarding the environment issues;
- creating the legal international structure for this co-operation;
- acquiring funds and making use of them to protect the environment especially in the developing countries.

A very important action and with positive effects for international co-operation in this field was the United Nations Conference for Environment (Stockholm, June 5 - 16, 1972). The Conference has adopted the Declaration about the environment which comprises 26 principles regarding the countries' rights and obligations referring to environment protection, the ways and means of international co-operation development in this domain. It has also been adopted a Plan of actions which contains 109 action suggestions at international level to protect the environment. After the Stockholm Conference, in the same year, the General Reunion of UNO has created its own subsidiary organism to co-ordinate the international co-operation - the United Nations Environment Programme (UNEP) with its headquarters in Nairobi (Kenya).

The UNO system takes action to support bilateral and regional co-operation; since the main role to protect the environment belongs to each and every country, the international co-operation is only a complementary factor. At national level there are in most countries national agencies for the environment protection and administration of natural resources. The UNO system helps to strengthen these agencies and through them environment protection projects are being carried out in various countries, especially in the developing ones. UNO also supports the specific regional pre-occupation for trans-frontier ecological areas, existing for instance over 200 distinct biogeographic areas in the world.

At present, as well, the debates within UNO plead for UNEP strengthening. UNEP is the environment programmes and projects' catalyst and coordinator in the whole UNO system. Thus, it has been proposed that UNEP should concentrate its activities in the following directions (Lămătic and Bostan, 2000; Tanasie, 1992):

- development, experimentation and support of practical methods applications and specific projects for ecological evaluations at national level;
- extension of international agreements to other domains such as the chemical products and dangerous waste products;
- extension of the regional programme regarding seas;
- development of similar programmes for the international river basins;
- identification of technical assistance requirements and training courses for the administration and environment protection and for the co-ordination in this sense of the international agencies;
- guidance of the international agenda towards environment scientific research and technological development;
- global ecological evaluation and international media report regarding the environment state, in this case global risks should be evaluated. The creation of a "Programme for global risks' evaluation" has been proposed, which is to be a co-operation mechanism between the existent organizations and organisms.

4. Environmental goods valuation: the *Total Economic Value*

Environmental accounting becomes the paradigm of the conservation and preservation of such capital by the same standards of an enterprise patrimony. Environmental values are supported and reinforced in their informative content by the economic evaluation in confront of other values present in decisional process (Demian, 2000; Plottu and Plottu, 2007). 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; Costanza et al., 1997).

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.

In the *Millennium Ecosystem Assessment* (MEA, 2005) economic valuation is stated as a powerful tool for placing ecosystems on the agenda of conservation and development decision-makers. In fact the three main domains are recognized as critical to choose and implement successful policies: the biophysical information about the ecosystem status and process, the socioeconomic information about the context in which and for which the decision will be made and the information about the values, norms and interests of key stakeholders shaping and affected by decisions. Within the MEA the Total Economic Value (TEV) is confirmed as the most widely used framework to identify and quantify the contribution of ecosystem services to human well being.

When the notion of value is connected to the notion of TEV it refers to the social context overlapping the ecosystem, taking into account the relations between the socio-economic system and the natural systems, with all the involved complex dynamics and feedbacks. Assessing the TEV could be a useful tool for policymakers: determining the total flux of benefits that ecosystems generate and assessing the effects of specific projects or policies, can support a better management of the territory. TEV is composed by use values, option values and non-use components. There is neither in the literature a single standard categorization nor terminology. Often *Total Value* is reported as the sum of use value and non-use values or passive values (Perman et al., 2003; Tietenberg, 1996) (Fig. 1).

Use values can be direct when goods and services are exchanged on the market that thus reveals their value. Use values are indirect refer to the life support services role of the natural environment, which are 'indirectly used'. Non-use values include: existence values, where the benefit results from knowledge that goods and service exist and will continue to exist, independently of any actual or prospective use by the individual; and bequest value, where the benefit is in ensuring that future generations will be able to inherit the same goods and services of the present generation. Beyond a purely typological distinction between use, option and non-use values, these different environmental values are not treated differently within the concept of Total Economic Value. When expressed in monetary terms from individual preferences, these values are incorporated into a sole approach reasoning in terms of utility (Plottu and Plottu, 2007).

5. An economic perspective on water and the environment

As economies expand globally, the strain on the earth's natural resources becomes increasingly apparent, and perhaps one of the most pertinent issues facing us today is that of water scarcity.

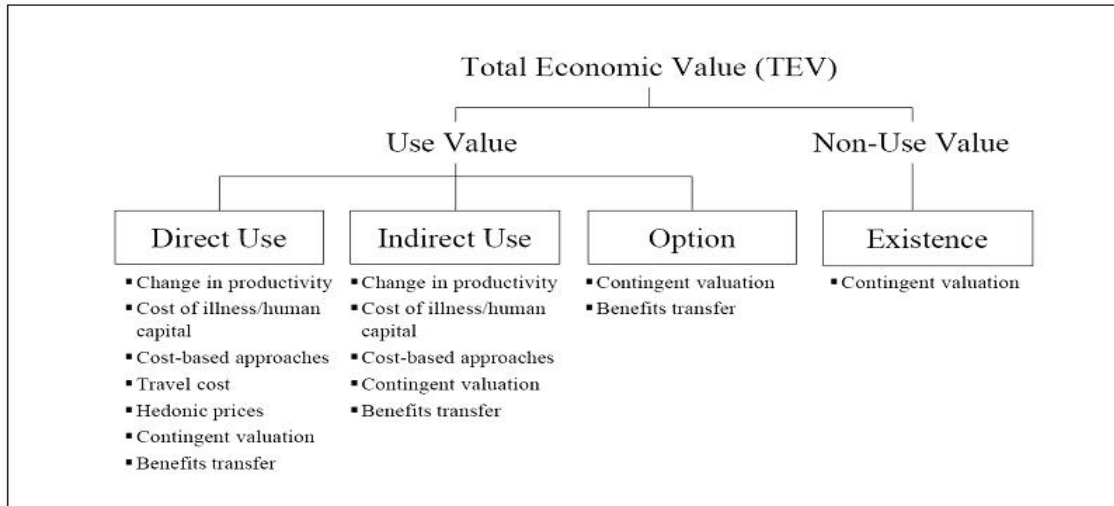


Fig. 1. Components of *Total Economic Value* (TEV)

The demand for water now surpasses supply over much of the Earth's surface (Tietenberg, 1996; Turpie, 2008). Water is a finite natural resource, essential for the sustenance of life on earth. Agenda 21, a major outcome of the United Nations Conference on Environment and Development (UNCED), popularly referred to as the Earth Summit, held in Rio de Janeiro, Brazil, in June 1992, states that effectively integrated management of water resources is important to all socio-economic sectors relying on water. Rational allocation prevents conflict and enhances the social development of local communities, as well as economic planning and productivity (<http://www.unu.edu/unupress/unupbooks/uu18ce/uu18ce02.htm>).

The value of aquatic ecosystems is less readily understood. Aquatic ecosystems offer a range of goods, services and attributes that generate value and contribute to human welfare. The concept of ecosystem goods and services, popularized in the ecological-economics literature, stems from the perception of ecosystems as natural capital which contributes to economic production (Turpie, 2008).

As economies expand globally, the strain on the earth's natural resources becomes increasingly apparent, and perhaps one of the most pertinent issues facing us today is that of water scarcity. The value of water is most readily appreciated as a direct input to economic production. Water is an essential input to all sectors that contribute to the overall economic output of the economy, although the productivity of water differs enormously from sector to sector (Perry et al., 1997).

Economists see water as a scarce resource because it is generally non-substitutable, there is an increasing overall demand for water, water use is intensifying, and there are limits to its use. Moreover, the provision of freshwater to end-users is itself an activity requiring resource-input. Despite this position, fresh water is still commonly treated as an

almost free resource. The consequence of this is inefficient use and potential over-use problems. But in reality water is a valuable resource requiring greater efficiency in usage, re-usage and proper economic pricing (Perry et al., 1997; Turner and Dubourg, 2006).

Economics is the study of the allocation of scarce means (total resources, man-made and natural) towards the satisfaction of the maximum number of human ends (wants and needs) as is feasible with prevailing technology and knowledge (Turner and Dubourg, 2006).

Integrated water resources management (IWRM) is based on the four 1992 Dublin principles (Lant, 2004):

- I) Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment;
- II) Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels.
- III) Women play a central part in the provision, management and safeguarding of water.
- IV) Water has an economic value in all its competing uses and should be recognized as an economic good.

Principle IV is central to an ecological-economic approach to sustainability (Fig. 3) (GWP, 2000; Lant, 2004).

The market value of water is only a portion of the economic value of water, to which must also be added the non-market values to human capital and ecosystem service values if the total ecological economic value of water is to be identified. "On the cost side, the fixed and variable cost of manufactured capital used to deliver water is the supply cost, but in order to find the total economic cost, the opportunity cost of allocating the water itself to its next best use, and any economic externalities (positive or negative) associated with this allocation must be added" (Lant, 2004).

VALUES OF WATER				COSTS OF WATER			
Ecological Economic Value	Ecosystem Service Value			Diminishment of Ecosystem Services		Ecological Economic Cost	
	Non-Market Value to Human Capital			Economic Externalities			
	Economic Value	Net Benefits from Indirect Use		Opportunity Cost of Water			Economic Cost
		Net Benefits from Return Flows		Capital Charges	Supply Cost		
	Market Value	Value to Users of Water		Operation and Maintenance			

Fig. 3. Comparison of market, economic, and ecological-economic values and costs of water

The highest and best ecological-economic use of water is the use with the greatest net value as shown in Fig. 3. This use often differs from current uses of water. Consequently, IWRM has been touted as an evolving framework for applying the concept of sustainability to the practice of water resources management.

6. Agriculture and the environment: an economic perspective

There are many dozens of different economic perspectives on environmental issues affecting and affected by agriculture. Agricultural production has harmed environmental quality primarily because of inadequately designed policies and natural resource projects (Zilberman et al., 1999).

Agriculture places a serious burden on the environment in the process of providing humanity with food and fibres. It is the largest consumer of water and the main source of nitrate pollution of groundwater and surface water, as well as the principal source of ammonia pollution (Bruinsma, 2003). It is a major contributor to the phosphate pollution of waterways and to the release of the powerful greenhouse gases (GHGs) methane and nitrous oxide into the atmosphere (IPCC, 2001; OECD, 2001).

The main agro-environmental problems fall into two groups. First, there are those that are global in scale such as, for example, the increase in atmospheric concentrations of the GHGs carbon dioxide (CO₂) through deforestation, and nitrous oxide (N₂O) arising from crop production (Houghton et al., 1995; Mosier and Kroeze, 1998). The second group of problems is found in discrete locations of the major continents and most countries, but at present has no substantive impact at the global level (Zilberman et al., 1999).

Public attention tends to focus on the more visible signs of agriculture’s impact on the environment, whereas it seems likely that the non-

visible or less obvious impacts of air pollution cause the greatest economic costs (Pretty et al., 2001).

Agriculture affects air quality and the atmosphere in four main ways: particulate matter and GHGs from land clearance by fire (mainly rangeland and forest) and the burning of rice residues; methane from rice and livestock production; nitrous oxide from fertilizers and manure; and ammonia from manure.

Agriculture now contributes about 30 percent of total global anthropogenic emissions of GHGs, although large seasonal and annual variations make a precise assessment difficult (Bouwman, 2001). More attention is now being given to methane (CH₄) and nitrous oxide (N₂O), since agriculture is responsible for half or more of total global anthropogenic emissions of these GHGs (Table 1). In recent decades the most important environmental issues concerning land have been land cover change, particularly deforestation, and land use intensification, especially its impact on land degradation.

Agricultural and environmental policies, markets, farm management practices, structural change, technological developments and socio-cultural preferences are the main driving forces that interact – and sometimes give conflicting signals – in determining agriculture environmental performance. The appropriate integration of agricultural and environmental policies can bring multiple benefits, by ensuring that policy goals are reached at least cost and that the burdens which agricultural policies can impose on the environment are fully accounted for.

There is now widespread interest in the use of economic instruments to complement regulatory instruments for environmental management. These include taxes on farm inputs which are sources of pollution, on farm emissions, or taxing farmers for their failure to meet required levels of environmental quality. An approach being tried in several countries is the use of input taxes to reduce the use of agricultural chemicals.

Table 1. Agriculture's contribution to global greenhouse gas and other emissions (Bruinsma, 2003)

<i>Gas</i>	<i>Carbon dioxide</i>	<i>Methane</i>	<i>Nitrous oxide</i>	<i>Nitric oxides</i>	<i>Ammonia</i>
Main effects	Climate change	Climate change	Climate change	Acidification	Acidification Eutrophication
Agricultural source (estimated % contribution to global emissions)	Land use change, especially deforestation	Ruminants (15)	Livestock (including manure applied to farmland) (17)	Biomass burning (3)	Livestock (including manure applied to farmland) (44)
		Rice production (11)	Mineral fertilizers (8)	Manure and Mineral fertilizers (2)	Mineral fertilizers (17)
		Biomass burning (7)	Biomass burning (3)		Biomass burning (11)
Agricultural emissions as % of total anthropogenic sources	15	49	66	27	93

7. Concluding remarks

Economic policies must recognize that environmental protection is a condition, and a prerequisite, for long-term economic growth. Experience shows that economic instruments, if designed and implemented properly, often in combination with other environmental policy instruments, can contribute to achieving economic benefits.

At the present time, economic policy is essentially concerned with economic stability and the functioning of markets.

For a great many environmental groups and services, there is no market or it is incomplete and these missing markets give rise to economic inefficiency. Consequently, the best strategy for integrating the environment into economic policy must be to create or improve the functioning of markets for environmental goods.

Finally, it must point out that the international co-operation strengthening to the advantage of the environment protection requires a more substantial support from the part of the multilateral financial institutions (The World Bank, The International Monetary Fund and the regional development banks), which should have a major influence upon the economic development in the world, being thus necessary to contribute in a higher degree to environment - development relation.

Growth typically enables societies to provide their members with a cleaner, healthier environment as it allows them to invest in cleaner technologies and products. Accordingly, the issue is how improvements in living standards can be accompanied by the safeguarding and improvement of the quality of the environment. As part of achieving the Lisbon European Council's goal of making the Community the world's most competitive and dynamic knowledge-based economy, capable of sustainable economic growth it is essential to change the actual approach to environmental policy.

Policy makers should acknowledge that market forces are implicated in many environmental problems and should seek to use them in order to achieve environmental policy aims.

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