

ENVIRONMENTAL APPRAISAL: A NEW METHOD BASED ON GNP VARIATION

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The first part of this article describes the situation of known methods of environmental appraisal and the theoretical concepts associated with the value of goods, services and external factors, from the perspective of both the market and the environment. The article classifies different types of values and names certain aspects of environmental appraisal applied to different ecological systems, describing their environmental function. It goes on to describe the appraisal methods in use today and their respective characteristics, strengths and weaknesses, such as contingent appraisal, travel cost, hedonic prices, cost avoidance, production variation, and cost-based methods. Other less frequently used methods are also named, such as Krutilla-Fisher, multi-criteria appraisal, pressure-status-response indicators, and Saaty hierarchical analysis. Finally, the second part of the article introduces a new and original method of environmental appraisal, developed by the authors, based on the variations in GNP caused by the use of an environmental resource; and the results obtained using this method.

The goods and services provided by natural resources play an important role in the economy of any given country or region. Generally, the economic value of these resources is obtained using methods based on personal surveys. For example, the value of a recreational service provided by a natural resource can be obtained using the Travel Cost Method, based on a real market and representing the cost of travel to a specific location. To establish the economic value of an environmental asset, the Contingent Value Model, based on a hypothetical market, is used. When these methods are applied to natural resources located in economically under-developed regions or countries, the values they provide can differ widely from the value of similar resources in countries or regions in different economic circumstances. The new method based on GNP variation facilitates the appraisal of environmental resources in developing countries and

also in cases of budget restrictions, since it is economic and quick to apply.

All biological resources, including their inter-relationships, are natural assets. Humanity benefits from these natural assets in the form of goods and services for current and future generations. However, despite these benefits, the global situation shows another reality: the increasing degradation and depletion of biological resources and bio-diversity.

The absence of an economic appraisal of certain natural resources has for a long time meant that decisions were made strictly on the basis of market signals. The deterioration of natural resources has generated other environmental problems that have spread from their local origins to a much larger sphere, and today are a matter of worldwide interest. Therefore, the economic value of natural resources is a key element for their effective management. The best judges of the value of a resource are those who use it in different ways. Knowledge of their real value would allow the different resources to be ranked in order of importance to define priorities for their optimum current and future use in society.

In recent years, certain countries have expressed serious concern regarding these matters and regarding the need for indicators of environmental sustainability. Some of these are based on GNP value [1], to which certain numerical adjustments are applied to produce environmental values. In order to calculate these indicators it is first necessary to establish the economic value of natural resources. In this manner, amortisation of natural assets and the loss of bio-diversity, among other values, can be deducted from the GNP. These values are a consequence of the economic growth of countries, generating an undeniable relationship between natural resources and the macro-economy.

The best-known methods of economic appraisal of natural resources and environmental services, within a neo-classic economy, are based on market prices. For other goods (water, biological diversity, genetic resources, etc.) and services (environmental purification, soil fertility, capacity for the assimilation of waste, etc.) for which a market does not exist, the methods focus on changes in environmental quality that affect human wellbeing. Thus, quality will increase in the case of a positive external action (recreation, beauty of a landscape), and decrease in the event of a negative external action (noise, smoke, water pollution). Over the past 30 years different methods have developed, within the framework of environmental and ecological economy, based on surveys and on the creation of hypothetical markets that simulate a real market for goods and services for which a market does not exist.

(1) GNP value is obtained from the total sum of end goods and services produced by an economy over a given period of time.

The most frequently used appraisal methods are the Contingent Appraisal Method, the Travel Cost Method, and others, as described in the first part of this article, based on variations in production values, cost values, environmental indicators and complex mathematical rationales. These methods, which measure the Disposition to Pay (DTP) and the Disposition to be Compensated (DTC) of the people affected by environmental change, either through the creation of hypothetical markets or directly based on real markets, are handicapped by the bias inherent in surveys of personal preferences.

Other methods such as multi-criteria evaluation, Saaty analytical hierarchies or the transfer of benefits are not yet fully used in many parts of the world, and

therefore their potential for use is still largely unknown.

Methods are needed that are cheap to apply, and quick and easy to process. The new method of appraisal of environmental goods and services introduced in this article fulfils these criteria, and furthermore, does not use personal surveys. It uses one variable, the GNP, to establish the economic value of services provided by natural resources. The method features several facilities and advantages principally that GNP data are easy to obtain; the absence of bias inherent in variables such as DTP and DTC that are a feature of other appraisal methods; and that it does not require the use of hypothetical markets. ■



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