



Environmental economics and Sustainability

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Environment Economics, Economic Incentives, Externality, Market failure and Economic sustainability.

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ABSTRACT

Environmental economics is the study of environmental uses and abuses as viewed through the lens of economics. Typical economic concerns, such as market failure, externality, or valuation, are applied to environmental topics. Topics studied include things like pollution, consumption and alternative forms of energy. One of the big concerns of today is that people are taking too much from the earth without giving enough back. The goal of environmental economics is to discover a balance between the least amount of usage and the greatest societal benefit

Introduction

Economics is the study of the allocation of scarce resources. Note that the theories of economics can be applied to any scarce resource, not just traditional commodities. Economics is not simply about profits or money. It applies anywhere constraints are faced, so that choices must be made. Economists study how incentives affect people's behaviour.

Environmental and natural resource economics is the application of the principles of economics to the study of how environmental and natural resources are developed and managed.

Natural resources – resources provided by nature that can be divided into increasingly smaller units and allocated at the margin.

Environmental resources – resources provided by nature that are indivisible.

Natural resources serve as inputs to the economic system. Environmental resources are affected by the system (e.g. pollution

Environmental economics is a relatively new field of economics that looks at environmental issues in relation to economic development and sustainability. Environmental economics looks a lot at environmental policies in countries, and how they impact the local and global economies, either positively or negatively. Environmental economics is generally viewed as a form of progressive economics, trying to account for various forms of market failures to better model markets in the future and lead to more widespread gains among people.

Importance of Environmental Economics

In general, prices reflect the relative scarcity of goods. However, in environmental economics, markets, and thus prices, often do not exist. There are some concepts that environmental and natural resource economics make it unique?

Market failures:

When market failures exist, government intervention may be appropriate.

Dynamics :

The decision to consume a good today typically does not affect the ability to consume it tomorrow. However, the decision to use natural resources today does affect what will be available tomorrow. Note that prices will influence this. Higher prices both provide incentives to conserve resources, encourage exploration for new sources, and the development of technologies to better obtain resources.

Irreversibility: Damage to natural resources has long-term effects. For example, if the Grand Canyon were flooded, future generations would be unable to enjoy its beauty. This is not as large a problem for normal consumer goods.

Linkages between the economic and ecological system: An interdisciplinary understanding of the environment, political science, etc. necessary to be a good environmental economist

One of the cornerstones of environmental economics is examining various causes of market failure. A market failure is said to have occurred when resources are not distributed in the most efficient manner, usually because of imperfect knowledge among the members of the market. The problem, then, is said not to be with the free market concept itself, but with the limitations of human understanding of market forces. Ideally, environmental economics views a healthy market as functioning such that all resources are distributed in such a way that they provide the greatest benefit to society; when this does not occur, the market can be said to have failed.

Market failure

Central to environmental economics is the concept of market failure. Market failure means that markets fail to allocate resources efficiently. Common forms of market failure include externalities, non-excludability and non-rivalry.

Externality

An externality exists when a person makes a choice that affects other people in a way that is not accounted for in the market price. An externality can be positive or negative, but is usually associated with negative externalities in environmental economics. For instance, water seepage in residential buildings happen in upper floor affect the lower floor. Or a firm emitting pollution will typically not take into account the costs that its pollution imposes on others. As a result, pollution may occur in excess of the 'socially efficient' level, which is the level that would exist if the

market was required to account for the pollution. A classic definition influenced by Kenneth Arrow and James Meade is provided by Heller and Starrett (1976), who define an externality as "a situation in which the private economy lacks sufficient incentives to create a potential market in some good and the nonexistence of this market results in losses of Pareto efficiency." In economic terminology, externalities are examples of market failures, in which the unfettered market does not lead to an efficient outcome.

Common goods and public goods

When it is too costly to exclude some people from access to an environmental resource, the resource is either called a common property resource (when there is rivalry for the resource, such that one person's use of the resource reduces others' opportunity to use the resource) or a public good (when use of the resource is non-rivalries). In either case of non-exclusion, market allocation is likely to be inefficient.

The basic problem is that if people ignore the scarcity value of the commons, they can end up expending too much effort, over harvesting a resource (e.g., a fishery). Hardin theorizes that in the absence of restrictions, users of an open-access resource will use it more than if they had to pay for it and had exclusive rights, leading to environmental degradation. See, however, Ostrom's (1990) work on how people using real common property resources have worked to establish self-governing rules to reduce the risk of the tragedy of the commons.

The mitigation of climate change effects is an example of a public good, where the social benefits are not reflected completely in the market price. This is a public good since the risks of climate change are both non-rival and non-excludable. Such efforts are non-rival since climate mitigation provided to one does not reduce the level of mitigation that anyone else enjoys. They are non-excludable actions as they will have global consequences from which no one can be excluded. A country's incentive to invest in carbon abatement is reduced because it can "free ride" off the efforts of other countries. Over a century ago, Swedish economist Knut Wicksell (1896) first discussed how public goods can be under-provided by the market because people might conceal their preferences for the good, but still enjoy the benefits without paying for them.

Solutions advocated to correct such externalities include:

Environmental regulations. Under this plan, the economic impact has to be estimated by the regulator. Usually this is done using cost-benefit analysis. There is a growing realization that regulations (also known as "command and control" instruments) are not so distinct from economic instruments as is commonly asserted by proponents of environmental economics. E.g.1 regulations are enforced by fines, which operate as a form of tax if pollution rises above the threshold prescribed. E.g.2 pollution must be monitored and laws enforced, whether under a pollution tax regime or a regulatory regime. The main difference an environmental economist would argue exists between the two methods, however, is the total cost of the regulation. "Command and control" regulation often applies uniform emissions limits on polluters, even though each firm has different costs for emissions reductions. Some firms, in this system, can abate inexpensively, while others can only abate at high cost. Because of this, the total abatement has some expensive and some inexpensive efforts to abate. Environmental economic regulations find the cheapest emission abatement efforts first, then the more expen-

sive methods second. E.g. as said earlier, trading, in the quota system, means a firm only abates if doing so would cost less than paying someone else to make the same reduction. This leads to a lower cost for the total abatement effort as a whole.

Quotas on pollution. Often it is advocated that pollution reductions should be achieved by way of tradable emissions permits, which if freely traded may ensure that reductions in pollution are achieved at least cost. In theory, if such tradable quotas are allowed, then a firm would reduce its own pollution load only if doing so would cost less than paying someone else to make the same reduction. In practice, tradable permits approaches have had some success, such as the U.S.'s sulphur dioxide trading program or the EU Emissions Trading Scheme, and interest in its application is spreading to other environmental problems.

Taxes and tariffs on pollution/Removal of "dirty subsidies." Increasing the costs of polluting will discourage polluting, and will provide a "dynamic incentive," that is, the disincentive continues to operate even as pollution levels fall. A pollution tax that reduces pollution to the socially "optimal" level would be set at such a level that pollution occurs only if the benefits to society (for example, in form of greater production) exceeds the costs. Some advocate a major shift from taxation from income and sales taxes to tax on pollution - the so-called "green tax shift."

Better defined property rights. The Coase Theorem states that assigning property rights will lead to an optimal solution, regardless of who receives them, if transaction costs are trivial and the number of parties negotiating is limited. For example, if people living near a factory had a right to clean air and water, or the factory had the right to pollute, then either the factory could pay those affected by the pollution or the people could pay the factory not to pollute. Or, citizens could take action themselves as they would if other property rights were violated. The US River Keepers Law of the 1880s was an early example, giving citizens downstream the right to end pollution upstream themselves if government itself did not act (an early example of bioregional democracy). Many markets for "pollution rights" have been created in the late twentieth century.

Environmental economics is a subfield of economics concerned with the relationship between the economy and the environment. As such, it is concerned with both the use of resources drawn from the environment as well as the waste put back into the environment.

Environmental economics is useful not only in terms of its ability to facilitate an understanding of why and how economic incentives can contribute to environmental degradation, but also in terms of its ability to design policy solutions to environmental problems based upon the use of economic incentives.

Economic Incentives as Sources of Environmental Degradation

In many parts of the economy the incentives associated with private decisions can be shown to be compatible with social objectives. However, when decisions affect the environment, private decisions can rather frequently promote degradation. Market failure refers to all the situations where private decisions result in outcomes that fail to maximize the value that society could get from its resources.

The first example of a market failure involves externalities. An

externality is a consequence of a decision that falls on someone other than the decision-maker. As a result, the decision-maker will either tend to undervalue that consequence or ignore it completely, which can result in private decisions being biased away from socially desirable outcomes.

Take the case of automobile pollution. We all know that exhaust from our automobiles causes pollution, but since the costs of that pollution mainly fall on other people, it is inadequately considered in the types of vehicles purchased, how often that vehicle is used (rather than using public transit or a carpool), and in the number of miles we drive it per year. As a result of this externality, we have a stock of vehicles that is too large, the average vehicle in that stock gets too few miles per gallon, and the fleet is driven an excessive number of miles per year. All these decisions result in more pollution than would result in the absence of externalities. Using Economic Incentives for Environmental Protection

Increasingly, environmental policy is coming to include economic incentives in the policy mix. Some examples of economic incentive policies include:

Environmental taxation. In principle it is better to tax an activity (such a pollution) that you don't want rather than an activity that you do (such as income). Current examples of environmental taxation that are designed to discourage environmentally degrading behaviour included emission charges, fuel taxes, and congestion charges. As is the case with water pollution charges in Europe environmental taxes may also be used to raise revenue to finance environmental improvements.

Tradable permits. Under a typical tradable permits system, an aggregate cap is set on resource use and allocated among users such that the sum of the user allocations is equal to the cap. Since users are free to trade their allocated amounts among themselves as long as the cap is not violated, this approach tends either to allow the environmental goal, as expressed via the cap, to be reached at a lower cost than more traditional [[command and control] regulatory policies or to allow a higher goal to be reached with same expenditure. Current examples of this approach to control pollution include the sulfur allowance program in the U.S. and the European Union Emissions Trading Scheme. Current examples of the use of this approach to control resource use include individual transferable quotas in fisheries and tradable energy certificates for energy production.

Deposit-refund scheme. Under a deposit-refund scheme the purchaser of a product pays a deposit on the container or the product. This deposit is refunded when the product or container is returned to a designated collection center. The key feature to this approach is that it provides an incentive for the consumer to return the item (as opposed to simply throwing it away) and it has no negative budgetary impact on the public sector. The incentive is provided by the consumer's money, not the public treasury. Deposit-refund systems are used for such diverse items as soft drink bottles or cans, waste oil, and even old automobiles.

Liability law. Liability law requires someone who causes an injurious outcome (such as an oil spill) to pay for the clean-up and to compensate those who were injured by the action. By forcing the party that caused the damage to

bear all of the costs of that damage, liability law removes the externality and the biased decision-making that results from it. In principle, parties engaged in an activity that poses an environmental risk are encouraged to take all cost-justified levels of precaution. Recent examples of the application of liability law include the 1989 Exxon-Valdez oil spill in Prince William Sound, Alaska, and the 1984 industrial disaster in Bhopal, India.

Disclosure strategies. Increasingly, right-to-know laws are forcing parties posing an environmental risk to make information about the nature and danger of the risk available to the public. Making that information public provides an economic incentive for those posing the risk to limit the adverse publicity resulting from that risk by lowering the magnitude of the risk posed. Examples of the use of these policies include: California's Proposition 65 and the Toxic Release Inventory in the United States.

Certification strategies. Surveys reveal that many consumers are willing to pay higher prices for commodities that pose a lower environmental risk either when they are produced or when they are consumed. However, most consumers would find it difficult to distinguish low- and high-risk products. To correct this information deficiency, certification systems have been set up where third-party certifiers monitor production processes and allow those who meet rigorous standards to label their products 'green'. Examples include: organic foods, sustainably harvested wood products, and bird-friendly coffee.

These systems offer considerable promise in principle; in practice the experience is mixed. One common source of a failure to live up to expectations is that monitoring and enforcement may be lax.

The aim of environmental economics is to promote Sustainable Development. It is defined as, "sustainable development is development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs."

Tools for promoting Sustainable Development

1. Assign environmental costs to resources under use.
2. Use price as a tool to avoid waste of resources.
3. Allocation of environmental resources based on true costs and real benefits.
4. Resource conservation through environmental management.
5. Material substitution(ex.copper sheet can be substituted by aluminium etc..)
- 6.Product Life Extension (ex.use and throw consumption pattern of many goods should be postponed.)
- 7.Recycling(industrial waste and by -products can be profitably replaced.
8. Pollution taxes.
9. Waste reduction through technological efficiency.

Conclusion

Environmental values are economic values.For economic efficiency and for economic welfare to conserve our limited natural resources,to make wise and sparing use of our limited clean air,water and living space,as it is to economize in the use of labour and capital

REFERENCE

• Allen K. Kneese and Clifford S. Russell (1987). "environmental economics. • Robert N. Stavins (2008). "environmental economics. • Maureen L. Cropper and Wallace E. Oates (1992). • David Pearce (2002). "An Intellectual History Of Environmental Economics. • UNEP (2007). Guidelines for Conducting Economic Valuation of Coastal Ecosystem Goods and Services.