IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Environmental Economics and sustainability - Research prospective

B Sukitha MA., MPHIL., M.ED
Assistant Professor,
Department of Commerce
Dr.M.G.R Educational and Research Institute,Tamil Nadu, India

Abstracts

The present study deals with environmental economics and sustainability in the research areas. It outlines the environmental behavior and decision-making, market mechanisms and incentives in environmental research. This paper makes a special note on climate change research issues, cost-benefit analysis and monetary valuation of the environment, and water management aspects of environmental economics research. Two different economic approaches to environmental issues, i.e. neo-classical environmental economics and ecological economics, are compared. Some key differences such as weak versus strong sustainability, commensurability versus incommensurability and ethical neutrality versus different values acceptance are pointed out.

KEYWORDS: ecological economics, post-normal science, co-evolution, institution al economics, sustainability, incommensurability

INTRODUCTION

There is a need of research to improve the valuation of environmental benefits. A great degree of uncertainty is associated with this topic, both because a large number of environmental benefits are not valued and because economists do not fully understand how people consider and make choices regarding environmental and ecological services. In this context, research is needed in the following aspects: water quality changes in terms of changes caused by agricultural pollution and one requested a basis for national estimates; The sensitivity of water values based on stream size and uses; ecological impacts from air pollutants; Introduced versus native species; avoided groundwater contamination; ecosystems' impacts from hazardous wastes; Avian species; and ecological endpoints from reducing toxicpollutants.

In this paper the research needs and the research areas are identified through analyzing the published research abstracts and reviews. The research gap is identified and on the basis of such identification, the research areas are suggested in this paper. It is a descriptive paper based on literaturesurvey. The growth of world population and the rapid growth of economic activity have caused environmental stress in all socio-economic systems. There is a wide scientific consensus that problems such as the greenhouse effect (and climatechange),ozonedepletion,acidrain,lossofbiodiversity,toxicpollution and renewable and non-renewable resource depletion are clear symptoms of environmentalunsustainability.Traditionalneo-classicaleconomicsanalysestheprocessofpriceformation by considering the economy as a *closed system*: firms sell goods and services, and then they remunerate the production factors (land, labour and capital). It is interesting to note that while classical economists such as Malthus (1798), Ricardo(1817),Mill(1857)andMarx(1867)hadclearintheir

mindsthat economic activity is bounded by the environment, neo-classical economics completely forgot this important characteristic of real world economies up till theseventieswhenthe debatewasstartedonsocialandenvironmentallimitsto economic growth. The real economy started to be seen as an *open system*that in order to function must extract resources from the environment and dispose oflargeamountsofwastebackintotheenvironment(Ayresand Kneese,1969; Kneese et al.,1970).

NEO-CLASSICALENVIRONMENTALECONOMICS

Basic Principles

Environmental economics can be considered as a particular specialisation of neo-classical economics studying two fundamentalquestions:

a. The problem of environmental externalities; and
b. Correctmanagementofnaturalresources(in particular,theoptimalinter- generational allocation of non-renewable resources).

ECONOMY-ENVIRONMENT INTERACTIONS

The issue ofscale

Systemicapproachestoenvironmentalissuesconsiderrtherelationshipsbetween threesystems:theeconomicsystem,thehumansystem andthenaturalsystem (Passet, 1979).

The *economic system* includes the economic activities of man, suchasproduction,exchangeandconsumption.Giventhescarcityphenomenon, suchasystemisefficiencyoriented.The*humansystem*compriseallactivities ofhumanbeingsonourplanet.Itincludesthespheresofbiologicalhumanelements, of inspiration, of aesthetics, and of morality which constitute theframe ofhumanlife.Sinceitisclearthattheeconomicsystemdoesnot constitutethe entirehumansystem,onemayassumethattheeconomicsystemisasubsystem ofthehumansystem.Finally,the*naturalsystem*includesbothhehumansystem and the economic system (Nijkamp and Bithas,1995).

From the ecological economic perspective, the expansion of the economic subsystem is limited by the size of the overall finite global ecosystem, by its dependence on the life support sustained by intricate ecologicalconnections hicharemoreeasilydisruptedasthescaleoftheeconomicsubsystemgrows relative to the overall system. Since the human expansion, with the associated exploitation and disposal of waste and pollutants, not only affects the natural environment as such, but also the level and composition of environmentally producedgoodsandservicesrequiredtosustainsociety,theeconomicsubsystem will be limited by the impacts of its own actions on the environment (Folke, 1991).Acentralissue then is:does any‘*optimal’scale* existfor the economy? This point has especially been tackled by Daly.

Human Health Benefits

The state of the science is very important regarding valuation of morbidity (nonfatal) and mortality risk reductions. These assessments come from recent cross-Agency reviews of the literature, largely in support of guidance development for applied benefit-cost analysis.

Environmental Behavior and Decision-Making

Interest in environmental behavior research has increased in recent years among both practitioners and academics. The preference for environmental behavior and decision- making research is quite diverse. Each program desires research about the compliance-related decision-making processes of its relevant regulated communities. These processes could be quite varied because the regulated communities in question include different combinations of individuals, firms, government agencies, and municipal corporations, and the regulations differ greatly in form and intent.

One seemingly common factor among these regulated communities is the influence of costs on decision making and the need for cost minimization in the manufacturing, farming, and service sectors. However, research has shown that perceptions of environmentally related costs differ among firms, organizations, and individuals. It could be noted that some firms may base operating and capital investment decisions solely on accounting costs, others more strongly weigh the transaction costs ofdealing with regulatory agencies, potential liability costs, costs of adverse publicity, potential cost savings of pollution prevention, costs associated with dealing with local communities, and even loss of sales in terms of market

share. Consideration of all of these types of costs, as well as the ability of firms to adapt through process changes and innovations.

There is a need of research towards how individuals, businesses, and facilities decide to meet environmental obligations, how they determine their degree of compliance with environmental regulations and how they consider the range of potential costs. Although traditional notions of costs have been researched extensively, relatively little research has been done on the actual role of complex environmental cost concepts in firm and individual decision-making. For instance, what is the most effective way to set environmental fines to encourage increased compliance? Research is needed to assess the optimality of this method and to compare its effectiveness with other methods such as a resource-based optimal compensation in lieu of fines and nonmonetary penalties such as restoration or enhancementactivities.

There is a need of research to consider an interactive model of compliance and enforcement, under which regulators and regulated parties work together to identify pollution sources and the means to address them. Public-private partnerships are often undertaken at the central and state level to improve environmental compliance. Such partnerships can encompass monitoring, technology sharing, regulatory relief, and other options to achieve improved environmental performance for a firm, locale, or sector. Research on compliance and enforcement has traditionally treated the policy process as linear. Researchers assume that the regulators first design and impose a policy focusing on water quality levels, emissions limits, then an enforcement strategy with respect to an audit frequency and penalties for noncompliance, and then the polluting firm decides whether or not to comply. Such assumptions are often not realistic or valid and may reduce the accuracy of behavioral predictions. This research area should attempt to identify the factors and design characteristics that would make public-private partnerships cost-effective.

Efforts to be made to conducts the environmental behavior research from multiple disciplines economics, business administration, political science, sociology, and decision theory that rely on distinctly different research approaches. Theory, methods, and empirical data in environmental behavior research are all somewhat incomplete. There is a great need to refine the behavioral theory to identify the factors that motivate different classes of environmental actors, whether their objectives are cost minimization, improved reputation, increased market share, and decreased transaction costs with neighbors and regulators. A variety of research approaches—case studies, theoretical models, experimental methods, interviews, surveys, retrospective financial and environmental performance data analysis, and geospatial analysis—can all make unique contributions to this broad area of study. In this context, there is a needto integrate these research approaches effectively to improve understanding of environmental decision-making.

Market Mechanisms and Incentives in Environmental Research

Commensurate with the interest from program offices, regions and elected officials. The research results should provide new theoretical developments and approaches that can be generalized to other circumstances or geographical areas using tradable water quality permits to resolve rural nonpoint water problems is complicated by existing agricultural subsidies, lack of monitoring, and cultural resistance to enforcement all of which present the potential for new theoretical and empirical extensions. Similarly, some basic theoretical questions with significant policy implications, such as how marketable permits interact with existing taxes, still do not have satisfactory answers and are not easy to test empirically. The uncertainty among theorists must progress to empirical testing so that some questions can be answered and extended in fruitful directions towards facilitating efficient trading program design and emissions tax levels.

- The range of benefits and the number of methods for estimating them could both be considerable. Ultimately, the principal benefits to the public would be reductions in damages to ecosystems or human health that can be estimated. However, the reputed value of an information disclosure approach is that itcan achieve these reductions at a lower cost or more equitably than other approaches, such as regulation or market incentives. How to calculate these benefits is unclear. However, there are a number of pertinent questions, including: Are markets working more efficiently as a result of information

disclosure, as economic theory wouldsuggest?

- Are there health and ecosystem benefits that would be unrealized if not for the information disclosurerequirements?
- Are there lower costs associated with firms acting on their own to avoid having to disclose seemingly adverse environmentalresults?
- Are there benefits to the firm to discovering pollution-prevention costsavings?
- Are there implementation and enforcement savings for state and central government agencies as a result of informationdisclosure?
- Are communities better informed and therefore more active in protecting their local environment through torts or negotiations with facilities? If so, what damages are reduced or savingsrealized?

These and other questions have been addressed inadequately to date. There is a clear need for more empirical information, as well as development of improved theory about how environmental information affectschoices.

Climate Change Research Issues

- How are the costs and benefits of climate policydistributed?
- How can we develop cost-effective climatepolicy?
- How can we balance concerns of cost-effectiveness or efficiency with concerns of equity andfairness?
- How can we take into consideration the various uncertainties and irreversibilities in climatepolicy?
- How can we make the emissions trading system workefficiently?
- Would a carbon tax be better than a cap-and-tradesystem?

Techniques often used in such analyses include game theory to analyze strategic behavior of countries in international negotiations, or general equilibrium modeling to analyze the effect of different policy scenarios on the economy.

Cost-Benefit Analysis and Monetary Valuation of the Environment

Cost-benefit analysis is a policy evaluation tool that is increasingly used to assess big public projects with serious environmental and social effects. Examples of these are highways, railroads, coastal protection, and big irrigation projects. What distinguishes cost-benefit analysis from other methods is its explicit aim to express all relevant effects in monetary terms. This means that a cost-benefit analysis takes into account not only the financial costs and benefits, but also, for example:

- The change in the quality of local residents' living environment, as reflected by the change in houseprices
- The change in tourism benefits, as related to what visitors will spend more or less in travel costs to visit thearea
- How much stakeholders should be paid to be compensated for any loss in environmental quality, as measured in asurvey

Full cost-benefit analyses are expensive and labor intensive, so performing a complete cost-benefit analysis for any thesis may not be realistic. What a thesis on cost-benefit analysis could involve is the development, exercise, and analysis of a valuation survey, or a thorough literature research on the monetary value of someenvironmental effect or ecosystem service. Only if the topic is not too big, and data are readily available, could a cost-benefit analysis be the topic of anythesis.

Water Management

Water is everywhere, but clean water for consumption or irrigation isbecoming increasingly scarce. Economic analyses of water management deal with questions suchas:

- How should water trading beorganized?
- What are the costs and benefits of watermanagement?
- How should international agreements on international rivers beorganized?
- How can we allocate water within river catchmentsefficiently?
- What economic instruments should we use to managewater?

A student conducting an economic analysis of water management is likely to collaborate with hydrologists. He or she may develop an economic model, perform a game theoretical analysis, or conduct a monetary valuation survey.

Macro-Economic Issues

- Many environmental problems are global or national problems. Therefore, these problems and the policies that address them have economic repercussions ona national or international scale. Macro-economic issues in environmental economics include: The environmental and economic effects of 'green' taxation
- The relation between economic growth and environmental degradation (Environmental KuznetsCurve)
- The relation between economic growth and resource abundance (Resource Curse)
- The role of innovation in environmentalpolicy
- Students working on this topic will probably use General Equilibriummodels.

CONCLUSION

It could be seen clearly from the above discussion that the research in environmental economics is urgent need of the hour. It could be noted that economic valuation of environmental degradation and environmental pollution is very essential to study the cost of pollution and cost of losing life support system. Through physical and biological sciences, one can study the physical damages and biological damages. In order to study the physical damages and biological damages, the research in environmental economics is very important. By realizing this fact in mind, this paper identifies the research needs and research areas in environmental economics. This paper enables the researchers to identify the research gap in environmental economics. The research in environmental economics is a multidisciplinary, interdisciplinary and trans disciplinary in nature. In order to promote the research in environmental economics, the following policy measures can be considered.

1. The government should promote research in environmental economics by the way of providing research grants and research assistance.
2. The government should encourage the researchers by the way of developing research infrastructural facilities.
3. The government should develop interdisciplinary research team towards analyzing the monetary valuation of environmental damages.
4. The government should appoint environmental economists in undertaking benefit cost analysis of development projects.
5. Effort should be made to regulate the environmental pollution with the application of environmental taxes and exploring the new avenues of taxing the polluters.
6. The government should incorporate environmental economics curriculum in environmental sciences, biological sciences and natural resource sciences.
7. The government should appoint environmental economists in preparation of environmental impact assessment modules.
8. The knowledge of environmental economics should be promoted through research and development system of the government.
9. The government should promote environmental economics education by the way of developing centre of excellence in environmental education in various universities and colleges.
10. The environmental economics education should be taught to the forest department officials, environmental department officials and natural resource management department officials.
11. Naturallife-supportingecosystemsarenegativelyaffectedbythedisposalof wastesfromtheeconomicsystem.Iftheeconomy-environmentinteractions are taken into account, immediately a broad question about the capability of the natural environments to sustain the economy arises.
12. Substitutionofmoreproductiveman-madecapitalfornaturalcapitalisnot an acceptable answer to environmental problems.
13. The idea of maintaining the natural capital stock is important de-sirable;unfortunatelyitisverydifficulttooperationalise.Itsmainproblem is connected with the possibility of valuing environmental goods in money terms (strong commensurability).
14. Environmental problems revery complex and characterized by scientific uncertainty.Anymethodtryingtooperationalisetheconceptofsustainable evelopment is necessarily a second best approach.

15. In economic theory, three main conflictual values can be identified: allo-cation,distributionandscale.Inanoperationalfra mework,thismeansthatan exhaustiveanalysishastotakeintoconsiderationeffi ciencycriteria,ethical criteria and ecological criteria, so a multidimensional paradigm is needed.

16. Ecological economics recognises that ecological and economical rationality are not sufficient to lead to correct decisions, thus environmental decisions must be taken by using a democratic scientific-political decision process.

REFERENCES

[1] Sundar, I, (2017) "Research methods in Environmental Economics" ISBN: 978-81-928130-4-2 Sun International Publishers, New Delhipp.494.

[2] Sundar,I, (2016)"Economics of Biodiversity" ISBN: 978-81-8387-741-1 Serials Publications, New Delhi pp.659

[3] Sundar, I, (2015) "Ecological and Evolutionary Sociology" ISBN: 978-81-928130-1-1 Sun International Publishers, New Delhi pp.527.

[4] Sundar, I, (2014) "Sustainable Development: Theory and Practice" ISBN: 978-81-8387-678-0 Serials Publications, New Delhipp.865.

[5] Sundar, I, (2014) "Multidisciplinary Perspectives in Biodiversity Conservation" ISBN: 978-81-8387-633-9 Serials Publications, New Delhi pp.564.

[6] Costanza, R., D'Arge, R., de Groot, R., Farber, S., Grasso, M., Hannon, B., Limburg, K., Naeem, S, O'Neill, R., Paruelo, J., Raskin, R., Sutton, P. and van den Belt, M. (1997) 'The Value of World's Ecosystems Services and Natural Capital', Nature, 387,255.