

Environmental Economics and Sustainable Development: A Study on Environment Management Policy of Nepal

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Abstract

Environmental economics has important contributions to the understanding of environmental phenomena, their causes, effects, and possible solutions that have been developed from various areas of economic theory and original applications and developments. Economists are to provide an increasingly effective contribution to the study of environmental issues and the pursuit of sustainable development. In particular, empirical analyses are of fundamental importance both to environmental economics and to the sustainability debate. The objective of this study is to analyze the environmental problems which are being encountered as a result of attempts to produce economic development in the nation. Descriptive research design and descriptive statistics have been followed to make an analysis. The secondary information was collected. It was found that the acts and regulations related to the environment have not been effective due to the lack of integrated environmental policy, lack of coordination among various agencies, and lack of adoption of a holistic approach.

Keywords: environmental economics, regulation of pollution, policy, sustainable development.

Background

Environmental and natural resource economics has emerged as a mature field of research over the last three decades. In the 1960s and 1970s, it was the subject of a comprehensive research program which dealt with a wide range of issues and policy problems, such as the economics of natural resources, the methods, and problems in the correction of externalities, the management of common property goods, the economics of nature preservation. In the early 1980s, however, scientists have highlighted a set of “new” environmental phenomena, such as global warming, ozone layer depletion, acid rain, freshwater and ocean pollution, desertification, deforestation, and the loss of biodiversity. Some of these phenomena, such as ozone layer depletion, were newly discovered; some others, such as global warming, were known but attracted new attention, due to their unexpected scale and socioeconomic implications (Colombo and Siniscalco, 2009). Given their scale and importance, the new environmental problems entered the agenda of policymakers and became the center of worldwide debate and a massive diplomatic effort, culminating in the UN Conference on Environment and Development held in Rio de Janeiro in 1992, followed by the Cairo UN Conference on Population and Development (1994) and the Istanbul UN Conference on Cities and Sustainable Development (1996).

The economists’ community has increasingly recognized that the common characteristics translate into big challenges for environmental economics: they raise new questions or pose old questions in a new context. In particular, traditional environmental economics had focused on environmental issues that were “limited” both in time and space and analyzed in a closed, competitive, full-information economy, in isolation from all other economic and

social dimensions of human development. The new environmental phenomena “crowd out” much of the existing knowledge, practice, and conventional wisdom, thus requiring new analytical tools and fresh policy analyses.

The general framework for the analysis has changed in terms of environmental issues that emerged as a particular dimension of human development. Environmental economics has received a new impulse and experienced a kind of breakthrough, both in terms of methods and focuses of the analysis. The required tools are being taken from other areas of economics: macroeconomics and the theory of growth, applied microeconomics, welfare economics, the theory of property rights, taxation, international, industrial, and labor economics, etc. The “new” developments of the environmental economics literature, both on analytical and policy grounds, may be grouped into three major research areas: (a) sustainable development; (b) transboundary environmental issues; (c) uncertainty and information asymmetries. The theoretical questions posed by the new environmental phenomena, how economic theory and environmental economics have dealt with those questions so far, and, finally, the issues that call for further advances in economic theory and, more generally, in environmental economics research (Munasinghe, 1993).

Environmental Problems has become one of the major political and economic issues in recent decades. Environmental pollution results from negative externalities. Externalities may be eliminated by the clear definition of property rights if the parties involved are not very numerous. This is precisely the industry with environmental pollution, which refers to air pollution, water pollution, thermal pollution, pollution resulting from the garbage disposal, and so on. As pollution results mostly from the industrial sector, automobile exhaust, and smoke from factories and electrical generating plants through the combustion of fossil fuels, which released particles into the air. While it is difficult to measure precisely the harmful effects of sulfur dioxide, carbon monoxide, and other air pollutants, they are known to cause damage to health and property.

Literature Review

Environmental economics plays a key role in identifying options for efficient natural resource management that facilitate sustainable development. It is an essential bridge between the traditional techniques of decision-making and the emerging more environmentally sensitive approach. Environmental economics helps us incorporate ecological concerns into the conventional framework of human society.

The global and transnational level consists of sovereign nation-states. In the next level are individual countries, each having a multisectoral macroeconomic structure. Various economic sectors such as energy, industry, agriculture, transport, etc. exist within each country. Finally, each sector consists of different subsectors, projects, and local schemes. The usual decisionmaking process that corresponds to this structure relies on techno-engineering, financial and economic analyses of projects and policies. In particular, we note that conventional economic analysis has been well developed over the past several decades, and uses a variety of techniques including projects evaluations (Munasinghe, 1993).

The causes of environmental degradation also arise from human activity. The physical

including biological and social effects of socioeconomic decisions on the environment must then be traced through to the bottom half of the diagram, and the techniques of environmental assessment have been developed to facilitate this difficult analysis (*Munasinghe and Lutz, 1991*).

Although the consolidation of environmental economic theory and its application to empirical issues spread throughout the developed world in the 1970s, the incorporation of environmental issues into development planning is a relatively recent phenomenon. A review of the literature in the field reveals the paucity of writings touching upon the environment. Academic development economics barely acknowledged the field until recently (*Dasgupta and Maler, 1991*). Much of the literature on the environmental economics of developing countries have emerged since the mid-1980s. This is largely as a result of the increasing emphasis being placed on environmental issues by major aid-giving institutions.

The Brundtland Report recognized the role of economics in sustainable development-both in assessing costs of environmental degradation in developing countries, and in designing relevant incentives to limit such degradation (*World Commission on Environment and Development 1987*). The recent worldwide concern regarding the environment has strengthened the emphasis placed on environmental sustainability as an important criterion for sound natural resource management. Another facet of this concern is reflected in the increased attention paid to intergenerational equity and the role of discount rates in economic calculations.

Gangadharan (2003) examined the data on compliance with environmental regulations within the manufacturing sector in Mexico. She found that the probability of complying depends, among other factors, on the kind of management practices of the firm and the level of environmental training. Dasgupta S. et al (2000) used new survey evidence to analyze the effects of regulation, plant-level management policies, and plant/firm characteristics on the environmental performance of Mexican factories. They focused particularly on management policies: the degree of effort to improve environmental performance and the type of management strategy which was adopted. Eckert (2004) examined the use of inspections and warnings to enforce environmental regulations. An empirical model of petroleum storage inventory reconciliation regulations was developed based on a state-dependent penalty system. The results suggested that, even in the absence of frequent prosecutions, inspections deter future violations but that this effect is small.

Gray and Shimshack (2011) reviewed the economic evidence on the impacts of environmental monitoring and enforcement on subsequent pollution discharges and compliance behavior. The empirical evidence that has been reviewed in the study suggested that monitoring and enforcement are significant determinants of pollution prevention and environmental compliance. Blackman (2009) conducted a study on environmental pollution control techniques in developing countries. He has reviewed the literature on non-regulatory pressure on environmental performance and found that most studies are lack of causal relationship between regulatory and non-regulatory pressures on environmental performances. He found that the most influencing pressures are; communities, regulators, capital markets, consumers,

and plant size. He also reviewed the literature on public disclosure on environmental performance. He examined whether the voluntary regulations can improve environmental performances and what drove them to participate in this.

Constitutional Provision on Environmental Protection in Nepal

The national government policies relating to environmental protection have greater eminence with the promulgation of the constitution of 1990. Previous constitutions were silent on environment protection policy. The Constitution of Nepal, 1990 has been including environmental protection policy under state policy in article 26(4). Sub article 4 of article 26 proclaims that: “ *The state shall give priority to the protection of the environment and also to the prevention of its further damage due to physical development activities by increasing the awareness of the general public about environmental cleanliness, and the state shall also make arrangement for the special protection of the rare wildlife, forests, and vegetation.* ” This provision gave the right to the environmentally concerned citizens and interested groups to show attention to the environmental relating issues of the nation, anyone can file a case of public interest litigation in the court in case of violation of his/her right to a clean environment. Article 26 of the directive principle includes some responsibilities and duties of the state which give implied or moral right to the citizen to have a clean environment.

The Interim Constitution of Nepal (2006) also mentioned the state duty to incorporate environmental matters into its policy process in the state policy of article 35, directive principle gave some responsibilities duties upon the state which give implied a moral right to the citizen to have a clean and healthy environment. This constitution has provided a fundamental right as a right to a clean and healthy environment in article 16 but there is no provision of fundamental duty by all people emphasizing environmental protection. Article 156(2) provided that any agreement with the foreign countries in the area of natural resources and the distribution and utilization has to be ratified or approved by a two-thirds majority of the member presenting in the joint session of parliament.

The Constitution of Nepal (2015) has also included the state duty to incorporate environmental matters into its policy process in state policy of article 51 (g) Policies relating to protection, promotion, and use of natural resources, directive principle gave some responsibilities duties upon the state which give implied of a moral right to the citizen to have a clean and healthy environment. This constitution has provided a fundamental right to a Right to clean environment in article 30 provisioned that (Article-30 (1)) ‘every citizen shall have the right to live in a clean and healthy environment’. But there is no provision of fundamental duty by all people emphasizing environmental protection. Article 279(2) provides that any agreement with the foreign countries in the area of natural resources and the distribution and utilization has to be ratified or approved by a two-thirds majority of members present in a joint session of parliament.

Decisionmakers in most developing countries now accept that poor management of the environment has become a significant barrier to development. Since sustainable development includes another long-standing, high priority objectives like economic growth and poverty eradication, scarce resources must be used as efficiently as possible. The conventional approach

relied on the systematic analyses of economic decisions that influenced the production of goods and services. However, as discussed earlier, this focus on economic efficiency is a necessary but not sufficient condition for sustainable development.

Research Problems and Objectives

In the developed countries, environmental problems have seemed to originate from industrialization and modernization, whereas in a country like Nepal these problems can be attributed to ignorance, poverty, and the rapid growth in population, maintenance of a balanced ecological system seems to get more and more difficult especially as the rapid increase in population pressure and rapid expansion of developmental activities seem to cause denudation of forests, land-erosion, floods, the drying-up of water sources and shortage of fuel woods, grass and other like sources of energy.

Also, industrialization, modernization, and tourism development seem to be contributing to ecological disturbances. The main objective of environment management is to mitigate the adverse effects of the mentioned factors and to maintain a balanced environment. Likewise, proper land-use patterns and a sound environmental management system are the basic prerequisites to control the process of desertification, increase land-productivity, and to implement balanced development plans. In short, proper land-use patterns and sound environmental management are the essential preconditions to improve the general welfare of the people. The objectives of this study are to analyze the regulation of environmental problems and review the environmental policy based on plan periods. Similarly; this study analyzed the environment and sustainable development.

Research Methodology

The paper is primarily based on secondary data, which has been collected from plan documents, annual reports, and publication of economic surveys, the publication of the government of Nepal, and published by the Ministry of Environment. Besides, the researchers have also collected data from the study related journal and articles published in national and international forums. The research study is analyzed based on the Sixth plan documents (1980-85) to Fourteenth plan documents (2016/17-2018/19) and the analysis is based on descriptive statistics. The descriptive technique is used to analyze the data.

Results and Discussions

Natural calamities like soil erosion, landslide, and flood have been on the increase in the country year by year, owing chiefly to such activities which are involved in settling the increasing population, expanding cultivable land areas, encroaching upon the forest property to meet the energy needs, carrying out an agricultural operation on hillside slopes, and similar other depredations against nature. Similarly, unplanned and haphazard urbanization and industrialization have also contributed to polluting the atmosphere.

Before the Sixth five Year Plan (1980-85), there was not any provision of environmental protection policy. In the Sixth plan, environmental programs were strengthened and soil erosion in the principal catchments areas of training and other effective actions to maintain the

policy of preventing further deterioration of the already worse situation. Priority was given to the conservation and expansion of water resources, forests, and rare animals in the interest of ecology. The policy under the sixth plan was to prevent the diversion of cultivable land to unproductive use and to develop forest and meadows in lands, which had no agricultural use. While preparing development and construction plan, environmental aspects were taken into consideration as a matter of policy. Suitable legislation and regulations were also framed to forestall atmospheric pollution that might result from urbanization and industrialization.

The measures initiated during the Sixth Plan helped in checking further deterioration of the environmental conditions on the one hand and in developing a sound base for the formulation and implementation of policies directed at the maintenance of a sound and balanced environment. Formation of Department of a sound a balanced environment. Formation of the Department of Soil and Water Conservation and the Department of National Parks and Wildlife Conservation were the results of some of the steps taken by the Government. Likewise, the implementation of integrated rural development projects, watershed management, community forest development, and other projects with afforestation components had contributed positively to the forest development program while the establishment of a Remote Sensing Center helped generate data on environmental status. In this background, the establishment of Mahendra Nature Conservation Fund and the establishment of the International Center for Integrated Mountain Development (ICIMOD) with the assistance of UNESCO and other friendly countries could be expected to play a significant role, the latter not only in Nepal but also in a regional context, in the conservation and development of a balanced environment.

The Seventh Plan (1985-90) had identified the following objective, policy, and program for implementation in the area of environment and land use. (i) To control environmental degradation caused by developmental activities and other factors and to bring about and maintain a positive relationship between development activities and environmental management, (ii) To preserve the interest and welfare of the common people by reducing the level of water, air, and sound pollution and (iii) To maintain and develop the overall welfare of the people through conserving and strengthening the environment through a system of sound environmental management.

To prevent environmental degradation, the environment and land use policy was incorporated for the first time as a national policy in the Sixth Plan (1980-85). Subsequently, the environment was recognized in the Seventh Plan (1985-1990) as an important aspect to be integrated into every development project. However, related programs could not be implemented effectively. Political commitment, as well as an adequate number of efficient agencies to direct, supervise, coordinate and provide consultancy services to these programs, were seriously lacking then. Besides, legal provisions were inadequate and ineffective to protect and promote national natural resources. Towards the end of the Seventh Plan and later, some important measures have been undertaken for environmental protection and management.

The Eighth Plan (1992-97) had formulated policies related to environment and resource preservation, with adequate attention to the problems existing in the nation's development

and environment, and also to the concepts of the Earth Summit Conference. The policy mainly focuses on environmental management and economic progress which are related and complementary processes, special care taken to incorporate such programs that minimize the negative impact on the environment, scientifically analyzed and upgraded and bio-diversity, traditional know-how, extensive legal provisions which could be made and implemented for environmental management. An environmental management plan was developed and implemented gradually to check ecological loss at the existing tourist spots. Various programs for environmental protection and management of resources in the plan:

(i) Environmental Impact Assessment (EIA) Program: Guidelines for various sectoral agencies were formulated for the environmental impact assessment program. Before carrying out large-scale development projects (esp. road, hydroelectricity, industry, irrigation, housing, drinking water, sewerage, etc.), priority was given to the obligatory assessment of the environmental impact at the time of conducting their feasibility studies. Based on these studies adequate fund was allocated in the project budget to minimize adverse effects on the environment.

(ii) Programme for Identifying and Preserving Sensitive Areas: Keeping in view the environmental aspect, integrated land-use procedure was devised. Surveys and studies were undertaken to diagnose the areas sensitive to desertification. Environment-related projects were designed and carried out for preserving and promoting the areas important from the viewpoint of the environment through the identification of ecologically fragile areas and desert land, and these projects were designed to be implemented stage-wise.

(iii) Conservation Programmes for Natural and Cultural Resources: Activities like collection, genetic analysis, and documentation of important vegetation, endemic species, and many other natural living resources were carried out regularly. Appropriate national and sectoral guidelines were formulated for devising environmental plans of natural and cultural spots. Environmental plans were envisaged for different natural and cultural sites to enhance the development of tourism and gradually implemented for their conservation and promotion.

(iv) Pollution Control Program: Studies on assessment of existing situations were undertaken in terms of water, air, noise, and soil pollution to control them, for which basic indices were prepared. Action programs involving appropriate technology was planned to carry out to control pollution from various sources. Appropriate management work plans were proposed to make and implement to control pollution. Similarly; environment-friendly land utilization processes were also developed and put into practice.

(v) Programme for Promoting People's Awareness: Environmental knowledge and practical awareness were promoted based on people's participation by carrying out publicity activities. Programs like the incorporation of environmental education in school curricula, dissemination of environmental awareness through communication media, and other programs with NGOs' participation, e.g. environmental education, environmental health, afforestation land use, water conservation, etc. were introduced environmental education programs.

Environment Protection Act (1997) and Environment Protection Regulations, 1998 had been effective. Environmental Impact Assessment Guidelines as a tool to minimize environmental impact had been enforced in the formulation and implementation of projects. Separate Environment Impact Assessment Guidelines for the forest and industry sector had been formulated and implemented. Though there were various provisions to protect the environment and control pollution in the Environment Protection Act, 1997, no effort had been made to institutionalize the process and the system in the sector agencies.

Realizing the concept of sustainable development, various legal provisions have been made. But the acts and regulations related to the environment have not been effective due to the lack of integrated environmental policy, lack of coordination among various agencies, and lack of adoption of a holistic approach.

In formal environmental education, achievements made by the Ministry of Education, the National Planning Commission, the World Conservation Union, and some other NGOs are encouraging. Primary level course on environmental education has been designed and incorporated and the same is being incorporated in the course of secondary and higher secondary levels. The environmental subject was also included in the university. Nevertheless, environmental awareness programs had not been disseminated at the people and the village level. No adequate provision has been made towards encouraging the joint participation of NGOs, the community, and the private sector in environmental protection. By effectively utilizing the provisions of the bio-diversity convention, it was felt necessary to establish a judicious system that delivers the economic achievements of the convention to the grass-root level instead of limiting it to the protected areas.

The long-term vision of environment policy (Ninth Plan, 1997-2002) implies achieving sustainability in resource protection and sustainable use of available natural resources. To integrate development and environment and render government, non-government, local body and private sector's active participation in the implementation of participatory programs was the goal of long-term policy.

The main objectives of the Ninth plan were to consolidate working system and planning environment sections of various ministries to maintain an environmental balance and all-round economic development of the country; adopt a unified approach to environment and development; formulate regulations and maintain coordination regarding national resource protection; widen the concept and area of bio-diversity; adopt scientific techniques in forest management; enforce mandatory and voluntary measures of pollution control by fixing emission and effluent standards, and adjust economic and financial policies in tune with environmental policy.

Proper environmental management plans were prepared and implemented by determining emission and effluent standards of air and water coming out from industrial plants to ensure environment-friendly industrial development. Efforts were made to make financial and economic policies favorable to environment policy, reviewing the tax, custom, and investment

policy in the context of the environment. The emphasis was given to capacity building for the Environmental Impact Assessment (EIA), institutional arrangement, and legal provision. For the improvement of the environment at the local level, various activities, such as cleaning programs, public awareness, ban on the use of the plastic bags, are being carried out by various.

The long-term objective of environment management (Tenth Plan, 2002-2007) was to create a clean and healthy environment by making environment management effects based on the concept of environmental governance and controlling pollution and to attain sustainable development through wise/judicious utilization of the natural resources. The objectives were interrelated to the environment protection and the economic development which could lead to sustainable development, emphasis was given to the protection of natural environment protection, restoration, and sensible use of resources and controlling the pollution in the urban areas and to keep the rural areas clean, healthy and beautiful, voluntary participation of people which could be encouraged and the sustainable development would be promoted. To carry out the environmental protection effort at the local level, the local bodies themselves were provided with the package programs for the implementation.

The long-term vision (Eleventh Plan 2007-2010) of the environment conservation sector was to achieve sustainable economic development by reducing environmental impacts. The objective of this sector was to help economic development by reducing the pressure on the environment through the implementation of international agreements and conventions. An integrated policy related to the environment was formulated and implemented. Programs were formulated, implemented, and monitored according to the spirit of treaties, conventions, and agreements on the environment that were endorsed by and to which Nepal is a part. By integrating the aspects of environmental conservation with infrastructure development and social and economic development works, programs will be implemented and implementation status was made public regularly.

The Twelfth Plan (2010-2013) aims to attain sustainable development by the rational use of natural resources with effective management of the environment. Similarly, the plan aimed to minimize the calamities which appeared due to climate changes. While the plan contains ambitious targets for environmental protection, there was still scope for further improvement by introducing green taxation. A tax on coal at modest carbon prices (\$20 per ton of CO₂) would provide an incentive to use it more efficiently, and yield revenues equivalent to 2-3% of GDP that could be invested in developing low-carbon technologies. Removing administrative controls on the price of water and electricity would rationalize their use and consumption, and introducing natural resources taxation nation-wide was similar effects while increasing revenue both at the central and local levels.

The objective of the Thirteenth Plan (2013-2016) for the environment was: adapt to the adverse impacts of climate change by making human activities and development processes environment-friendly as called for under the principles of green development. Various policy provisions were set in that plan. Through the Local Adaption Programme of Action, the

National Adaption Programme of Action could be executed at the local level and efforts to alleviate poverty could be expanded. Programs for spreading public awareness about protecting and preserving the environment could be carried out. The Ministry of Science, Technology, and Environment could serve as a focal agency to coordinate all the activities related to environmental conservation and climate change. By enforcing the treaties and conventions to which Nepal is a party, and especially taking advantage of the Clean Development Mechanism under the Kyoto Protocol, the agencies concerned would be mobilized to derive maximum benefits, etc.

The concept of a green economy could be integrated into all economic programs. Special programs for reducing various types of pollution will be designed and implemented to keep urban pollution within a certain limit and to preserve the beauty of rural areas. To reconcile the sometimes conflicting demands of environmental protection and poverty alleviation, poverty alleviation programs with an environmental dimension could be effectively implemented. Through the enforcement of treaties and conventions relating to the environment and climate change, adaptive programs would have been implemented in the areas designated by the National Adaption Program of Action; criteria and standards regarding air, water, and sound pollution could be enforced; and persistent hazardous chemicals would be properly managed.

The vision of the Fourteenth Plan (2016-2019) was: Sustainable development through a clean and healthy environment. The targets of the plan were to operate development activities with a favorable environment friendly and climate change. The objectives of the plan were: to protect the environment for achieving sustainable development goals, to minimize pollution which creates increasing urbanization, and under green development human activities and development processes could be enhanced climatic changes.

The conservation of Nepal's natural environment and the creation of programs for sustainable development has become challenging tasks. The long-term view foresees the integration of the environment with development and the inclusion of environmental concepts in sectoral development programs. For carrying out this task, the emphasis was given to encourage joint and collaborative efforts of government agencies, local bodies, non-governmental agencies, consumers' groups, and private sectors. The problems of a landslide, land-erosion, flood, a decline in agricultural production, and deforestation are existing in villages while smoke dust and garbage are increasing in the city day by day. The policy and practice of conserving the environment and the formulation and implementation of other programs that empower people have, indeed, increased environmental awareness.

Findings and Conclusions

The environment stability of human settlements is part of the relationship between humans and their natural, social, and built environments. It is also termed as human ecology, this broadens the focus of sustainable development to include the domain of human health. Fundamental human needs such as the availability and quality of air, water, food, and shelter are also the ecological foundations for sustainable development; addressing public health risk through investments in the ecosystem can be a powerful and transformative force for sustainable development which, in this sense, extends to all species.

Environmental sustainability concerns the natural environment and how it endures and remains diverse and productive. Since natural resources are derived from the environment, the state of air, water, and the climate is of particular concern. Environmental sustainability requires society to design activities to meet human needs while preserving the life support systems of the planet. This, for example, entails using water sustainably, utilizing renewable energy, and sustainable material supplies. Sustainability requires that human activity only uses nature's resources at a rate at which they can be replenished naturally. Inherently the concept of sustainable development is intertwined with the concept of carrying capacity.

The policy and practice of conserving the environment and the formulation and implementation of other programs that empower people have, indeed, increased environmental awareness. The process of expanding activities favorable to the environment and the practice of environmental impact assessment (EIA) have been started. But still, adverse effects are seen on public health and tourism development due to the degradation of environmental quality.

Realizing the concept of sustainable development, various legal provisions have been made. But the acts and regulations related to the environment have not been effective due to the lack of integrated environmental policy, lack of coordination among various agencies, and lack of adoption of a holistic approach.

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