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ENVIRONMENTAL ASSETS AND LIABILITIES IN ARUNACHAL PRADESH, INDIA: A CRITICAL ASSESSMENT

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ABSTRACT

Environment is a complex of physical, chemical and biotic factors that act upon an organism or an ecological community and ultimately determine its form and survival. It is the combination of different external physical conditions that affect and influence the growth, development and survival of organisms including human being. Such external conditions include biotic components like plants, animal and other living beings and abiotic components like soil, weather, water, air, sunlight etc that constitute environmental asset. Arunachal Pradesh is a land of mountains and forest with abundant of environmental assets. Around 80 percent of the total geographical area is covered with forest. Nature has blessed this state with all environmental assets that requires for survival and sustenance of human being. The rate of consumption of the environmental assets is less than the rate of replenishment of such assets in the state. The state has abundance of fresh air, pure drinking water, unpolluted soil and climate that required for the survival of human being. However, the relentless march towards development, industrialization and increasing urbanization has led to degradation of these environmental assets. Under the above background the present paper attempts to examine the nature and extend of some selected environmental assets and the liability on the part of state government and its people to conserve these assets.

KEYWORDS

Environmental Asset, Environmental Liability, Environmental Degradation, Pollution.

INTRODUCTION

Environment is the surrounding of an object or a man with living and non-living factors that determines the existence of life. It is a complex of physical, chemical and biotic factors that act upon an organism or an ecological community and ultimately determine its form and survival. It is the combination of different external physical conditions that affect and influence the growth, development and survival of organisms including human being. Such external conditions include biotic components like plants, animal and other living beings and abiotic components like soil, weather, water, air, sunlight etc are called natural resources. Natural resources occur naturally within environments that exist relatively undisturbed by mankind, in a natural form. A natural resource is often characterized by amounts of biodiversity and geo-diversity existent in various ecosystems.

Natural resources are materials and components that are found within the environment. Every man-made product is composed of natural resources at its fundamental level. A natural resource may exist as a separate entity such as fresh water and air as well as a living organism such as a fish or it may exist in an alternate form which must be processed to obtain the resource such as metal ores, oil and most forms of energy. Some Natural resources can be found everywhere such as sunlight and air and such resources are known as a ubiquitous resource. However most resources are not ubiquitous they only occur in small sporadic areas these resources are referred to as localized resources. There are very few resources that are considered inexhaustible such as solar radiation, geothermal energy, and air. The vast majority of resources are however exhaustible, which means they have a finite quantity and can be depleted if it is not properly managed.

The various natural resources derived from the environment are essential for survival of human being and for satisfying their varied wants. All such natural resources may be termed as environmental assets. A nation's environmental assets are diverse and important. Environmental economists talk about natural assets at par with physical assets, human assets, intellectual assets and other forms of assets. Environmental assets, like any other assets, provide a flow of services over a period of time. Often they provide these services over very long periods of time greater than most other forms of assets. Arunachal Pradesh is a land of mountains and forest with abundant of nature gifted capital or environmental assets. Nature has blessed the state with all environmental assets that requires for survival and sustenance of human being. However, the relentless march towards development, industrialization and increasing urbanization has led to degradation of these environmental assets. The present paper is humble attempt to examine the environmental assets in the state and the liability to preserve its natural character by the stakeholders.

OBJECTIVES

The main objectives of the paper are:

1. To assess the nature and extents of environmental assets in Arunachal Pradesh.
2. To examine the liabilities on the part of stakeholders in preserving these assets.

METHODOLOGY

The present paper is basically based on the secondary information collected from different articles, books through electronic media i.e., internet. Some of the information is based on personal observation and experiences of the author. All the sources of information have been duly acknowledged. In this paper the natural resources is being considered as environmental assets and it has been classified into two categories viz; Environmental assets that provides survival benefits and the environmental assets that provide use benefits or for satisfying the different needs of human being. The responsibility to preserve and to bear the consequences of non-preservation of the environmental assets is considered as environmental liabilities. The evaluation is being made in the context of Arunachal Pradesh.

DISCUSSION: NATURAL RESOURCE AS AN ENVIRONMENTAL ASSET

In financial accounting assets are economic resources. Anything tangible or intangible that is capable of being owned or controlled to produce value or benefit and that is held to have positive economic benefit is considered as an asset. A resource with economic value that an individual, corporation or country owns or controls with the expectation that it will provide future benefit is an asset. In economic terms assets represent ownership of value or benefits that can be converted into cash at any given point of time. The natural resources are assets for the nation or a society in the sense that it provides various economic, social and survival benefits or value to the human being. Natural resources may also be termed as natural capital because it is used as a factor of production and for survival of human being. As such, for the purpose of analysis and discussion, the natural resources are taken as equivalent to as environmental assets in this paper.

The natural resources are diverse and varied. Environmental economists tried to equalise with natural resources as natural capital or environmental assets as it also provides different benefits to the man as like physical asset, human assets, intellectual assets and other forms of assets. However, the benefit accrued from environmental assets is different from other economic assets. The environmental asset provides multiple benefits to the living organism including human being and most importantly it sustains life and provides materials for satisfying their different needs.

Environmental assets are elements of the environment that contribute to human well-being by yielding either survival benefit or use benefit (benefit of satisfying the need) to an individual or group of individuals or a community. In other words environmental assets are defined as the natural resources that provide human being the survival benefits and use benefits. The natural or environmental assets like air, water, land, etc provides survival benefits to the human being. On the other hand, the natural or environmental assets like various forest product in the form of tree, bamboo, fruits, animals, soil, etc provides used benefits for satisfying the varied need of human being. Therefore the above definition include assets that produce free services to production and welfare for the survival of human being as well as that serve as input of material, energy and space into production for satisfying different human needs.

Hence, the environmental assets are broadly classified into two categories namely- the assets that are required for the survival of living organism including human being and the assets that required for satisfying different needs of human being. The list of the environmental assets for survival and use benefits are given in Table-A.

TABLE-A: ENVIRONMENTAL ASSETS

For survival (sustenance of life)	For use (satisfying human need)
Fresh Air, Pure drinking water, Land for settlement, Favourable Climate, vegetation, Sunlight, Environmental system, etc.	Wind, Trees, bamboo, canes, fruits, vegetable, sand gravels, sands, boulders, birds and animals, fish, Fossil fuel, minerals, metals, carbon credit, etc.

Source: compiled from field assessment.

ENVIRONMENTAL ASSETS FOR SURVIVAL BENEFITS

Man may acquire abundance of economic assets, physical assets, intellectual assets and other assets for their comfort but if they do not have adequate and clean environmental assets their life is always at risk. Human being is helpless before the environment or nature. The environment is the source of every possible resource for the survival and to meet the various needs of human being. The basic necessity for the survival of human being is air, water, land, forest, climate, sunlight, etc which are the free gift of the nature or environment and are called environmental assets. Some of these assets, like sunlight, air, wind, etc., are continuously available and their quantity is not noticeably affected by human consumption. The nature has provided abundance of environmental assets for the survival of human being. However, due to the increasing human activities in the process of development and to meet their endless needs the quality or quantity of these assets has been affected. The rate of consumption of these assets is more than the rate of its replenishment or recovery. Hence, the depletion or degradation of environmental asset is effected. The depletion of natural resources or asset is caused by human activities that are called as 'direct drivers of change' such as mining, petroleum extraction, fishing and forestry as well as 'indirect drivers of change' such as demography, economy, society, politics and technology. Therefore, it is a great concern for all the nations to create awareness about the important of environmental assets and the liability to preserve and to bear the outcome of such reckless activities. Moreover, at present age the question of quantity or availability of the assets is not important but its quality and the ability to sustain life.

Arunachal Pradesh is a land of natural assets with abundance of forest and biodiversity. Around 82 percent of the total geographical area of the state is under forest cover. There is numerous rivers, streams, rivulets and springs, etc. that provides potable water for the survival of human being. There is abundance of qualitative environmental assets for the survival of human being. The environmental assets like air, water, sunlight, land, vegetation, etc are available in its natural and pure form. So far, the rate of consumption of these environmental assets is less than the rate of its replenishment and recovery.

ENVIRONMENTAL ASSETS FOR USE BENEFITS

As already pointed out, the environmental asset provides use benefits to the human being. Use benefit may be defined as the benefit that the human being derived from the environmental assets to satisfy their numerous needs and wants. The environmental assets like forest resources in the form of trees, bamboo, canes, fruits, vegetables, etc are used to meet the daily requirements of the people. The various activities of the people especially the tribal community are associated with the forest resources. The different natural resources that are used to meet the basic requirements of human being like food, clothing and shelter are also available in the form of trees, bamboo, canes, fruits, vegetable, sand gravels, sands, boulders, birds and animals, fish, etc. The wind and sunlight are used to produce energy in the form of wind energy and solar energy. The environmental assets like Fossil fuel, minerals, metals, hydropower, etc. are used for earning huge amount of revenue for the state or a country. Recently, the vegetation or forest resources become an important source of earning carbon credit.

Arunachal Pradesh is well known for the relationship between tribal people with its natural resources or assets. Its environmental assets are the source of food, clothing and shelter for its tribal people. The forest resources are culturally and ritually linked with the various activities of the people. The forest resources are used by the people of the state for different economic activities like agriculture (jhum cultivation), hunting, food gathering, construction of dwelling places, etc.

ENVIRONMENTAL LIABILITIES

In financial accounting liability is defined as the money that a person or a company owes to somebody. In other words, it is the obligation on the part of the company or a person to repay the amount with the cost of its use. As per Oxford advance learner dictionary, liability is the state of being legally responsible for something. It is the state of being accountable to the activities and its consequences. Therefore, environmental liability is the responsibility of the government, corporate entity, society and an individual to prevent the damage of environmental assets and to bear the consequences of such damage. The European Communities (Environmental Liability) Regulations 2008, states that environmental liability is the prevention and remedying of environmental damage. The purpose of these Regulations is to establish a framework of environmental liability based on the 'polluter-pays' principle, to prevent and remedy environmental damage. The Regulations supplement existing National and European Legislation to achieve the prevention and remediation of environmental damage by introducing, among other things, a positive reporting obligation on operators in respect of actual or threatened environmental damage. Liability typically extends to individuals who have operational control, executive powers, or individual or joint ownership of assets. Since a board of directors has executive powers, statutory liability extends to all board members who are declared as Directors of the Company with the Registrar of Companies. Liability may also extend to senior officials who are not board members if they fulfill the above criteria. Following are some of the terms that are used to denote of environmental liability.

1. COMPLIANCE OBLIGATIONS

It means that the company or any other polluters are obliged to comply with the rules or obligations prescribed by environmental laws and regulations in terms of the manufacture, use, disposal, and release of chemical substances and to other activities recognized under environmental laws and regulations as adversely affecting the environment.

2. REMEDIATION OBLIGATIONS

Obligations to clean up a site and/or pay for the cleanup of a site contaminated by chemicals and other wastes considered under law, regulations, and by science to pose adverse health risks to humans and the environment. Such sites could include old or previously undiscovered landfills.

3. FINE AND PENALTY OBLIGATIONS

Obligations to pay fines or penalties under civil or criminal law for non-compliance and/or expenses for supplementary environmental projects (SEPs) agreed to as part of a settlement for non-compliance.

4. COMPENSATION OBLIGATIONS

Obligations under some state statutes as well as under common law, to pay (or "make whole") individuals and businesses for damages suffered by them or their property from the use or release of toxic substances or other pollutants. Commonly known as "compensatory damages," these liabilities may occur even if a local government is in compliance with all applicable environmental standards.

5. PUNITIVE DAMAGE OBLIGATIONS

Obligations to pay damages, which are punitive in nature and are imposed in addition to compensatory damages; to punish and deter conduct viewed as showing callous disregard of others or as being grossly negligent. Punitive damages are typically awarded in addition to compensatory damages, thus dramatically increasing the potential overall costs of environmental liability.

6. NATURAL RESOURCE DAMAGES (NRD) OBLIGATIONS

Obligations (normally in the form of fines) arising from natural resources liability. Natural resource liability arises from injury, destruction, or loss of natural resources that do not constitute private property. Central, state, local, or tribal governments must control natural resources, which include plants, wildlife, land, air, and water. NRD can be imposed for accidental releases (e.g., during transport) as well as lawful releases.

STRATEGIES FOR MINIMIZING ENVIRONMENTAL LIABILITY

The best way to minimize the environmental liability exposure is to identify areas of potential risk and then develop and implement proactive management practices and guidance to reduce the risk of loss. Some of the important strategies for minimizing the environmental liabilities of the polluters or the undertakings are briefly discussed below.

1. STATUTORY STRATEGIES

Under the provisions of the *Water (Prevention and Control of Pollution) Act, 1974* and the *Environmental (Protection) Act, 1986*, it is a criminal offence to cause or knowingly permit any poisonous, noxious, or polluting matter to enter into the rivers, streams, groundwater, and coastal waters. The occupier of a facility has "strict liability" in this regard and the regulators (in this case the state or central pollution control board) need only prove that the pollutants originated from the concerned facility for the liability to be imposed.

A significant legal reference to contamination-related liability is in the *Hazardous Wastes (Management and Handling) Rules, 1989, as amended in 2003*. Section 16 of these rules mentions that the occupier of a facility shall be liable for damages to the environment resulting from the improper handling and disposal of hazardous waste listed in Schedules 1, 2, and 3. The occupier . . . of the facility shall be liable to pay financial penalties as levied for any violation of the provisions under these rules by the State Pollution Control Board with the prior approval of the Central Pollution Control Board.

2. ABSOLUTE LIABILITY

The enterprise must be held to be under an obligation to provide that the hazardous or inherently dangerous activity in which it is engaged must be conducted with the highest standards of safety and if any harm results on account of such activity, the enterprise must be absolutely liable to compensate for such harm, and it should be no answer to the enterprise to say that it had taken all reasonable care and that the harm occurred without any negligence on its part.

3. POLLUTER PAYS PRINCIPLE

The principle of absolute liability in case of environmental injury has further found judicial validation in the polluter pays principle, which has become the law of the land through legal judgments. The 'Polluter Pays' principle demands that the financial costs of preventing or remedying damage caused by pollution should lie with the undertakings which cause the pollution, or produce the goods which cause the pollution. Under the principle, it is not the role of Government, to meet the costs involved in either prevention of such damage, or in carrying out remedial action.

Recently, the court decision specifies that a global oil and gas company has to pay US \$ 8.6 billion as a remediation and restoration costs for soil and ground water contamination in Ecuador's northern jungle. The court decision specifies that the company pay \$6 billion for cleanup of soil and water, \$1.4 billion to build health care systems, and \$800 million for creating health care plans and treating cancer patients. The remainder will be spent on recovering native plant species, building water distribution systems and repairing cultural damage.

4. PRECAUTIONARY PRINCIPLE

The "precautionary principle" – in the context of the law – means that:

- Where there are threats of serious and irreversible damage to the environmental assets, lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
- The "onus of proof" is on the actor or the developer/industrialist to show that his action is/was environmentally benign or favourable. The precautionary principles means that the state government, corporate entity, industrialist, individual developers or any other agencies that undertakes environmentally prone activities has to take all possible measures to control and prevent any kind of environmental hazards in future.

5. ENVIRONMENTAL AUDIT

The process of compiling information on a specific media type to determine if an operation or facility or a company is in compliance with environmental requirements is known as environmental audit. According to World Bank, environment audit is a methodical examination of environmental information about an organization, a facility or a site, to verify whether, or to what extent, they conform to specified audit criteria. The criteria may be based on local, national or global environmental standards. Thus, it is a systematic process of obtaining and evaluating information about environmental assets and liabilities of a company or a corporation.

6. ENVIRONMENTAL INSURANCE

Environmental insurance policies can help finance the costs associated with future unforeseen environmental liabilities, such as the compensation, fines, penalties, etc. The company or any agencies that undertakes such activities that are likely to cause environmental degradation in the event of future contingencies can insure such activities. The environmental assets like land, air, water, etc may cause numerous problems due to the human intervention in their existence. The land slide, air pollution, water contamination, etc may cause serious danger to the life and properties of human being. Environmental insurance can help in financing or compensating such losses.

7. ENVIRONMENTAL MANAGEMENT SYSTEM

To manage environmental assets in a more efficient and cost-effective manner, many organisations have been experimenting with environmental management systems (EMSs). An EMS is a set of management processes and procedures that allow an organization to evaluate, control, and reduce its activities, products, and services, that affect environmental assets resulting in greater operational efficiency and control. EMSs are being widely adopted in the private sector and some forecast them to become a prerequisite for business transactions on a national and international level.

8. FINES AND CLOSURE NOTICE

Monetary fines and penalties are imposed on the industrial concerns that contaminate water, land and environmental assets at large. In case the financial fines are not paid or a drastic environmental degradation occurs or likely to occur, the appropriate authority may give order for closure of the plant. The Tamil Nadu Pollution Control Board (TNPCB) ordered closure of 10 dyeing units in the Tirupur knitwear cluster that failed to comply with the Supreme Court order pertaining to pollution caused by the dyeing units on the Noyyal River. The Supreme Court also directed the dyeing units to deposit US\$ 11.6 million to clean up the Orathapalayam Dam on the basis of PIL filed by local communities.

CONCLUSION

In the present study an attempt has been made to evaluate the environmental assets and liabilities of the human being in general and of the state of Arunachal Pradesh in particular. The environmental assets has been identified as the free gifts of nature in the form of air, water, land, forest, space, vegetation, etc that sustains the life and essential for human sustenance. The environmental liability has been equalised with the responsibility or an obligation on the part of the polluters to pay compensation in the event of consequences or to initiate alternative measures to contain the environmental impact of such pollution caused by him. In this sense, it is the responsibility of every government, corporation, society and an individual to protect the environment and its assets and to preserve it in its natural form. The State's responsibility with regard to environmental protection has been laid down under Article 48-A of our Constitution, which says that "the state shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country". It has been observed that the

environmental liability is rest on every citizen to protect the environmental assets. Environmental protection is a fundamental duty of every citizen of our country under Article 51-A (g) of our Constitution which says that "the duty of every citizen of India is to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures." Hence, environmental liability is the responsibility to protect and preserve environmental assets and to bear the consequences of non-compliance with such responsibility.

Arunachal Pradesh is industrially backward state and there is no question of industrial or hazardous pollution emission. So far, the capacity of natural environment to replenish the air and water pollution is high in the state in comparison to other industrially developed states. However, in the process of development and increasing urbanisation the environmental assets like land, forest, etc are being affected that may expose to the risk of environmental liability. The proper implementation of the environmental rules and regulation through various strategies for minimizing environmental liability will enhance the quality of environmental assets thereby reducing climate change in the state. A reduced exposure to environmental liability manifests itself by protecting human health and the environment, conserving natural resources, reducing costs, and building friendly and livable communities that are attractive to residents, investors, and businesses in future.

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