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CONSERVATION OF NATURAL RESOURCES: A VITAL ENVIRONMENTAL ISSUE IN THE PHILIPPINES

by

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INTRODUCTION

The conservation of natural resources and the maintenance of environmental quality are the most important issues of the Republic of the Philippines today. The increasing population and its needs for existence with optimum quality and standard of living, the maintenance of our natural resources and the quality of our environment are most important issues to the country and people.

GEOGRAPHICAL FUNDAMENTALS

What are conservation, natural resources, and environment? These are the three most important items for exposition to bring forth the issues.

1. Conservation, as defined by Webster Dictionary, means the act of keeping or protecting from loss or injury. The dictionary further quotes W.H. Taft's speech on September 5, 1910 before the Conservation Congress in Saint Paul, Minn. as follows:

"Conservation as an economic and political term means the preservation of natural resources for economic use so as to secure the greatest goal for the greatest number."

This definition sounds too idealistic and unless further explained would only mean the keeping of the natural resources for somebody else. On the other hand, that definition established the subject for discussion which challenges others whose philosophies of life in this world are for the establishment of a better place to live in. The geographer, agricultural economist, and sociologist advanced their definitions . (1)

The geographer defines conservation as the wise utilization of natural resources for maximum benefits with minimum wastes. This also means

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the employment of all faculties of good judgement for the efficient utilization of certain resources in question. The economist, on the other hand, defines conservation as "conservation in practice as in public policy is to increase the productivity of our natural resources and to heighten social values." Thus, conservation may be characterized as a prudent administration of the natural agents of production enforcing reasonable strain and efficient utilization in the appropriation of the natural resources of the earth, and when feasible, promoting their reclamations to the end that productive capacity shall be economically developed and maintained and the natural inheritance of the earth shall be improved. Following this trend of this definition, it seeks to provide for a well-balanced production and consumption of resources for indefinite time. (2)

In the Philippines, especially the Philippine Geographical Society, the National Committee on Geographical Sciences and the National Research Council of the Philippines (NRCP), the College of Arts and Sciences, U.P. and the Ministry of Natural Resources of the government have big stakes in the correct meaning and application of the word conservation. When we speak of conservation we are concerned with wise utilization of natural resources with minimum of waste, thus maintaining continuous existence of these resources.

EXPLOITATION VERSUS CONSERVATION OF NATURAL RESOURCES

To an engineer, exploitation is a perfectly respectable term meaning to develop for use and benefit. It comes from a word meaning to unfold. To the conservationist, it has an evil meaning; wrong, destructive and selfish use. Here is where the word exploitation differs from conservation, both economically and morally. Conservation as applied to land and other resources means wise use. (3)

To illustrate — let us consider the natural drainage arteries of an urban area. In the city of Manila we call these drainage arteries "esteros" of which there are quite a number in downtown Manila. For conservation of these esteros, we clean and dredge as often as possible to keep the rain water flow freely and avoid flood during the rainy season of the year. Other people, however, especially the affluent and the capitalists or oligarchs exploited these channels by constructing commercial and business structures and houses on these esteros, thus obstructing the flow of water. Moreover, squatter's shanties built along estero banks plus the uncontrolled dumping of household garbage into these esteros or canals gravely deteriorate water flow. Continuous rain for days or even for hours easily produce serious flooding all over the low areas.

2. Natural resources are elements of the natural environment upon which man derives his livelihood and well being. These are land and soil, flora and fauna, minerals under the land and soil, water on land, underground water, rivers, lakes and seas, the rays and heat of the sun,

weather and climate. From these natural resources, man makes his living, enjoys life until he dies. Our existence depends upon how we utilize these resources and live and enjoy their blessing or suffer from their scarcity. It is therefore essential that we utilize them properly and wisely and thus maintain their utility for the benefit of generations after generations.

Beside the natural resources, there are also other resources, such as the human resources that consist of man and his talents, and also cultural resources whereby people enjoy the blessings of technology, education and governmental system. These two other resources will not be discussed in this exposition of conservation of natural resources and maintenance of environmental quality.

NATURAL RESOURCES AND THEIR CONSERVATION

The Philippines is rich in natural and earth resources. The total soil cover is 300,000 square kilometers or 30 million hectares. The mountains, hills, and rolling lands are replete with vegetations, of forest trees and grasses, of wildlife and comparatively rich in minerals and mineral fuels. The forest cover as of 1972 constituted 52.24 percent while the non-forest land was 47.76 percent or 14 million hectares. There are 15 principal metallic and 20 non-metallic minerals in 25 million hectares of geologically surveyed land.

The territorial water is composed of 180 million hectares with 2,200 known species of fish with mollusk life known to be the most abundant.

The land form or topography is generally mountainous, hilly, rolling to level. In 1956, the total area for agricultural production was estimated at 20 percent or six million hectares.

The climate provides abundant rainfall and sunshine giving the whole country twelve months of growing season in the year. Rice and corn can be planted the year round and where irrigation is available, rice crop is grown in three crops in one year. (4)

"The wants of people must be met out of the land or go unsatisfied. Of course, different groups of people want different things at any time. And the wants of individual groups change over periods of time. Conservation insist that the land and other natural resources must be used for supplying present wants and maintained in conditions to supply future wants."

CONCEPTS OF NATURAL RESOURCES CONSERVATION

Professor Behan, in his exposition of the "Litany of Scarcity versus the Challenge of Abundance", presented provoking expositions that lead to various resources. (5) In the book Natural Resources Conservation, An Ecological Approach, its introduction has this to say, and we quote:

"America is on the sharp edge of crisis (1973). She is degrading her natural environment. She prides herself on conquering outer space, yet after two centuries, she still does not know how to manage her "inner" space on earth. This environmental dilemma is the result of four major factors, namely: rapid population increase, pollution, excessive consumption of resources and the gradual deterioration of land ethics," unquote.

Professor Behan further said, "We all know that natural resources are fixed and finite. There is just so much, quantitatively of our stock resources of iron ore, petroleum, sulfur, etc. And there is a fixed limit on how much we can grow of the renewable resources — timber, forage, and wildlife. Natural resources are fixed and/or limited." It is on this basis that he called this **inventory concept of natural resources conservation.**

The other concepts of natural resources conservation that are discussed in this exposition are: (1) Functional Concept, (2) Multiple Purpose Use Concept, (3) Watershed Concept of Water Conservation, and (4) Environmental Concept.

1. **Inventory Concept** — The utilization of our forest resources within the context of inventory concept has been going on year after year especially after the World War II when the Philippines went into massive reconstruction programs of the economy. With the help of the US dollars and army surplus equipment such as trucks, bulldozers and such other heavy equipment for road construction, Mindanao, rich in forest resources, was the first victim to the unrestricted exploitation.

Conservation of the forest resources within the context of inventory concept, demands that while these resources are being utilized, provision for future use by the next generations must be programmed. As a tree is cut down for logs and lumber, seedlings of trees must be planted to replace the trees cut and other trees destroyed during the operation. Logged-over areas must be planted either with fast growing soft-wood trees that can be harvested in 8-16 years or with other dipterocarp species for a long term period. In this way, deforestation of forest areas will be avoided and therefore, kept evergreen for generations.

In our country, the only logging and forest concessionaires practicing forest conservation we know are the Nasipit Lumber Company and the Aras-Asan Lumber, Inc. This concept of conservation of natural resources especially forest resources, if followed strictly, will provide our children and grandchildren with forest vegetation, quality watersheds and refreshing climate for all time.

2. **Functional Concept** — The conservation of natural resources within the context of functional concept makes use of technology, as the important component of conservation. In this concept, a resource is more than just a tangible, physical substance. A resource is also defined by the utility we perceived in the substance and by the technology

of transforming the potential of the substance into the actuality of satisfaction. The equation to express this concept is:

$$R = f\ (UsT)$$

Within this concept therefore, a resource (R) is equal to the function (F) times the utility (U) of substance (s) and of technology (T). The substance, for all practical purposes and to orthodox minds is indeed fixed and finite. But the utility factor and the technology factor are not limited at all. We find new ways for and new ways to use many substances all the time, and for old substances, too. The logical conclusion here is as simple as it may be startling; Natural resources as functions rather than inventories are not a bit limited. (6)

In the Philippines, we find this concept very practical, effective and constructive. After the great flood in Central Luzon in July 1972, forest concessionaries of the whole country were given new directive in logging operations. Only those concessionaries who have equipment and machineries to process the logs into finished lumber and who can use the waste material in logging operation into usable products like wallboards called "lawanit" and similar products, were allowed to continue to operate their concessions. These directives removed the operators whose aims are to exploit the forest resources for fast dollars and denude the hills and mountains of forest trees. Their concept of development of our economy is to increase exportation of logs and increase the dollar income without thinking of future conditions of the forest resources for the next generations. This is really exploitation of the first degree and not conservation.

3. **Multiple Purpose Use Concept** — The conservation or the wise utilization of natural resources within the context of multiple purpose use concept takes advantage of some of the components of the functional concept. Here, technology goes one or two stages farther than the usual transformation of the substance into the actuality of satisfaction.

This concept is being applied more and more on forest and range lands, in watersheds, on water impoundments and water courses. As recreation use soars, there is a greater need to protect the many fragile scenic and aesthetic areas. Conservation has known and applied the skills and technology necessary to safeguard and improve our resource base. (7)

A good illustration of multi-purpose use concept is the conservation of water. Water, a natural resource, can be utilized to serve many purposes to satisfy human wants. This is besides its use directly for human consumption. Such water uses are recreational, for fishery, irrigation, and water power, all in one system. This is exemplified in our Upper Pampanga River Project (UPRP) of the National Irrigation Administration (NIA) of the Republic of the Philippines. Completed at the cost of about 1 billion pesos, the project irrigates about 770 square

kilometers of rice lands during the wet season and about 729 square kilometers of rice lands during the dry season with an annual production of more or less 570,000 metric tons of rice. The water supply of 2.5 billion gallons (1 gal. = 3.79 liters) in this project can generate 100,000 KW of hydroelectric power. Besides controlling floods, the project also provides the medium for the production of fish, and promotes local ecological balance, and in a way, promotes tourism in the region. Here is a water resource conservation practice illustrating the multiple-purpose use concept.

4. **Watershed Concept of Water Conservation** — Water is an important element of nature and of the human body. As a constituent element of our environment, water is indispensable to all living organisms. Whatever water we have, we must protect it from being polluted or its disappearance in our land. Its relation to land is that 71.7 per cent of planet earth's surface is water and 28.3 percent land. According to the data produced by the International Hydrologic Decade, the total volume of water of this planet is 326,076,000 cubic miles, broken down as follows:

1.	In the ocean		317,000,000 cu. mile
2.	On the surface		
	river and streams	3,000 cu. mile	
	fresh water lakes	30,000 cu. mile	
	salt lakes and inland seas	25,000 cu. mile	
3.	Underground water		
	soil and moisture seepage	16,000 cu. mile	
	ground water 1/2 mile deep	1,000 cu. mile	
	ground water 1/2 mile deeper	1,000 cu. mile	
			76,000 cu. mile
4.	Glacier and ice cap.		9,000,000 cu. mile
	Grand total		326,076,000 cu. mile

1 cubic mile of water = 1,101,117,143,000 gallons
= 4.16×10^9 cu. meters

The distribution of water of the world and the amount any country has depends upon many factors, such as climate, soil, topography of the land, natural flora and fauna, and the location and space on the surface of the globe. The Philippines and the countries in South-east Asia are within the torrid zones, north and south of the equator; rainfall is abundant and temperature is warm and hot. As part of the monsoon region of Asia, the rainy season is influenced by the monsoon winds. Torrential rains come sometimes by nine continuous days at a time.

Water conservation, aided by properly constructed water facilities, will go a long way in the maintenance of the environmental quality. Floods in Central Luzon always occur during the rainy season of the year. This destroys rice and corn crops besides houses along the water-

ways such as rivers and canals. One of the solutions would be the construction of catchment basin big enough to accumulate all running water that come from the watersheds. To illustrate; we may construct a basin as big as eight kilometer long, five kilometer wide, and ten meter deep in the Candaba swamp area. This does not need concrete wall since the excavation will create a natural basin big enough to accommodate 400 million cubic meters of water. (The senior author had thought of this concept when he was Administrator of the Irrigation Service Unit, Department of Public Works and Communication in 1952-1960).

5. **Environmental Concept** — To the conservationist, this concept has several implications. To the bird watcher, it is the protection of the bird sanctuaries. To the hunter, it is the preservation and increase of game in the hunting ground. And to the naturalist, it is living in harmony with nature. About the only group of people who came close to doing this were the American Indians of the early days.

The utilization of natural resources within the context of environmental concept is well exemplified by the projects of the Parks and Wildlife Office of the Ministry of Natural Resources, Republic of the Philippines. This concept unfortunately is not well known by the public because it is being taken for granted.

However, in the case of the famous Rizal Park in Manila, you find the concept being applied and fully appreciated by thousands of people. Trees are planted and grown not for the logs or pulp they produce but for the shade and the beauty the trees impart to the whole park complex. A hill was constructed to simulate a waterfall for the park visitor to see and admire; a long pool of water and fountain create a make-believe wilderness.

Animals of local and foreign species are kept in well constructed cages for the park visitors to see, appreciate and venture into the study of their existence and origin. Flowers of different varieties are planted and grown not to be pick-up but to be admired by the park visitors.

The environmental concept can be considered as the result also of the application of the combination of the inventory concept, the functional concept and the multi-purpose concept of natural resource conservation.

In totality, the geographer, as a generalist, makes use of a variety of disciplines to achieve man's desire in the satisfaction of human wants. His concern for the future generations makes him a citizezn of the world, not only of an individual country. If man really learns and understands that natural resources are not infinite, he may yet be able to live in harmony with his planet and at the same time protects the natural resources, utilizes them wisely throughout his life and maintains their existence and using them wisely and sees that they are there and keep the environment for generation and generations as nature makes them.

It is obvious therefore, that the most urgent need is to find some ways of making conservation education into a law for the young and old, to see that the future is still there as good if not better. The law should be instructional, with study and discussion of current problems and needs in the conservation of natural resources; include but not limited to air pollution, water pollution, the effects of excessive use of pesticides, the conservation of wilderness, forest management and the protection of wildlife and humane care of domestic animals, wise use of soil and water, timberlands, forests, minerals, fish and other aquatic life and the scenic and recreational resources.

If we can really bring this idea of education on the conservation of our natural resources by Congressional Law to educate on our people young and old, we will be doing a good deed to our generation by conservation (wise utilization) of our natural resources and at the same time keep our environment as clean as nature has give us.

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