

Environmental Conservation for Sustainable Development: The Annapurna Conservation Area Project, Nepal

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Introduction

Nepal is known as one of the last remaining Shangri-Las in the world, endowed with abundant natural beauty and cultural heritages. With the advent of democracy in 1950 and subsequent opening doors to the outside world, hundreds and thousands of people from all over the world have visited Nepal. Since then, Nepal also embraced the western model of development by building roads, hospitals, factories, schools, and industries. Unlike the past, where some parts of the country were inaccessible, now virtually all parts of Nepal have been connected either by roads, air services or through other means of transportation and communication. The living standard of the Nepalese has improved, an indication of which is an increase in life expectancy and considerable decrease in infant mortality rates. As a result of all this change, one may ask, did Nepal have to pay any price for development?

As elsewhere in the world, the answer is affirmative. A loss of natural resources and biodiversity and an increase in pollution caused by rapid urbanization and industrialization have been some of the consequences. Unlike the past where Nepal was known for sports hunting for large mammals such as Royal Bengal Tigers and one-horned Asiatic rhinos by princes and kings and other dignitaries from Europe and other parts of the world, a large number of flora and fauna have either disappeared from Nepal or decreased drastically within the last five decades. For example, according to Dinnerstein (personal communication 1992), in the year 1900, it was estimated that there were over 1,000 one-horn Asiatic rhinos roaming about in Chitwan Valley in Nepal. By the 1960s, the population had dwindled down to 70. Similarly, the Royal Bengal Tiger and many other species of animals and plants have also decreased drastically and some of them have even reached the verge of extinction.

At the same time, the fruits of development have not been shared equally. The gap of economic disparity between rural and urban populations and between the rich and the poor has widened. Today, more than 40 percent of Nepalese are living below absolute poverty, most of whom are rural inhabitants. At the same time, the local people are blamed for all the environmental woes.

In order to protect forest and wildlife, affected areas were designated as national parks and reserves, prohibiting the local people from the use of natural resources without providing any alternatives. This has led to a continuous conflict between park and people since the first national park was established in Nepal in 1973.

Recognizing the fact that conservation cannot be only for the sake of the rich and elite few, an alternative model of protected area management is necessary which will strike a balance between conservation and development. Unlike the conventional model of conservation where a force and fencing approach is used to protect the forest and wildlife, the alternative model seeks to integrate local people in the management of conservation. Thus, the Annapurna Conservation Area Project (ACAP) was conceived by the King Mahendra Trust for Nature Conservation (KMTNC), the leading non-governmental environmental agency in Nepal, to integrate conservation for sustainable rural development and empower the local people to protect, conserve and utilize their natural resources. Therefore, the aim of this paper is to highlight the evolution of the ACAP and how this new approach of protected area management has been able to change the attitudes and perception of the Nepalese bureaucracy and the local people.

The paper is divided into two parts. Part I deals with conceptual aspects on sustainable development and environmental conservation. Part II deals with ACAP and its strategies and activities.

I. Sustainable Development: What does this mean?

Sustainable development has become a catchy phrase in the development literature lately without properly realizing what it really means. In this section I will try to identify some of the key features of sustainable development and trace the history of this idea.

With the dramatic increase in world population, roughly from 1 billion in 1800 to over 5 billion today, pressure on the natural resources, particularly on the forest land, have increased considerably. More and more lands have been converted into croplands in order to produce more food to feed the growing number of people each year. Deforestation is much more pronounced every year, with a loss of 2 percent or 100 million hectares of forest land between 1980 and 1990, almost equal to the size of Egypt (WRI, 1996).

The environmental problem is much more acute in Asia than anywhere else. Asia is the fastest growing region in the world both in terms of population and economy. Over 3.5 billion people, roughly 60 percent of the world's population, are concentrated in Asia. Each year, 54 million people are added. In order to feed these growing numbers, each year more and more lands have been converted into croplands, most of which come from forest land causing serious deforestation. Deforestation in Asia, particularly of tropical forests, is much more serious than elsewhere. Between, 1980 and 1990, Asia lost 11 percent of its tropical forest, whereas during the same period the world lost only 8 percent (WRI, 1996).

With the rapid growth of population and lack of employment opportunities and modern amenities in rural areas, more and more people are migrating into urban areas. Development of megacities has been taking place in Asia. By the year 2025, over 55 percent of Asia's population will be living in cities. There will be 20 megacities

with a population threshold of 10 million or more. Rapid urbanization means concentration of a larger number of people in a smaller area requiring a larger network of public and private transportation to mobilize these people. Energy demands and consumption are ever increasing. The results have been air pollution and loss of economy. For example, due to traffic congestion alone in Bangkok, Thailand is losing \$272 million a year, almost 2.1 percent of country's GNP (WRI, 1996).

Despite the 1998 recession, Asian economies have shown robust growth in the 1980s and early 1990s. More growth has meant more demands on energy and stress on natural resources. Rapid industrialization and modernization to catch up with the west has been the aim of Asian nations with minimum consideration paid to the environment.

There is only one earth with limited resources. Given the above model of development, how can we sustain our world? One must raise fundamental questions such as "development for whom?" and "with what values should development be pursued?" Unless we take urgent action to move into a new paradigm of development that is sound to natural resources and the environment, and is socially equitable, the survival of human beings will face an unimaginable crisis.

Due to the concerns discussed above, unless sustainable development is practiced the future of the planet earth looks gloomy. But what is sustainable development and how can it be realized?

Sustainable development means different things for different people. It has become a fashionable slogan that everyone likes to use without properly discerning what it really means. Some skeptics think that sustainable development is like climbing a mountain. Before embarking on a journey of climbing, one must know where the summit lies. The second is that one must consider that there are no completely painless ways to get there. Failing to know these things may lead to a deceptively easy path that never reaches the top but meanders off to a dead-end, frustrating the climber and wasting energy. The current popular slogan "sustainable development" has become such a road (Worster, 1993). On the other hand, those who promote the notion of sustainable development argue that sustainable development can be achieved provided modes of development are compatible to the carrying capacity of the earth's natural resources (Daly, 1996). With the present trend of development that is oriented towards growth, over-consumption by the industrialized countries, and generating waste that has become a paramount problem in modern history, one wonders whether our society has a sustainable future?

Donald Worster (1993) traced the history of the idea of sustainable development in his book, *The Wealth of Nature: Environmental History and the Ecological Imagination* wherein he devoted a full chapter on this theme. In the chapter entitled "The Shaky Ground of Sustainable Development," Worster traced the concept of sustainable development from the notion of "sustained-yield" that appeared in Germany in the late eighteenth and early nineteenth century. Germany depended in a most essential way on its forests for the wood needed to support its economy, but the forest was

in a state of decline due to over-use and increase in population. Fear of resource depletion, poverty and social chaos prompted some citizens to find a solution based on the authority of science. Thus, they began talking about managing forests so that periodic harvest matched the rate of biological growth (Worster, 1993).

Americans like Bernhard Fernow (1851–1923), an immigrant from Germany, and Gifford Pinchot (1865–1946), the first Chief Forester in the Department of Agriculture, imported the sustained-yield theory of environmental management into the United States in the last two decades of the nineteenth century. Fernow was of Prussian extraction, trained in sustained-yield techniques in the Prussian Forest Academy at Munden, and a critic of the *laissez-faire* economy of his adopted home. The forest resource, he explained, “is one which, under the active competition of private enterprise, is apt to deteriorate, and in its deterioration to affect other conditions of materials existence favorably; . . . the maintenance of continued supplies as well as of favourable conditions is possible only under the supervision of permanent institutions with whom present profit is not the only motive. It calls preeminently for the exercise of the providential functions of the state to counteract the destructive tendencies of private exploitation” (Worster, 1993: 145).

Around the same time, Pinchot, who studied at the French Forest School in Nancy examined model forests in France, Germany and Switzerland. He likewise believed that the state, guided by technically trained professionals like himself, must take an active role in managing the nation’s natural resources in order to secure a sustainable future. For both men, nature was little more than a utilitarian commodity to be managed and harvested for the common good. They had absorbed completely the dominant world-view of the era, which taught that the primary goal of social life is economic progress — steadily increasing production over the long term — adding only the corollary that such production must be directed by the state and its experts to avoid destroying the organic social order (Worster, 1993). Therefore, Worster believes that “sustained development” or “sustainable development” is not a new concept, but an idea which has been around for at least two centuries. It is a reflection of modern faith in human intelligence to manage nature (Worster, 1993).

Various concepts have been propounded in defining sustainable development. The simplest form would be: Sustainable development means to “live on the interest alone and not use up the principal amount.” Some have used an economic perspective in defining sustainable development whereas others have used an ecological perspective. Two definitions are discussed below.

The concept of sustainable development was popularized only after the UN sponsored Commission, the World Commission on Environment and Development (WCED), known commonly as the Brundtland Commission. A comprehensive definition on sustainable development was provided in its report entitled *Our Common Future*, published in 1987. Accordingly, “sustainable development is development that meets the needs of the present without compromising the ability of the future generations to meet their own needs” (WCED, 1987).

Most recently, Daly, an economist, has provided a new definition of “sustainable development” based on ecological considerations. Accordingly, “sustainable development, therefore, is development without growth — that is without throughput growth beyond the regeneration and absorption capacities of the environment. The path of future progress is development, not growth. This distinction must be made or confusion is inevitable” (Daly, 1996: 13).

Many people use economic growth and economic development synonymously. They argue that once growth takes place, people will have a higher income increasing their purchasing power and thus will be able to afford to purchase alternative energy rather than energy based on firewood. In other words, they can spend more money on technologies that have less environmental impact. However, one must realize that in order to grow, one has to use more energy and other natural resources which, in most cases, are finite. Hence, development that is not based on the carrying capacity of the earth’s natural resources will not be sustainable.

Unlike other reports, the Brundtland Commission was an important political initiative and reported directly to the General Assembly of the United Nations. In turn, the United Nations General Assembly asked for a report on progress in sustainability after five years. This report was known as the United Nations Conference on Environment and Development (UNCED) which was held in Rio de Janeiro, Brazil in 1992 (Kerkby, *et al.*, 1995). This was 20 years after the Stockholm Conference where for the first time environmental issues were brought up at the international level. The 1992 UN Conference on Environment and Development (UNCED), better known as the “Earth Summit,” was attended by more than one hundred heads of states and governments. At the Earth Summit in Rio, the world leaders agreed on a number of issues such as the adoption of the Convention on Biological Diversity and the Convention on Framework of Climate Change, and agreed on Agenda 21 (Action Programs for Sustainable Development). Therefore, sustainable development was considered to be a panacea for all environmental woes worldwide. It was decided by the leaders to set up a national level committee in each country, known as the National Council on Sustainable Development, in order to coordinate and monitor environmental activities. After the Earth Summit, an international NGO known as the “Earth Council” was established at San Jose in Costa Rica to monitor and review progress in implementing environmental reforms.

In March 1997, the Earth Council sponsored a seminar-cum-workshop known as “Rio + 5” in Rio de Janeiro to review the progress made thus far in each country and region. The seminar was supposed to be action oriented and thus it was entitled “Rio + 5: From Agenda to Action” with the aim of identifying achievements made thus far and what needs to be done to further advance sustainability.

The meeting was successful in the sense that prior to the meeting at Rio various consultative meetings were held in various geographic regions. These regional meetings were aimed at learning and sharing from each other’s experiences and identifying projects that were best realized at the local level in achieving sustainable develop-

ment. At the meeting in Rio, representatives from various stakeholders, the business communities, international donors, government representatives, people's representatives, and NGOs participated along with many journalists. The meeting also adapted a "Earth Charter" to present at the special session of UN on Environment which was held in June 1997. Furthermore, after the Rio + 5 meeting, a document known as "Implementing Sustainable Development: Experiences and Recommendations from National and Regional Consultations for the Rio + 5 Forum" was prepared for the Fifth Session of the United Nations Commission of Sustainable Development (UNCSD).

Environmental Conservation

Environmental conservation has also become a catchy phrase like sustainable development. What does it mean? We all know that for the survival of the human society, we need to conserve our natural resources which supply us with food, shelter, energy, oxygen and so forth. Two principles for use of wild plants and animals are cited as providing a strong economic justification for conservation of global biodiversity. One is concerned with sustaining our food production and the other with protecting our health (Murray, 1995).

Human actions over the past century have drastically changed the earth's surface and atmosphere. We have heard so much of global warming and "El Niño," the massive scale of movement of warm water that affects the global climatic condition and its destructive effects on the earth. Since the Stockholm Conference, many organizations from all over the world have taken initiatives to mitigate further decline in our environment. Twenty years later, once again, at the end of the Earth Summit in 1992, it became clear that "without better environmental stewardship, development will be undermined; and without accelerated development in poor countries, environmental policies will fail" (Serageldin, 1994). Furthermore, Rio was a signal to the world that after decades of pitting environmental quality against economic growth, policy-makers are finally becoming aware of the crucial and potentially positive link between the two. Humanity must learn to live within the limitation of the physical environment. We must recognize that even if environmental degradation does not reach life-threatening levels, it can result in a significant decline in the quality of the world we live in (Serageldin, 1994).

In order to mitigate environmental problems, the World Conservation Union (IUCN) developed a global conservation strategy. The IUCN report entitled *World Conservation Strategy* (WCS) was published in 1980. According to WCS, conservation is defined as "the management of human use of biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the need and aspirations of future generations" (WCS, 1980).

Therefore, to achieve sustainable development one must fulfill certain prerequisites. According to WCS, the prerequisites are as follows: "Among the prerequisites of sustainable development is the conservation of living resources. For development

to be sustainable, it must take into account of social and ecological factors, as well as economic ones; of the living and non-living resource base; and of the long-term and short-term advantages and disadvantages of alternative actions” (WCS, 1980).

According to WCS, living resource conservation has three specific objectives:

- *To maintain essential ecological processes and life support systems* (such as soil generation and protection, the recycling of nutrients, and the cleansing of waters), on which human survival and development depends;
- *To preserve genetic diversity* (the range of genetic material found in the world’s organism), on which depend the breeding programs necessary for the protection and improvement of cultivated plants and domesticated animals, as well as much scientific advance, technical innovation, and the security of the many industries that use living resources; and
- *To ensure the sustainable utilization of species and ecosystems* (notably fish and other wildlife, forests and grazing lands), which support millions of rural communities as well as major industries.

Socio-Economic Consideration for Environmental Conservation

The Earth Summit held in 1992 endorsed the crucial link between natural environmental conservation and human survival. Since the Earth Summit, environmentalism has become a global concern and not necessarily an issue of the west or the east.

However, when we talk about conservation, we must also take into consideration the prevailing socio-economic conditions, particularly in the developing countries. The reasons are: one billion people — mostly from developing countries — do not have access to clean water; 1.7 billion people do not have access to sanitation; and two to three million children die annually because of diseases associated with the lack of water and sanitation. To this situation, we are adding about 90 million people to the global population every year — again, mostly in developing countries (Serageldin, 1994).

The WCS succinctly stated the importance of people’s needs while developing conservation strategies. The WCS went on to warn that: “People whose very survival is precarious and whose projects of even temporary prosperity are bleak cannot be expected to respond sympathetically to calls to subordinate their acute short-term needs to the possibility of long term returns. Conservation must therefore be combined with measures to meet short term needs.”

Concern about the environmental degradation became the topic of serious political discussions at the international level when the United Nations Environmental Conference was held in Stockholm in 1972. Perspectives on the environment issue, however, are very different between rich industrialized countries and poor developing countries. Perhaps the most eloquent statement of these differences came from the former Indian Prime Minister, Indira Gandhi, at the Stockholm Conference. She asked: “How can we speak of those who live in the villages and in the slums about keeping oceans, the rivers, and the air clean when their own lives are contaminated? Are not

poverty and need the greatest polluters?” (Quoted in Schrecker, 1993).

What she said reflects the prevailing situation in developing countries where poverty and lack of basic needs are the main obstacles for the survival of the people. For them, environmental protection is a luxury that only rich members of the global community can afford (Schrecker, 1993).

Whatever the different perspectives may be between the rich and poor countries, environmental conservation is essential for humanity’s survival, both for the people of the industrialized and developing countries. At the same time, it is equally important to consider the existing socio-economic conditions of a country and realize that the same yardstick cannot be used everywhere to measure the successes and failures of conservation. Every action we take in any corner of the globe affects the whole world. Thus, I believe, we must “think globally and act locally.”

With this backdrop, I now would like to discuss the evolution of the Annapurna Conservation Area Project in Nepal as an alternative approach in protected area management.

II. The Annapurna Conservation Area Project (ACAP): An Integrated Approach to Conservation and Sustainable Development

The Evolution of the Annapurna Conservation Area Project (ACAP)

Nepal, with an area of 147, 181 sq km in size, has a rich biodiversity and cultural heritage. With the eradication of malaria, the lowland plain of the Tarai became suitable for human settlement. This has opened up opportunities for land-hungry people to migrate in large scale from the hills since the 1950s, creating a severe stress on the ecology and destruction of habitat and loss of Nepal’s many indigenous and endangered animals such as tigers and rhinos. Drastic actions were warranted to halt the further slide of Nepal’s fragile environment.

Initially, Nepal adopted a western model of protected area management, designating an affected area as a national park with strict enforcement by law. Within a decade, Nepal made impressive achievements by establishing 16 protected areas covering 15.7 percent of the land. However, in the course, local people were forgotten. Stern actions were taken against the local people if they encroached the park whereas no compensation was paid when wildlife damaged their crops and killed their cattle. This caused a continuous park-people conflict overshadowing Nepal’s achievements.

Keeping this view in mind, an alternative strategy in conserving the biodiversity of Annapurna was the necessity to strike a balance between human needs and nature conservation. Thus, the Annapurna Conservation Area (ACA) was established in December 1986 precisely to address these concerns. This new approach calls for the participation of the local people as a partner in conservation, giving them the responsibility in conserving biodiversity while empowering them to utilize the resources in a sustainable manner.

ACA is the largest protected area, covering 7,629 sq km, or 5 percent of the land or

33 percent of the total protected area in Nepal. This region is one of the most geographically and culturally diverse regions in the world with elevation ranging from 1,000 meters to over 8,000 meters above sea-level, incorporating dry, arid and steppe climatic conditions in the north and wet, green and lush temperate forest ecosystems in the south. The region is endowed with rich biodiversity: 1226 plants species, 426 species of medicinal plants, 474 species of birds, and 101 species of mammals have been recorded so far. These include endangered species such as the snow-leopard, musk deer, and Himalayan brown bear.

The Annapurna is equally rich in cultural diversity. Over 116,000 local residents, from eight ethnic and tribal groups, have inhabited the region practicing their culture and traditions for centuries, carving a lifestyle out of steep terraces and barren plateaus. Subsistence agro-pastoralism coupled with a high population growth rate of 2.3 percent a year, and lack of alternatives led to increased dependency and exerted pressure on natural resources. Nevertheless, the local people developed their own management schemes of conserving natural resources in order to provide a continuous supply to fulfill their daily needs.

Two important events, the Forest Nationalization Act of 1957 and the trekking tourism, tilted the ecological balance in the Annapurna. The Forest Act shifted the ownership of forest from the people to the government. This caused disenchantment among the local people in forest protection. At the same time, the forest department was unable to take full control of forests. Thus, forests became a “tragedy of commons,” a property which no one assumed responsible to protect and manage.

With easy accessibility and less-strenuous topography, by early 1980s, the Annapurna became the most popular destination for adventure tourism surpassing the Everest region. By 1985, more than 25,000 tourists (49,318 in 1996), 65 percent of the total trekkers, visited the Annapurna. Decades of unplanned and uncoordinated tourism had exerted additional pressure on the already stressed natural environment. Rampant clearing of forests for construction of tea-shops and lodges as well as firewood being the main source of energy, caused severe localized deforestation to take place. Non-biodegradable items such as tins, plastics and bottles littered trails and hill slopes. The problem became so acute that the King of Nepal had to intervene and issued directives in 1985 to protect the Annapurna’s environment while developing a sound tourism. The King Mahendra Trust for Nature Conservation (KMTNC), a Nepalese non-governmental organization, took the initiative to realize the directives of His Majesty, the King. Upon the recommendations of a study team, Annapurna was designated as the “Annapurna Conservation Area.”

ACAP addresses the problem of maintaining a crucial link between economic development and environmental conservation. It recognizes that protection of critical habitats and long-term maintenance of biodiversity cannot be achieved without improving the economic conditions of the indigenous people. Inhabitants being the focal point of every conservation efforts, ACAP strives to strike a balance between nature conservation, tourism development, and human needs.

Community Participation in Conservation

Environmental problems in the developing world are complex and they must be considered holistically. Following the 1975 IUCN definition which excludes local peoples from residence in and use of park resources, conservationists from all over the world have embraced this notion in protecting wildlife and forests without considering their own socio-economic and cultural considerations. In contrast, recent literature argues in favour of the indigenous peoples as they tend to live in harmony with nature (West and Brechin, 1991; Western, Wright, and Strum, 1994; Kemf, 1993). Often it is argued that nature must be protected for the benefit of the people to gain a respite from the burden of the modern civilization while local residents are prohibited from the use of resources. However, biodiversity conservation and local people's needs should not be sacrificed at the cost of each other. Rather, conservation should demonstrate how biodiversity can be optimally maintained while fulfilling the needs of the local people. One thing has become clear: unless local people's needs are addressed, whatever management strategies are developed, preserving biodiversity may become only a myth. Thus, community participation in conservation is one of the key features of ACAP.

Three Principles of Partnerships

The overall goal of ACAP is to conserve both natural and cultural resources for the benefit of the local people of present and future generations and to implement rational management policies and programs. ACAP's long-term objective is to benefit the 116,000 inhabitants by providing a viable means, enabling them to maintain control over the way their environment is used. Thus, ACAP has based its activities on three principles (Gurung, 1995).

1) Sustainability

ACAP gives a top priority to secure both financial sustainability and sustainable exploitation of resources for local needs. Many foreign assisted development projects have insufficient provisions for sustaining development, either by the local people or by the government, after the donor agency leaves. To be financially self-reliant once the funding from donor agencies is completed in the ACAP, an entry fee of NRs. 650 (US\$12) is levied to all the international trekkers visiting the Annapurna region. For the first time, His Majesty's Government of Nepal has allowed ACAP to collect the fee to be deposited initially in the endowment fund. Since 1992, 50 percent of the annual user's fee is being utilized whereas the grants from donors are decreased by almost 50 percent (Gurung, 1995). It is estimated that the interest from the endowment fund and income from entry fees will make ACAP financially self-reliant once the basic infrastructure is established. Thus, there will not be any financial burden, either to KMTNC and His Majesty's Government or to local people, even after the funding from donors terminates. A similar approach is also maintained among the community development projects where the local people are either trained or provi-

sions are made for the projects to continue (Gurung, 1995).

2) People's Participation

For the long-term conservation of the Annapurna region, it was recognized that the interest of the local people and their needs must be considered first. Unless these people feel that fruits of conservation can be harvested by themselves and that the resources belong to them, the support of the local people cannot be generated and sustained. Thus the project considers the local people as the main beneficiary and includes them in the planning, decision-making, and implementing processes and delegates significant responsibilities for the management of the conservation area to them.

To carry out various conservation and community development activities within ACA, ACAP works through various management committees nominated or elected by the people themselves. One of the main committees of ACAP is called the "Conservation and Development Committee" (CDC) as the main body representing at least one member from each of the nine wards (the lowest political unit) of the Village Development Committee (VDC). A minimum of one female member must be elected or nominated in the CDC. The CDC has 15 members, four of whom are nominated by the Conservation Officer, representing as far as possible the various ethnic and social groups. The CDCs not only penalized those who violate the rules, but also control seasonal firewood collection and so forth. Similarly, the Lodge Management Committee, Kerosene Depot Management Committee, Electricity Management Committee and various other committees have been formed as required each having their own responsibilities (Gurung, 1995).

3) *Lami* (Catalyst)

His Majesty's Government of Nepal and various other national and international agencies have implemented various development and conservation projects in the region. ACAP aims to work with them in close collaboration to improve the quality of life of the people. ACAP uses grassroots methods to help villagers maintain control over their local resources as well as help to identify their immediate needs and priorities. As a result, ACAP considers itself a *lami* (matchmaker) that will bring together resources from outside to meet the needs of the local people.

In this context, I shall now discuss four examples of activities that the ACAP has implemented.

Project Activities

1) Community Health and Sanitation Program

The majority of rural people in the Annapurna region were previously deprived of health care facilities. A sick person depended upon treatment from the traditional medicine men, such as shamans or witch-doctors. Sanitation and health care were in a

poor state. Thus, ACAP established a health care program in conjunction with the District Public Health Office (DPHO). The DPHO provided its manpower, vaccines, and other facilities. ACAP's role was to promote, publicize, and motivate local people to receive the services. For example, the superstitions among the local community that a pregnant woman must hide her pregnancy from being seen by the evil spirits often led to delivery complications. A recent survey found out that 12 women die everyday during child birth in Nepal which means one woman dies in every two hours in labor (*The Kathmandu Post*, 15 Nov. 1997). Had pre-natal care been provided, and if the pregnant mothers had gone for regular check-ups, the problems could have been mitigated in time. It took several years of health education on the part of ACAP for such a change to begin. When mobile clinics are in operation they are now often visited by pregnant mothers.

Similarly, the local people have requested a health post since ACAP established its headquarters in Ghandruk. A series of negotiations with local people was carried out in order to ensure that the health post would have sufficient funds to cover recurrent costs. A system was developed whereby the local community raised NRs.100,000 (US\$4,000) whereas the project invested NRs.200,000 (US\$8,000) to create an endowment trust fund. The health post has been in operation since 1987, and within two years, the management responsibility has been taken over fully by the local people themselves. The interest generated by the trust fund pays the salary for the health assistant working there.

Necessary training has been provided to the local community in order to build proper toilet facilities among households. Regular cleaning campaigns have been carried out within the villages up to the Annapurna Sanctuary, mobilizing local school children and the villagers. Now, it has become a regular monthly program for the mothers' group to keep the village clean. Thus, it can be said that health and sanitary conditions in Ghandruk have improved significantly.

2) Forest and Wildlife Conservation

The challenge for conservationists "is to meet the growing needs for fuelwood, which must be addressed through policies that reduce demand, increase supply, and encourage an alternative sources of energy. . . . Demands can be reduced through direct interventions to encourage conservation and use of more efficient technologies" (World Bank, 1992: 57).

ACAP has adopted a number of strategies in forest and wildlife conservation. Local people have been trained to manage their forest and empowered to conserve, protect, and utilize to fulfill their basic requirements. Thus, Conservation and Development Committees (CDCs) have been established in different communities. The CDCs are responsible for managing their natural forest, control hunting, issue permits for fuelwood collection and timber for construction of houses for the local communities, and planning development programs for local community needs.

In order to fulfill the fodder requirements and control soil erosion, individual and

community tree plantations have been carried out. In order to provide tree-seedlings, forest nurseries have been established at various places within the project area which produces indigenous species only. Local people, both men and women, have been trained to manage the nurseries.

Furthermore, the Annapurna region is the most popular destination in Nepal for adventure tourism. Almost 50,000 tourists visit each year in addition to a similar number of people as support staff. This means that dependency on firewood for heating and cooking cannot be stopped unless alternative sources of energies are easily made available. Thus, ACAP has introduced fuelwood saving devices such as back-boiler water heaters and improved stoves in order to reduce fuelwood consumption. Similarly, solar energy has been used in order to heat water. Kerosene depots have been established at various places where other means of energy are in short supply. Most recently, ACAP has been promoting micro-hydro electricity projects (MHEP) that will tap local streams to produce electricity. Unlike kerosene which is an imported fossil fuel and solar energy in which technologies have not been well developed, conventional technologies and technical manpower are easily available within Nepal for the small hydro-electricity projects. Most importantly, the source is environmentally friendly and renewable as there are abundant streams available in the Annapurna Conservation Area (ACA). Within ACA there are now six MHEP being installed and many more are under construction, all under the management and operation of local people.

3) Promotion of Ecotourism

The ACAP believes that tourism, if properly managed, can bring benefits to the people of the Annapurna region. As a result, ecotourism is promoted. The ACAP has recognized that ecotourism needs to be based on both nature and culture so that all stake-holders — villagers, visitors, private sectors and the natural environment — can benefit. Thus, ACAP emphasizes sensitizing all users through various means which include brochures and audio-visuais. ACAP's working definition of ecotourism goes beyond the conventional definition, applying environmental and cultural sensitivity whereby all the users, both locals and visitors, minimize their impact.

Local lodge owners have been trained in managing their lodges and improving the quality of their products without a great deal of additional investment. The training of lodge owners include food preparation, minimizing energy consumption, improving sanitation and hygiene, waste management and recycling, and most importantly the safety and security of the trekkers.

4) Conservation Education and Training

What ACAP has realized is that in order to achieve its goals of conservation and sustainable development, raising awareness among the local people through conservation education is a must. The educational component could be both formal, teaching conservation education at local schools, and informal teaching through adult edu-

cation classes. Appropriate training for the local people is necessary.

Firstly, ACAP has identified three main target groups: the local adult population, children at schools and tourists. Various programs have been developed for different target groups. Dialogue, motivation, adult education classes, audio-visuals such as videos and slides programs, and study tours have been organized for the adult population. Conservation education classes have been running as regular class work at the local high schools. Slide shows, videos, brochures and minimum impact codes are produced and distributed to tourists prior to their departure for trekking.

Conclusion

Development and environmental conservation are not antagonistic; rather, they are complementary to each other. They are the two sides of the same coin. I am of the opinion that good ecology is good economics. Hence, sustainable development is development that brings about a balance between environmental conservation and development.

The London-based journal, *The Economist* (June 28th — July 4th 1997), published an article reviewing the progress made after the “Earth Summit + 5” held in June 1997 in New York, which stated that there has been some progress in environmental awareness fostered by the Rio conference. Mexico, for instance, is set to eliminate the sale of leaded petrol and Thailand is trying to phase out the two stroke motorcycles that account more than half the dirt in Bangkok’s air. Environmental debates are more sophisticated now than five years ago. And nobody now disputes that the environment is a problem worthy of global action. However, the article also criticizes industrialized countries for not doing enough to reduce car-related carbon-dioxide emissions. At Rio, the rich countries agreed that by 2000 their emissions of climate-changing greenhouse gases, particularly carbon dioxide, would be no higher than at the 1990 level. Few have kept this agreement. Except Britain, Switzerland, Germany, and Netherlands, other countries are nowhere near their modest Rio pledge.

The Worldwatch Institute, in its “1997 State of the World Report” identified Eight Environmental Heavyweights known as E8. These countries are United States, Russia, Japan, Germany, China, India, Brazil and Indonesia. The Institute argues that these eight countries have 56 percent of the world population, 59 percent of the Gross World Product and 53 percent of the World’s Forest Area. At the same time, 58 percent of the World’s Carbon Emissions come from only these eight countries. The largest polluter being the United States which releases 23 percent of the world’s carbon emissions (Brown *et al.*, 1997: 8).

Therefore, it has now become apparent that environmental problems are a global issue. It is neither the problem of rich industrialized countries nor of poor developing countries alone. Sustainable society is possible only when all the countries feel that saving the earth is the responsibilities of all the mankind.

Poverty and environmental degradation and population growth are inextricably related. None of these fundamental problems can be successfully addressed in isolation

(WCED, 1987). In Annapurna, large scale poverty, subsistence farming, large but ecologically fragile areas, lack of alternative sources of energy, over-grazing, high population growth, have complicated environmental issues. Isolating one of them as the root cause of problem would not alleviate conservation issues nor would enforcing stricter rules and regulations through the use of external force help to ensure the maintenance of biodiversity. We have experienced negative repercussions in other parts of Nepal where local residents were excluded virtually from all decision-making processes in the protected area management and banned them from the use of resources. Yet, people still encroached upon the parks and reserves for fuelwood and fodder and poaching of wildlife.

In the Annapurna region, programs had to be developed in a way that will fulfill the local residents' basic needs in the first place. Food comes before conservation. Secondly, in a country like Nepal, where the very existence of the people is dependent upon the resources within a protected area, it is most important that the local residents be included in the management of the reserve and in the decision-making processes. For example, ACAP was unable to enforce the kerosene-only policy in the Annapurna sanctuary without consulting the local people. It took two years to motivate local residents, but once it was accepted by them, it has lasted. As the Coordinating Body for Indigenous People's Organization of the Amazon Basin (COICA) leader Nugkuag (1990) puts it succinctly, "to save forest, you must first save the indigenous people who live there."

Therefore, ACAP from the very beginning of its implementation has adopted a grassroots approach. This has moved ACAP from myth to reality. All ACAP programs had to be sustainable both in terms of financial base as well as training the local people who can manage them properly. Local residents are made aware through conservation education programs that they are the custodians of the resources and they need to manage them. They are made aware that they must exploit natural resources sustainably in order to save for future generations. In fact, ACAP believes that the focus of all conservation effort is the "people" and not any particular species of plants and animals.

Since the implementation of ACAP in 1986, several positive changes have taken place in the protected area management in Nepal; in particular, the change has been seen in the perception of His Majesty's Government of Nepal (HMGN). HMGN has amended the existing National Parks Act in order to share responsibilities of protected areas management with the NGOs. Similarly, revenue generated out of the protected areas has been shared with the local people for the conservation and development of buffer zones. Most important of all, HMGN has accepted local residents as partners of conservation rather than as culprits of the environment. Thus, unlike in the past where regular armed troops from the Royal Nepalese Armed Forces were deployed to protect the forest and wildlife in the protected areas, now the local residents have been empowered to manage, conserve, protect and utilize the natural resources.

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