

SERVICES OF FORESTS

Socio-cultural roles and nature-based ecotourism

DR M A BASHAR

THE forests have become focal points of local, national, regional and global interests -- interests that often compete with each other and are often incompatible. Demands placed on forests are intense, and are steadily increasing in complexity and scope. As in the present time the people have changed a lot, perceptions of the forests have changed considerably. People are demanding more and more from the forests. Seldom are old demands relaxed; rather, new demands are simply added to the list. Frontiers of service provided by forests are spreading like amoebic pseudopodial extensions. The services are multidimensional, which include many vital life-supporting roles and have gained particular attention in recent times. For instance, the maintenance and enhancement of quality water supply, which has long been recognised as a key contribution of forests. Of more recent recognition are demands for forests to serve as repositories of biological diversity, to store carbon and to provide recreational and educational opportunities for tourists. Services of forests are important, but in the absence of easy measures of their worth, they tend to be publicised less than they deserve.

Services of forests are categorised into two broad types. 1. The type includes those services for which a formal market exists or could be developed: *clean water, grazing, ecotourism, recreation, hunting and gathering*. 2. The type includes services that are largely intangible and not sold through markets: *cultural and spiritual values, influences on climate, erosion control and conservation of biological diversity*. Recently, progress has been made to price and sell several forest services that were largely non-marketed in the past. For example, the carbon sequestration and storage functions of forests are becoming more "marketable" under new international agreements. Similarly, forest genetic resources, and the associated functions of biological diversity conservation, are increasingly being valued and marketed.

For forest dependent communities in Asia, the more urgent interest is in developing financially viable services that can provide alternative sources of revenue to excessive harvesting or clearing of forests. While the intrinsic economic value of these more viable services may be less on average than for ecological services, their marketability gives potential for immediate financial gain and this

can be a powerful incentive for promoting conservation. In wealthier countries, the inability to capture forest values in financial terms may not necessarily deter governments from subsidising forestry for the purpose of generating intangible benefits. Japan provides a wide range of subsidies for silviculture aimed at protecting land and conserving water resources, creating a "healthy living environment," establishing recreational opportunities and promoting the economies of mountain communities. Subsidies range from 30 to 50 percent of costs, are long-term and cover all activities that contribute to the public good rather than private gain.

The Australian Office of National Tourism projected foreign exchange earnings for all tourism of A\$21 billion in the year 2000. The industry accounts for some 500,000 jobs, or around 6.6 percent of Australia's workforce. Domestic interest in ecotourism is strong. Visits to national parks have generally increased since the early 1990s -- in some parks the number of visits has increased substantially, at over 10 percent per annum. Australia's appeal gains much from images of nature, including its forests and bush land. Australia has established a National Ecotourism Strategy and funding has been allocated for ecotourism infrastructure development, environmental management, and other projects through the Forest Ecotourism Programme and the National Ecotourism Programme.

Let us see what we find when we examine the state of ecotourism in Indonesia. International visitors' arrivals have increased substantially over the decades. Tourism receipts in 1995 totalled US\$5.2 billion, of which ecotourism receipts can be estimated at more than US\$350 million. Continued growth in both arrivals and receipts are expected. The primary beneficiaries of these earnings are, however, airlines, tour companies and hoteliers. Little money is paid directly to local communities and less is collected by forest managers. But this little money for the local communities is great help in their income. Tourism policies in Indonesia's plan include: tourism to support quality of improvements; encouraging development in remote areas; and promoting the preservation of natural resources and culture.

Let us come to the question of **"Socio-cultural roles and nature-based ecotourism"** at least in Asia and the Pacific. In this region of the world, forests play important roles in the above subject. Maintaining forests or trees in traditional burial grounds is common in most coun-

tries in Asia and the Pacific region. In a few countries, specific provision is made in government-protected forests for cultural functions. For example, Nepal has designated religious forests and Sri Lanka has protected forest areas around temples. In these cases, the cultural functions of the forest are a major factor favouring conservation. A more modern, and rapidly growing, social function of forests is serving as destinations for ecotourism and recreation. Ecotourism is still a relatively small component of the world's huge travel and tourism industry, but it already generates significant

incomes for many countries. Ecotourism can create and capitalise on a symbiotic relationship between tourism and environment. It provides an economic incentive to perfect natural resources such as forests, wildlife, scenery and waterways. It also offers jobs and the potential for economic advancement to impoverished rural communities.

A few trends highlight the prospects for ecotourism to contribute to forest conservation in the Asia-Pacific region. They are:

Tourism in general already makes a substantial contribution to the region's economy; Tourism has grown rapidly in the region (especially in Australia, New Zealand, Indonesia and the other Pacific islands), and this growth is expected to continue; ecotourism in the region and globally has grown faster than tourism generally, and this probably will continue over the next several years; domestic and intra-regional visitors are an important component of the region's ecotourism, and this importance is expected to increase in the future; and ecotourism demand will evolve

cultural and sometimes religious activities. This situation renders the sustenance of sound environment and nature conservation.

In the developing countries, the necessity of publicising services of forests is severely lacking and wanting. This sector must be given attention with especial emphasis. The country like Bangladesh has to be very serious in all respects to understand and exercise the services offered by the forests. We must remember that the services are very important and useful and they could be made so if we become serious about the maintenance of forests as the services

places as symbol of God's existence. As a consequence, places with these religious taboos normally enjoy a high degree of priority in terms of conservation. The holy books of every religion cite something or the other in favour of such natural conservation. For example, the Holy Quran says man is born with nature made by Allah and he indeed prospers who purifies it; and he is ruined who corrupts it. The Srimav Bhagavatam says that one should look upon deer, camels, monkeys, donkeys, rats, reptiles, birds and fleas as though they were their own children. The Buddhists too believe that the branch of a tree must never be cut so as to destroy the shade beneath which Lord Buddha had taken shelter.

In this manner though the believers do not directly participate in conservation but disallow others to destroy nature. Apart from Hinduism, the two major religions Buddhism and Jainism organised in the region around 2500 years ago. Both preached against animal sacrifice at religious ceremonies and emphasised compassion towards all forms of life. The Bishnois sect (formed about 400 years later) poses an interesting example by emphasising on the preservation of one particular tree species, *Procopis ciner* area, which is by far the most useful tree of the Rajasthan desert of central India where the sect originated. Once upon a time the Thar Desert swarmed with antelopes and gazelle. It is now barren-except in some extensive tracts of the desert state in Rajasthan and neighbouring areas in India where herds roam freely in the fields and along with the livestock of the Bishnoi community.

Four hundred years ago, a young man of this area perceived the need for protection of nature and wildlife. His 29 principles of life, from which his followers took their name of 'Bishnois' or 'twenty-niners', included a conservation ethics that has survived the centuries and is as much a reality today as always. Jamboji, as the young man was familiarly known, had a vision, in which he saw man bringing disaster upon himself by destroying nature. It led him to renounce his inheritance and undertake a mission to teach people to care for their health and environment. As part of the 29 principles a Bishnoi should refrain

deserve. Religious conservation practice is, however, a ritual or tradition linked to a particular faith and is based on a religious belief. This type of conservation implies 'belief in the existence of God who has created the universe and given man a spiritual nature which continues to exist even after the death of the body'. Religious belief plays a major role in conservation of nature and natural resources. Religious leaders generally impose religious meaning or sanctity to certain



from eating meat. It is noteworthy that, unlike similar other sects, Bishnois do not cremate their dead, because that would require cutting down trees for the funeral pyre.

Bangladesh is a predominantly Muslim country with limited resources. Overpopulation and scarcity impose minimal inhibitions in exploiting natural resources. Even so, there are a few plants and animals, which are being conserved by the people because of religious and traditional belief. Some of these are stated below.

Plants

Mehedi: The juice of mehedi leaves is used in Muslim religious and matrimonial festivities. Mehedi leaves are also used for dying hair, beard and nail. So, those who have reverence for religious practices, maintain at least one mehedi tree in the garden. **Tulshi:** The tulshi tree is essential in the religious practices of Hindu families. In a Hindu predominant village, it is hard to find out a house without tulshi tree. It felt that protecting the tree has a great religious value and importance. **Woodapple, Tamal:** Leaves are used in Hindu worship rituals and social activities. Such trees are conserved mostly by the Hindu community. **Banyan tree:** Venerated by the Hindus, the tree is important also from the ecological point of view, because it gives support (either by providing food or shelter) to about a hundred different species of animals. **Barun, Ashok, Sheuli, Parijat:** Those are conserved by the Hindu community as flowers used in worship.

Animals

Spider: Muslims do not kill spiders in reverence to an incident which related how a spider protected Prophet Muhammad (S) by covering the entrance of a cave with its web, where the prophet once took shelter. **Bostami turtle:** Devout Muslims regularly feed this species

of turtle in a pond at the shrine of Saint Bayzid Bostami in Chittagong. The population is the only living species of that kind and is claimed as an endemic species for Bangladesh. **King Cobra:** It is venerated by the Hindus for its close association with the Lord Mahadeva. Hindus thus, do not generally kill snakes. **Marsh crocodile:** Followers of the Saint, Muslims or not, regularly feed marsh crocodiles in the shrine of Saint Khan Jahan Ali at Bagerhat. The species is otherwise extinct in Bangladesh. **Blue rock pigeon:** The Saint Shah Jalal reportedly reared these pigeons and so Muslims zealously protect these birds in their sanctuary in Sylhet. **Owls:** Garo tribes of Bangladesh do not kill owls because they believe that they are their forefathers. Hindus also venerate owls because they are the carriers of goddess Laxmi. **Hanuman langur:** The Hindus venerate this animal as it is associated with Lord Rama. **Rhesus macaque:** Macaques are believed to have made a bridge for Lord Rama and thus facilitated the recovery of abducted Sita. This belief plays a major role in preventing killing or poaching of these animals. **Wild boar:** Pork is forbidden for Muslims. Caste Hindus also do not eat pork since boar (Baraha avatar) is thought to be an incarnation of God Vishnu.

In Bangladesh, we have some important forest areas Chittagong (Sitakundo, Karaerhat, Chunati), Cox's Bazar (Eidgaon, Eidgar, Fashiakhali), Sylhet (Lawasara and Rama Kalenga), Mymensingh (Sherpur), Tangail (Modhupur), Noakhali (Nijhum Islands) and Khulna (Sundarbans: the largest mangrove) to be considered as the ecotourism spots.

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RECYCLING OF GARBAGE

Towards a world without waste!



MD. ASADULLAH KHAN

IN the past 10 years, Dhaka and cities like Chittagong, Khulna and Rajshahi have transformed into vast terrifyingly crowded urban settlements which seem to rise out of a sea of uncollected garbage. The horror begins the moment one has stepped out of his house on the road. Speaking about Dhaka, it is now a disorderly and dirty city whose claim to fame so long has been its tree lined roads with clean pavements. But at the present moment, most parts of the city, especially Gandaria, Wari, Lalbagh, Hazaribag and even Mohammadpur and Mirpur now seems to be collapsing under crowding high rises generating mountains of garbage and seas of raw sewage.

The garbage spills out of the bins and other unofficial dumps and lines the city roads so that you see miles of pavements littered with human feces, rotting food, household as well as factory and medical wastes. And when it rains heavily, these spill farther into roadside shops interfering with pedestrian movement. Oblivious of the horrible stench and filth, people make their chores, clearly reconciled to the fact that squalor is a way of life and to expect anything better is a sheer madness.

Plainly speaking, half of Dhaka city's garbage isn't picked up. In most parts of the city filthy water in choked drains stagnates for days

and so citizens learn to live with frequent epidemics of malaria, dysentery, diarrhea and now dengue fever. At the present moment, city's garbage collection points are nothing more than rotting, open heaps of refuse. Till now, half of the Dhaka city has the luxury of an underground sewer system, but in other areas human excreta flows directly into open, surface drains. On the other hand as population increases, its trash -- mainly hazardous plastics, metals and packaging -- is growing exponentially. Right now, Dhaka city generates about 10,000 tons of garbage everyday. And as almost half of this garbage is unattended, festering and stinking, it becomes breeding ground for diseases.

But what keeps these cities so dirty? It is a combination of slothful city corporation or municipal authorities who refuse to change outdated waste disposal practices that can no longer keep pace with population growth, new kinds of trash like plastics and a near total apathy of citizens. As for sewage, an abysmal lack of planning on the part of DCC (Dhaka City Corporation) and WASA has led to a situation of total breakdown inundating city roads with the slightest shower. These days it breaks down so frequently with the wastes of about 70 million more people than it was designed for. The sewer lines lead to drains -- almost all of it untreated -- directly into the rivers, virtually killing the marine life. Dhaka's Buriganga and Narayanganj's Shitalakha have turned into giant sewers, chiefly from raw sewage.

Garbage has never posed that much of a problem in the developed cities of the world as it does in our case, simply because of the absence of planning and total apathy on the part of the agencies concerned. In 1997, 276 million Americans produced about 195

billion kg of banana peels, Cheerios boxes, gum wrappers, coke cans, ratty sofas, car batteries disposable diapers, junk mail and worn-out nikes. And that's just the relatively benign municipal solid waste. Each year American industries belch, pump and dump more than 1.1 billion kg of really nasty stuff -- like lead compounds, chromium, ammonia and organic solvents -- into the air, water and ground.

The really bad news is that most of the planet's six billion people are just beginning to follow in the trash-filled footsteps of the US. "Either we need to control ourselves or nature will", says Gary Liss of Loomis, Calif, a veteran of recycling and solid waste programmes who advises clients aiming to reduce landfill deposits. In nature, Liss points out, there is no such thing as waste. What dies or is discarded in one part of the ecosystem nourishes another part. Liss says humanity can emulate nature's garbage-free ways, but it will require innovative technology and a big change in attitude.

Instances are not hard to come by. There an unusual place called "eco-industrial park" in Denmark shows how much can be gained by recycling and resource sharing. Within the park, a power company, a pharmaceuticals firm, a wall-board producer and an oil refinery share in the production and use of steam, gas and cooling water. Excess heat warms nearby homes and agricultural greenhouses. One company's waste becomes another's resource. The power



plant, for example, sells the sulphur dioxide it scrubs from its smokestacks to the wallboard company, which uses the compound as a raw material. Dozens of these eco-industrial parks are being developed all over the world.

Biotechnology is now giving us additional tools to cope with waste and mostly to our advantage. We now have microbes that can take toxic substances in contaminated soil or sludge -- including organic solvents and industrial oils -- and convert them into harmless by-products. Soon we may be using

genetic engineering to create what Reid Lifset, editor of the "Journal of Industrial Ecology", calls "designer waste streams." Scientists at Monsanto and Heartland Fiber are working toward engineering corn plants -- with the kind of fiber content that paper companies would find attractive. So long as the genetic tinkering poses no ecological threat this approach could tap in a huge stream of agricultural waste, turning some of it into an industrial ingredient.

In consumer markets, recycling has already spawned an army of alchemists: Jackets are being

made from discarded plastic bottles, briefcases from worn-out tires and belts from beer-bottle caps. Even though the U.S. has barely begun to get serious about recycling, about 25 percent of its 195 billion kg of municipal garbage is now salvaged, at least temporarily, for some sort of second life.

Recycling will gain momentum as we develop materials that are easier to reuse. For example, Jesse Ansubel, director of the Programme for the Human Environment of Rockefeller University, predicts that architects will increasingly rely on new types

of foamed glass that can be made unusually strong but still lightweight. Glass is a very recyclable material made from sand, and it can be crushed back essentially into sand. Ausubel thinks we could see foamed glass replacing much of the concrete in to-day's buildings.

There are limits, of course, to how many lives you can give a pile of debris. In the long run, we have to reduce the amount of material we use in the first place. Some progress is being made -- aluminum cans and plastic soda bottles have become thinner over the years, for example -- but more sweeping reductions will require a whole new kind of manufacturing process.

That, says Lifset, is where nanotechnology plays a role. In this emerging field, which employs just about every kind of scientific and engineering discipline, researchers expect to create products by building them from scratch, atom by atom, molecule by molecule. This bottom-up nanotechnology ushers in the horizon that replaces traditional drilling, sawing, etching, milling and other fabrication methods that create so much waste along the way.

Researchers have made headway toward molecule-size transistors and wires and even batteries thousands of times as small as those that are now in use. These laboratory feats are now producing sugar cube-size computers. Says Lifset: "A lot of the consumer goods and industrial equipment could become dramatically smaller when nanotechnology comes online. That, plus more efficient recovery of the discarded goods, ought to translate into huge reductions in waste."

But technology is not enough. Just as critical are changes in attitudes and lifestyle. Brad Allenby, AT&T's vice president for

environment, safety and health, believes our move from the industrial age to the information age could help enormously. At last count, he says, 29 percent of AT&T's management force telecommuted, meaning less reliance on cars. This, Allenby speculates, could be part of something bigger -- a shift in our view of what enhances our quality of life. Maybe we'll put less value on things that use lots of materials -- like three cars in the family driveway -- and more on things that don't swallow up resources -- like telecommuting and surfing the Internet. Maybe downloading collections of music from the Web will reduce the demand for CD cases.

And while visions of a "paperless office" have proved wildly wrong so far, we still have an opportunity to use computers to cut consumption of paper and the trees it comes from. Allenby thinks of such trends as "dematerialization". The deeper dematerialization goes in society, the less stuff there will be to discard. What's more, as society becomes more information-rich, the easier it will be to find uses for the diminishing amount of discarded materials. Maybe, with the help of brokering services on the Internet, we can generalize the principle that governs garbage sales: One person's garbage is another's treasure.

Can't we make such a slogan a reality in our case?

True, the situation has come to such a pass in our country mainly because development has happened before urban planning. Still let's not lose hope. Let's also hope for the better like many others around the world.

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