ENVIRONMENT

The Daily Star

Diminishing hills, endangered ecology

ATURAL resources are a gift of God. But like any other thing on earth, they do not last forever. They need nourishing, and conservation in order to last for generations. What many people are not aware of is the fact that destruction of natural resources seriously affects the ecological balance. Destruction of forests and hills affects the flora and fauna of the area, which in turn has an effect on the food chain. This chain of events could lead to a serious threat to mankind's existence itself over a long period of destruction and negligence.

Sylhet was once haven of greenery and a treasure trove of nature in our country. The hills and mounds in and around Sylhet are gradually diminishing, thanks to the greedy and ferocious attacks by a section of people. Ecologists, both local and foreign. fear that besides damaging local landscape, this is going to have serious long-term impacts.

Indiscriminate destruction of hills have a direct impact on the lithosphere (land) leading to floods, water logging, change of weather, increase in temperature and increase in storms, landslides slides and weathering. The biosphere (organisms) suffers extinction of rare species, destruction of biodiversity, spread of diseases. Some of the immediate effects on the environment being observed are deforestation, reduction in fertility of the soil, damage to life and property due to landslides, communication cut-off and destruction of historical and religious sites

Hills in Sylhet cover about 206 square kilometres. This include the terrain of hills and mounds along the foothills of the Khasiya and Jyontiya hills, hills along the North-east and south-western regions, Golapganj, Biyanibazar. These small hills vary in height from 20 to 100 metres. These hills and mounds are mostly of red earth and some contain sandstone as well. These are not only important for their scenic beauty but are great resources of the country. One of Bangladesh's prime exports, tea, is grown on these hills. Once known for absence

Hills and mounds in and around Sylhet are gradually diminishing, thanks to the greedy and ferocious attacks by a section of people. Ecologists, both local and foreign, fear that besides damaging local landscape, this is going to have serious long-term impacts, writes Rezaul Karim



of trees, which were planted to provide shade to the tea plantations. The hills are now sources of panoramic beauty. In addition to providing shade to tea plantations, there has been some planned forestation along some hills. This has made the region not only a tourist attraction, but also important in maintaining

ecological balance in the region. Just a few decades back, these hills were rich in flora and fauna. But now, a lot of these rare species are either endangered or extinct. These hills are also the sources of mineral resources like natural gas, limestone, sandstone, which have traditionally contributed to the economy of the country. The fertility of trees, these hills now boast of a lot

of land along the foothills is also very suitable for fruit bearing trees and the tea plantation owners in the areas where tea is not grown have grown numerous orchards. The hilly region has also proved to be suitable for rubber plantation.

But large-scale destruction of the hills (by cutting it down for earth and soil) has been gradually changing the entire scenario. Destruction is predominant in Star Tea Estate, Malinichara Tea Estate, Lakkatura Tea Estate, Chatak, Golapganj and Gowainhat. This venture to obtain soil, sand and stones is increasing day by day. Survey shows that on an average, 1200 square metres of hilly region are being made flat each

year. Those who have been to Sylhet for the last time about a decade ago, will now be surprised at the change in the area if they were to visit it now

The destruction started back in the 1970s by a section of the people. It has been noticed that over 1,000 truck loads of earth is taken from the hills of Sylhet everyday to be used for land filling in low-lying regions and construction of roads. And its not only the hills under private ownership, even public property is being indiscriminately destroyed in the process. Each truckload of soil earns the hill owners a mere Tk 80-100. They probably have no idea of the cost they are causing to nature.

This meagre profit-earning venture is damaging the ecology to such an extent, which cannot be measured even in crores of taka. These can never be replenished.

There are laws against cutting down hills, but they are not really heeded to. Like many other laws they too are not implemented. No one has ever been made to answer for the disregard he has shown for law or for causing such an extent of damage to environment, which car never be compensated. Absence of legal action against those who are destroying these natural resources in Sylhet have now resulted in a serious threat to the environment in the region.

The silent killer indoors

MUNEERA PARBEEN

HILE the world screams about air pollution in our immediate environment, which poses severe risk to the physiological wellbeing of humans, little is said about similar hazards caused by pollution within the four walls of a home.

The topic of indoor air pollution is a topic that has somehow averted the attention of many environmentalists. A human being spends the longest period of his day within his house. Therefore, the lingering pollution within a house poses more ate risk to his health. An individual could be exposed to more airborne substances indoors than he is outdoors There have been a few studies in the country itself on the ill effects of indoor pollution though a lot has been done on the topic even in neighbouring countries. At a seminar on air pollution, recently held in the city, Han Heijnen, an environmental health advisor to the WHO, Bangladesh, emphasised the issue saving that the hazards from indoor pollution is more acute than outdoor pollution, and stressed the need for its study. Studies on the issue from the United States and Europe show that persons in industrialised nations spend more than 90 per cent of their time indoors. For infants, the elderly, persons with chronic diseases, and most urban residents of any age, the proportion is probably higher. In addition, the concentrations of

many pollutants indoors exceed those of outdoors. The locations of highest concern are those involving prolonged, continuing exposure -that is, home, school, and workplace Lungs are most vulnerable to

airborne pollutants. Acute effects, however, may also include nonrespiratory signs and symptoms, many of which depend on toxicological characteristics of the substances and host-related factors.

seasonal discomforts.

Heavy industry-related occupational hazards are generally limited to only those who work in that arena and are exposed to it directly in their course of work problems.

als usually think smoking alone is a big contributor to indoor pollution. While smoke from cigarettes is a big contributing factor, there are other apparently 'innocent' factors leading to health problems

Key signs and symptoms of pollutants affecting the health of adults included pharyngitis, nasal congestion, persistent cough, conjunctival irritation, headache wheezing (bronchial constriction) and exacerbation of chronic respiratory conditions. In children, the symptoms may be the onset of asthma, increased severity of, or difficulty in controlling, asthma, frequent upper respiratory infections, persistent middle-ear effu-

"mainstream" smoke, the smoke inhaled by the active smoker, are also found in "side-stream" smoke, the emission from the burning end of the cigarette, cigar, or pipe. ETS maternal smoking on foetal develconsists of both side-stream smoke opment has also been well docuand exhaled mainstream smoke. mented in various studies around Inhalation of ETS is often termed the world. Maternal smoking is also "second-hand smoking", "passive associated with increased incismoking", or "involuntary smoking." dence of Sudden Infant Death Syndrome The role of exposure to tobacco smoke via active smoking as a

Airborne particulate matter contained in ETS has been associcause of lung and other cancers, emphysema and other chronic ated with impaired breathing, lung obstructive pulmonary diseases, diseases, aggravation of existing and cardiovascular and other disrespiratory and cardiovascular eases in adults has been firmly disease, changes to the body's established. Smokers, however, are immune system, and lowered

ENVIRONMENT WATCH

Black Death unravelled AFP. Paris

British scientists have genetically decoded the plague, an ancient evil that has returned to haunt mankind as a feared weapon by terrorists, the journal Nature reported yesterday.

The unravelling of the plague bacterium's genetic structure is a key step towards spotting chinks in its armour that can be attacked by antibiotics and other weapons.

The genome of Yersinia pestis, as the bacterium is known in Latin, shows a smart, adaptable rod-shaped bug that evolved a few thousand years ago from a relatively benign gut-dwelling germ, according to the team led by the Sanger Centre in Cambridge, Britain

Over the course of the years, Y pestis found ways of surviving outside the gut by acquiring genes from bacterial cousins. Around 150 genes that were no longer needed in the new environment still linger in the genome, but play no apparent active role. One of the acquired genes exudes insecticidal toxins, which were useful for infecting fleas - the transmission route for the bug to reach mammals.

Y pestis is transmitted to humans via fleas on rats. When the rodent dies, the fleas bite humans.

The bacterium spreads from the site of the flea bite to the lymph nodes, causing them to swell into black, agonising lumps called bubos, from which the terms bubonic plague - and Black Death - are derived.

If the lymphatic system is overwhelmed, the toxin rapidly spreads through the blood circulation and to all the majo organs. When it reaches the lungs, it is then coughed into the air by the patient as fine, highly contagious droplets, which are breathed in by other people.

This form of the plague - pneumonic plague - is even more vicious than the bubonic kind, for it can kill within three days, leaving little time for antibiotics to work.

There have been three plague pandemics since the Middle Ages, inflicting an estimated death toll of 200 million people. Modern sanitation and the advent of antibiotics have

mistakenly led many to believe that the plague is a disease of the

In fact, a number of people, albeit relatively small, die from the disease in poorer countries each year and doctors are worried at the rise of several antibiotic-resistant strains of the bacterium.

The September 11 attacks on New York and Washington have triggered fears that ruthless terrorists are plotting to use chemical agents or biological weapons, such as anthrax, smallpox and the plague, against cities.

Scientists do not rule out this possibility, but say any terrorist group would have to overcome several major technical obstacles, firstly to acquire the agent, then manufacture it in large quantities and finally to deliver it effectively as airborne droplets

Biologists this week have published several important studies that widen knowledge about anthrax and the plague.

The timing of these studies is coincidental, and there is a long road between the laboratory and any new treatment arising from these discoveries.

Hatchery fish face dark night of the shoal

AFP, Paris

Scientists are devising novel tactics, including group training courses and video nasties, to try to help fish born and raised in hatcheries to cope with life in the wild.

Many countries, including Britain, Japan, Norway and the United States, are breeding fish and then releasing them into oceans and rivers, either as sport for anglers or replenishment for diminished fish stocks.

Reared in a protected environment and with a regular supply of food, these hatchery fish stand little chance of survival - less than one in 20 make it to adulthood, according to studies of reared salmon.

Piscatologists Culum Brown of the University of Edinburgh and Kevin Laland of Cambridge University have come up with some smart ideas to ensure that hatchery fish do not have their chips, New Scientist reports in this Saturday's issue.

One of their schemes is group training, based on the premise that many species learn from watching the reactions of others in year, 1.2 million was in non-tropical areas.

But the report warned that efforts to improve forest management would only be successful by fighting crime and corruption. "Illegal and corrupt activities threaten the world's forests in many countries, particularly but not exclusively in forest-rich developing countries," it said.

And in some cases, the FAO claimed illegal logging and trade appeared to be growing as a consequence of trade liberalisation and globalisation

It listed a range of illegal forest practices such as the approval of illegal contracts with private enterprises by public servants, the harvesting of protected trees by commercial corporations and the smuggling of forest products across

High timber values, low government official salaries and a large number of poorly-designed regulations are amongst other factors which the FAO said create a favourable environment for forest crime and corruption.

Other factors, which the report cited for loss of natural forests, include atmospheric pollution, high winds and drought that have contributed to a range of severe fires across the world.

Regarding bans and restrictions on commercial logging, the report said they had contributed to conservation in some countries but in others "they have negatively affected the forest sector and local communities or have simply transferred the problem of over-harvesting to other countries.

Sustainable forest management and forest certification however, was gaining momentum, according to the report, with an estimated 12 percent of the world's forests under protected

Green Pig takes wing in France

AFP, Paris

Desperate to ease a malodorous mountain of manure, France on Wednesday launched a programme to give its pig farms a cleaner, brighter, gentler future.

Seventy researchers will be mobilised under a four-year. 83.6 million franc (12.7 million euro, 11.55 million dollar) endeavour to devise "green pig farms" that, to put it bluntly, will smell less.

The faecal burden is worst in the western regions of Brittany, the lower Loire valley and Lower Normandy, which by themselves account for 70 per cent of all pork production in France.

Pigs are monogastric (single-stomach) creatures, which deposit large quantities of nitrates and phosphorus in their manure because of their incomplete digestion of plant food.

Intensive farming has caused nitrate levels in Breton water to rise tenfold over the past quarter-century, as discharge from the porcine population, but also from other farming activities, has seeped into the water table.

Phosphorus can also cause algal "blooms" in rivers and lakes, depleting oxygen and killing fish and other aquatic life.

The fallout from factory farming has become critical in other European countries, such as Belgium and the Netherlands, and plans to build new pig farms inevitably run into fierce local opposition

In the quest for a solution, the French believe the basic design of pig farms and the animals' diet are good starting points.

"Pig production methods have hardly changed over the last 40 years. We have to think radically," programme co-ordinator Michel Bonneau warned grimly.

One area of interest is litter. Factory farms generally put the pig in a pen with a slatted floor. The manure falls through the slats and is gathered in a trough, where it ferments with a predictable stench.

But studies carried out by the National Institute for Agronomic Research (INRA) show that using litter such as straw or sawdust, which is only used by 10 per cent of French pig farms, greatly reduces the fermentation process, cutting output of ammonium gas - the principal stinker - by half.

The scientists believe they will also eventually scent a breakthrough in a change of pig feed.

They want to look at ways in which the usual mix of cereals, plants, soybean and edible waste products from industrial processes can be re-jigged to cut output of ammonium and metals such as zinc and copper.

Pork is the cheapest and most popular food in France, ending up in sausages, pate, bacon, cutlets and innumerable other dishes. Per capita consumption in 1999 was 37.3 kilos (82 pounds) Agricultural scientists have already discovered that one way to reduce manure phosphorus is to dust pig feed with an enzyme called phytase. This can cut the excreted phosphorus by 56 per cent, but it is expensive and raises pollution worries in its own right.

children, correlate with the amount of smoking in the home and are often more prevalent multiple adults smoke within a house. The impact of

Contaminants encountered at homes and offices are different from those encountered outdoors.

and bronchitis. In babies especially Experts say it is difficult to estabin our country, these symptoms are lish the actual causes of indoor frequent and common, but never directly attributed to our living condipollutants because many signs and symptoms are non-specific, making tions. differential diagnosis difficult. In

Environmental tobacco smoke (ETS) is a major source of indoor air many cases, multiple pollutants may be involved. The challenge is contaminants. The ubiquitous nature of ETS in indoor environfurther compounded by the similar ments indicates that some unintenmanifestations of many pollutants and by the similarity of those effects. tional inhalation of ETS by non-These are usually allergies, influsmokers is unavoidable. Environmental tobacco smoke is a enza, and the common cold. Many dynamic, complex mixture of more effects may also be associated. independently or in combination than 4,000 chemicals found in both with, stress, work pressures, and vapor and particle phases. Many of these chemicals are known toxic or carcinogenic agents. Non-smoker Because a few prominent aspects of indoor air pollution, exposure to ETS-related toxic and notably environmental tobacco carcinogenic substances will occur smoke (ETS) and "sick building

in indoor spaces where there is syndrome," have been brought to smokina All the compounds found in the attention of the public, individu-

not the only ones affected.

sion, snoring, repeated pneumonia The US Environmental Protection Agency (EPA) has classified ETS as a known human carcinogen and estimates that it is responsible for approximately 3,000 lung cancer deaths a year among nonsmokers in the United States. Children's lungs are even more susceptible to the harmful effects of ETS. Experts say that in infants and young children up to three years, exposure to ETS causes an approximate doubling in the incidence of pneumonia and bronchitis. There is also strong evidence of increased middle ear effusion, reduced lung function, and reduced lung growth. Several studies in recent times have linked ETS with increased incidence and prevalence of asthma and increased severity of asthmatic symptoms in children of mothers who smoke heavily. The adverse health effects of ETS, especially in

defences against inhaled particles. For direct ETS exposure, measurable annoyance, irritation, and adverse health effects have been demonstrated in non-smokers. children and spouses in particular. who spend significant time in the presence of smokers. Acute cardiovascular effects of ETS include increased heart rate, blood pressure, blood carboxyhaemoglobin; and related reduction in exercise capacity in those with stable angina and in healthy people. Studies have also found increased incidence of nonfatal heart disease among nonsmokers exposed to ETS, and it is thought likely that ETS increases the risk of peripheral vascular disease, as well.

With help from the Health professional's guide to ETS problems, USA

Traditional wisdom in fight against arsenic

DR JAMAL ANWAR

RSENIC contamination of the groundwater was detected in 1993. A lot of money has been invested to arrange seminars and develop expensive and largely ineffective filters: however, the rural poor, the worst affected in the crisis, has not yet got the support they really need. Interestingly, while much attention has been paid to treatment of arsenic-contaminated tube-well water, simpler and less expensive alternatives have been ignored. I have gone to numerous villages in Bangladesh and found that the water of kua (dug well), although not in use, is not arsenic contaminated.

Dug well is an indigenous technology, is socially accepted and can be constructed with easily available resources. In the United States, Section 265.91 of the Code Federal Registration (CFR) requires special design, criteria casing, clay packing, etc while sinking wells in a contaminated region. A dug well requires double casing made of terra cotta clay rings where inside is filled with clay to inhibit water percolation from the surrounding geological formation.

Pathogen, bacteria, viruses can be removed through solar radiation (at no cost) and other methods at

Comparative analysis of arsenic levels in dug well and tube-well water

Permissible level of	Tube well		Dug Well	
arsenic(µg/l)	Level of arsenic (µg/l)	Depth (metre)	Level of arsenic(µg/l)	Depth (metre)
50	125	21	6	15
50	600	15.7	7	15
	300	33	less than 3	10.6
	18	5	15	50
			50	719
50	302	33	5	12
50	468	18	6	12
50	218	27	6.7	10.6
50	240	21	5	12

site which is acceptable to all. It is nology. easy to remove bacteria. But pres-The wells are cheaper and easier ent experiences in Bangladesh and to construct and less susceptible to bacteriological contamination India show that household methods (BRAC, August 2000). of arsenic removal have totally failed but the donors and the NGOs Natural biological filtration occur, when water percolates through are continuing to support the inefsand bodies (develop microbial flora fective methods whose metabolism contributed to

The construction of dug wells the effectiveness of removing that existed even 30 years ago have effluents) almost vanished from the country λ In dug wells within the standing due to non-use and popularisation water simple sedimentation take of tube-wells. place and has been found fre-Advantages of dug wells are:

quently a substantial reduction in Dug wells are indigenous tech-BOD (Biological Oxygen Demand).

 λ Natural iron coagulation and settlement occur within standing water (decrease in arsenic, suspended solids, ammonia, nitrate and phosphate content).

Protected dug wells provide acceptable bacteriological quality but usual investigation and monitoring methods are inadequate in Bangladesh.

Surface water irrigation

Agriculture through contaminated groundwater is now contaminating our food chain. There is no programme to go back to traditional

method of agriculture. The government has no programme on "floodwater" irrigation. Wilcock, an irrigation expert, who visited Bengal in early 19th Century, was overwhelmed to see irrigation system in Bengal. He had said, "River water in the early months of the flood is gold. 2.5 billion tonnes of fertile soil carried by the rivers Ganges-Brahmaputra goes directly to the Bay of Bengal." Flood irrigation system is the only alternative. It will not only stop contaminating food chain and surface water but also reduce use of fertiliser. As we notice after each severe flood, a bumper crop in Bangladesh is recorded.

Conclusion

Arsenic problem in Bangladesh should be solved within our traditional wisdom. Herb Klein, a former US congressman (July 1998) expressed, "Much is already clear and it is deeply embarrassing for western scientists and engineers for this crisis is entirely due to their failures." We do not want the same mistake

repeating in the name of mitigation. We were united during our independence, severe cyclones, floods and severe tidal storms. Now there is a greater need to be united and fight together for arsenic free water

the shoa

One tactic is to put a clued-up demonstrator fish in a naive shoal, and place a predator behind a transparent, porous screen

The inexperienced fish learn from the reactions of the demonstrator fish that they should flee, and the sight and smell of the predator reinforces that reaction

A more drastic way envisaged by Brown and Laland entails showing hatchery fish a "video nasty" of the predator devouring one of their brethren

University of Helsinki researcher Sampsa Vilhunen has come up with a different approach, the British science weekly

He fed predator fish on Arctic charr, and then moved the fish to a new tank.

Hatchery-raised Arctic charr were then put in this water, and the mere odour - apparently from the faeces expelled by the terrified fish as they were hunted down - was enough to learn to avoid the predator.

Mixed FAO reports on forest

AFP, Geneva

Forests are disappearing at a rapid rate in tropical countries but are on the increase in Europe where they help to protect biodiversity and provide jobs, said a new report published in Geneva on Wednesday by the UN's Food and Agriculture Organisation (FAO).

But the biggest threat to successful forest management is corruption and illegal forest practices, the FAO said in its biannual report, State of the World's Forests 2001.

"During the 1990s, the loss of natural forests was 16.1 million hectares per year, of which 15.2 million occurred in the tropics," the organisation explained. Deforestation was highest in Africa and South America.

The organisation said the major cause for the loss and degradation of natural forests was conversion to other land uses and to agriculture in particular.

Only one million hectares of this lost land was later re-used for forest plantations, it said.

"The countries with the highest net loss of forest area between 1990 and 2000 were Argentina, Brazil, the Democratic Republic of Congo, Indonesia, Myanmar, Mexico, Nigeria, Sudan, Zambia and Zimbabwe," said the report.

Elsewhere, however, natural forests have been growing at a rate of 3.6 million hectares a year, mainly in non-tropical countries, it said.

"Forest expansion has been occurring for several decades in many industrialised countries, especially where agriculture is no longer an economically viable land use," the FAO said.

The report particularly aimed to debunk various myths about the state of European forests, which it said were now expanding by about 880 thousand hectares a year.

It pointed out that Russia's forest area was the world's largest at 851 million hectares, a fifth of the global total.

In the rest of Europe, it said: "Forests cover about 38 per cent of the land area, conserving bio-diversity, protecting against erosion and providing employment, recreation, wood and a wide range of other goods and services, many of them not yet economically valued.

"This counteracts their relative lack of importance in conventional GDP calculations.

In terms of area, the biggest net gains of forest were in China, Belarus, Kazakhstan, the Russian Federation and the United States. In many cases, these were boosted by specific plantation policies

Out of a total of 3.1 million hectares of forest planted each

Canadian bio-technologists, led by microbiologist Cecil Forsberg of the University of Guelph, Ontario, are taking matters a step further

They have genetically engineered a pig whose saliva glands produce phytase, thus slashing phosphorus output by 75 per cent, the specialist US journal Nature Biotechnology reported in

The GM swine have yet to leave the laboratory. Environmentalists are opposed to transpenic animals as a matter of course, and INRA said that it would not pursue this path because of public concerns

Caspian ecology in dire straits

AFP. Almatv

Russia's envoy for the Caspian Sea Viktor Kalvuzhny called Wednesday for the five littoral states to take "urgent measures to clean up the inland sea's ecology which he said was in "critical" condition

"The state of biological resources in the Caspian is critical." Kalyuzhny said at an oil conference in Kazakh city of Almaty.

He said some oil companies exploring the sea's resources used poisonous material for drilling, had polluted the sea with waste, and barred access to the oil sites by ecologists.

Moreover uncontrolled poaching had created a serious depletion of the Caspian's sturgeon stocks, Kalyuzhny said.

He suggested the five Caspian states - Kazakhstan, Iran, Russia, Azerbaijan and Turkmenistan - sign agreements that would "allow them to take urgent measures for the protection of the Caspian environment and fish.

He also called for the creation of a joint Caspian centre to monitor the sea's ecology.

In June Kazakhstan, Russia, Azerbaijan and Turkmenistan agreed to suspend sturgeon fishing until the end of the year to help restore fish stocks.

Slow progress in negotiations on the Caspian's legal status was one of the reasons for the lack of ecological co-operation between the Caspian states. Kalvuzhnv told the oilmen.

But "the ecology cannot wait while we dawdle over negotiating the sea's status," he warned.

The division of the Caspian Sea's resources has been a source of dispute among the five littoral states since the collapse of the Soviet Union 10 years ago.

Kalyuzhny confirmed Russia's opposition to the laying of undersea oil and gas pipelines, citing ecological risks.

"Before starting such projects, the littoral states need to jointly solve the issues of the ecological safety (of the projects),"

Kazakhstan is planning to build an underwater link to the pipeline from Baku, in Azerbaijan, to the Turkish port of Ceyhan, heavily backed by the United States.

Russia has expressed its opposition, fearing a loss of influence in the Central Asian region.

Meanwhile, US ambassador in Kazakhstan Larry Napper discussed progress achieved in realising the 2.8 billion dollars Baku-Ceyhan project.

"A primary feasibility study has been completed, and the results back up the viability of the project," Napper said.

A more detailed feasibility study, itself costing 120 million dollars, had got under way, he told the oilmen