

Compensation for climate change

NURUL HUDA

BANGLADESH including those who are badly affected by global climate change should be compensated from the developed countries who are mainly responsible for it. This demand became stronger at a seminar in observance of World Environment Day in the country as elsewhere in the world on June 5.
It is time that the developing countries including Bangladesh should unite to initiate international advocacy at the United Nations level for the compensation and to protect the environment from further change, speakers at the seminar, organized by Bangladesh Paribesh Andolon (BAPA) said.
BAPA president Professor Muzaffar Ahmed sounding a note of warning said, "Climate change would jeopardize the right to food. Regional food production is likely to fall as a result of increasing temperature, which causes grain sterility, desertification and also rise in sea level."
In this regard it needs to be recalled that the G-77 grouping of 134 developing countries have long been demanding for additional one per cent of the GNP of the developed and industrial countries for tackling the adverse effects of climate change including climate refugees in the least developed countries including Bangladesh, Maldives, Marshal

NASA scientists apprehend that least developed countries like Bangladesh and small island countries like Maldives would face considerable sea level rise within this century while Inter-governmental Panel on Climate Change (IPCC), which won noble prize for popularizing the science of adverse effects of climate change, made a prediction of 0.50 meter to two meter sea level rise by the year 2050. All these apprehensions are indeed matters of serious concern for countries like Bangladesh.

Island and Mozambique.

The demand was raised rather loudly at the just concluded Bonn climate change conference, organized by UN Framework Convention on Climate Change, according to a member of Bangladesh delegation at the conference.

The G-77 grouping also expressed its serious concern over the non compliance of existing one per cent Official Development Assistance (ODA) commitments of the developed industrialized countries who are mainly responsible for causing global warming by emitting green house gases and asked the rich countries to pay for their pollutions by providing extra one percent grant support to combat the ever increasing risks of the most vulnerable developing nations.

Meanwhile, NASA scientists apprehend that least developed countries like Bangladesh and small island countries like Maldives would face considerable sea level rise within this century while Inter-governmental Panel on Climate Change (IPCC), which

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Whether such predictions would come true in totality or partially is not important. But the predictions are indeed made on the basis of analytical studies.

It needs to be mentioned that destructive land use on unplanned watersheds in Asia, Africa and Latin America is producing consequences whose cost, in both financial and human terms, is virtually incalculable. As soil erosion leads to the sedimentation of rivers, dams and reservoirs, floods become more severe and more lives, crops, buildings and livestock are lost.

Watershed damage results in disrupted irrigation systems and reduced crop yields, which means increase in number of hungry people. Soil erosion has been described by environmental experts as a quiet crisis and a

creeping catastrophe because it is not generally visible to the farmer until much of the damage has already been done. The case of Guatemala needs special mention, where 40 per cent of the productive capacity of the land has been lost because of erosion and different areas of the country have been abandoned as agriculture is not beneficial.

As early as 1986 a massive reafforestation programme was undertaken in Zimbabwe, as part of a campaign to make the country's people responsible for their environment. Every able-bodied citizen was urged to plant at least one tree a year with a target for 12 million trees, half of which by the country's 5,500 schools.

The school children were asked to plant and nurture the new trees and to cherish their environment. In the initial years tree plantation scheme was an annual school competition through the country's education ministry. There were experiments to plant indigenous trees aimed at protecting the country's natural habitat.

Tree plantation campaign has become quite popular here in our country for the last couple of decades and we are aware of the fact that more than half of the world's forest cover has disappeared in the past three decades. There are government efforts to enlighten the people about the long-term adverse effects not only of random felling of trees, but also of unplanned crop cultivation.

The question is being raised whether felling of trees so to say plunder of forest resources can be stopped. With the arrest of some forest officials revealing stories of plunder of forest resources started coming out in the national press. A job in the forest department was seen by a section of officials as having Aladdin's lamp in their hands to become millionaires overnight. It is time to take effective steps to stop plunder of forest resources permanently as the country's environment and ecology are already in bad shape.

The Sunderbans--shared by Bangladesh and India--house the richest mangrove swamps in this part of the world. The area supports dense brackish water forests and is the principal habitat of the Royal Bengal tiger, and also several other endangered species.

Over the past 200 years, the natural wealth of the Sunderbans has been reduced which has led to steady rise in the level of the Ganges delta, which again has resulted in insufficient flow of river water, essential to leach out excessive salts from the soil. This has contributed to the gradual death of the mangroves. During the past century at least 1,500 square kilometers of mangroves in the Sunderbans have been cleared for agriculture, according to an estimate.

Several million people continue to remain dependent on the Sunderbans mangroves. The compulsive need to extend farming into the delta has caused a steady regression of the mangroves, exposing the lands to soil erosion and associated degradation.

The Sunderbans in Bangladesh part suffered more than it suffered in the Indian part as many of the wildlife of this part reportedly migrated to the other part.

The plunder of the resources of the Sunderbans should be stopped with an iron hand and those given the task to protect the valuable resources should get properly paid and rewarded for their honest work.

As regards the demand for compensation there is need for mounting pressure on the developed countries so that they adhere to internationally agreed upon environmental targets and commitments to support the developing countries. Bangladesh can take pioneering role in this regard.

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Humans are unabatedly warming the climate

The United States must begin a sustained effort to exploit new energy sources and phase out unfettered burning of finite fossil fuels, starting with a moratorium on the construction of coal-burning power plants if they lack systems for capturing and burying carbon dioxide. Such systems exist, but have not been tested at anywhere near the scale required to blunt emissions.

TAREQUL ISLAM MUNNA

TWENTY years ago, James E. Hansen, a climate scientist at Nasa, shook Washington and the world by telling a sweating crowd at a Senate hearing during a stifling heat wave that he was 99 per cent certain that humans were already warming the climate.

"The greenhouse effect has been detected, and it is changing our climate now," Dr. Hansen said then, referring to the string of warm years and the accumulating blanket of heat-trapping carbon dioxide and other gases emitted mainly by burning fossil fuels and forests.

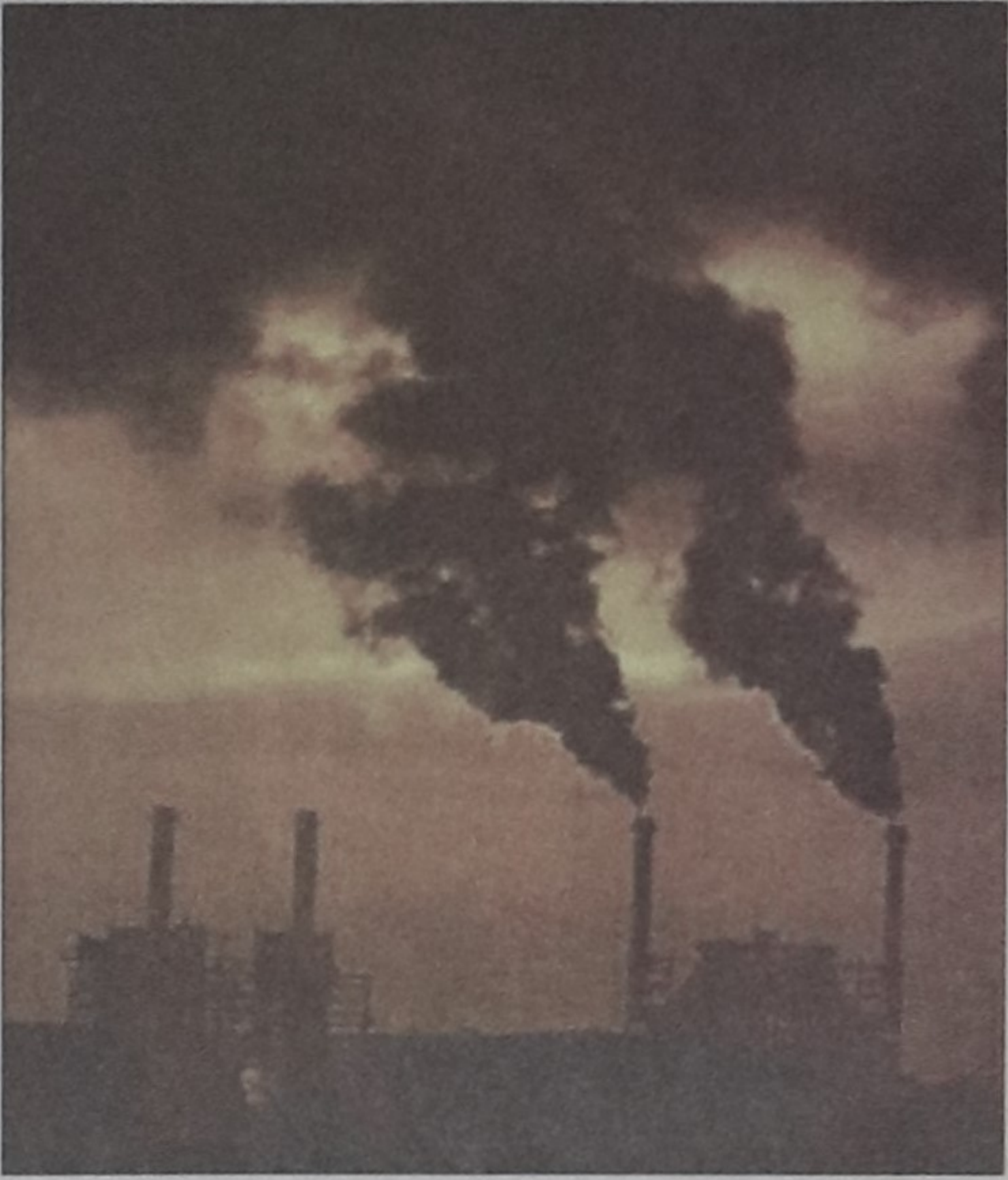
To many observers of environmental history, that was the first time global warming moved from being a looming issue to breaking news. Dr. Hansen's statement helped propel the first pushes for legislation and an international treaty to cut emissions of greenhouse gases. A treaty was enacted and an addendum, the Kyoto Protocol, was added. Even as the scientific picture of a human-heated world has solidified, emissions of the gases continue to rise.

Twenty years later Dr. Hansen, plans to testify at a House committee hearing that it is almost, but not quite, too late to start defusing what he calls the "global warming time bomb." He offers a plan for cuts in emissions and also a warning about the risks of further inaction.

"If we don't begin to reduce greenhouse gas emissions in the next several years, and really on a very different course, then we are in trouble," Dr. Hansen said at Nasa's Goddard Institute for Space Studies in New York, which he has directed since 1981. "Then the ice sheets are in trouble. Many species on the planet are in trouble."

Dr. Hansen said that the natural skepticism and debates embedded in the scientific process had distracted the public from the confidence experts have in a future with centuries of changing climate patterns and higher sea levels under rising carbon dioxide concentrations. The confusion has been amplified by industries that extract or rely on fossil fuels, he said, and this has given cover to politicians who rely on contributions from such industries.

Dr. Hansen said the United States must begin a sustained effort to exploit new energy sources and phase out unfettered burning of finite fossil fuels, starting with a moratorium on the construction of coal-burning power plants if they



lack systems for capturing and burying carbon dioxide. Such systems exist, but have not been tested at anywhere near the scale required to blunt emissions. Ultimately, he is seeking a worldwide end to emissions from coal burning by 2030.

Another vital component, Dr. Hansen said, is a nationwide grid for distributing and storing electricity in ways that could accommodate large-scale use of renewable, but intermittent, energy sources like wind turbines and solar-powered generators. The transformation would require new technology as well as new policies, particularly legislation promoting investments and practices that steadily reduce emissions.

Such an enterprise would be on the scale of past ambitious national initiatives, Dr. Hansen said, like the construction of the federal highway system and the Apollo space programme. Dr. Hansen disagrees with supporters of "cap and trade" bills to cut greenhouse emissions, like the one that foundered in the Senate last month. He supports a "tax and dividend" approach that would raise the cost of fuels contributing to greenhouse emissions but return the revenue directly to consumers to shield them from higher energy prices.

However, as was the case in 1988, Dr. Hansen's peers in climate

tology, while concerned about the risks posed by unabated emissions, have mixed views on the probability of a scientist's advocating a menu of policy choices outside his field.

Some also do not see such high risks of imminent climatic calamity, particularly disagreeing with Dr. Hansen's projection that sea levels could rise a couple of yards or more in this century if emissions continue unabated.

Dr. Hansen said he was making a new public push now because the coming year presented a unique opportunity, with a new administration and the world waiting for the United States to re-engage in treaty talks scheduled to culminate with a new climate pact at the end of 2009. He said a recent focus on China, which has surpassed the United States in annual carbon dioxide emissions, obscured the fact that the United States, Britain and Germany are most responsible for the accumulation of greenhouse gases.

Dr. Hansen said he had no regrets about stepping into the realm of policy, despite much criticism. "I only regret that we haven't gotten the story across as well as it needs to be," he said. "And I think we're running out of time."

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BIODIVERSITY

Conservation of biotic-abiotic and biotic-biotic interactions

DR MA BASHAR

BY now the term 'biodiversity conservation' has become very popular but the meaning of it is not clear even to many educated people in the society. It is generally understood that the conservation of living organisms is the conservation of biodiversity. But actually the conservation of the biodiversity is the conservation of interactions in an ecosystem.

Biodiversity means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are parts. This includes diversity within species, between species and of ecosystems. Biodiversity has three main components: ecosystem biodiversity; species diversity; and genetic diversity.

Ecosystem biodiversity describes the variety of different ecosystems found in a region. A categorisation of the combination of animals, plants, micro-organisms and the physical environment with which they are associated, is the basis for recognising ecosystems.
Species diversity describes the number and variety of species in a given area.
Genetic diversity describes the range of genetic characteristics found within a species and among different species.

Ecosystem is a system or phenomenon of interaction between abiotic and biotic factors in a certain area of the biosphere. The biosphere may be divided into smaller ecological units each of which is termed as an ecosystem. This is a term first to describe a natural unit that consists of living and non-living parts, interacting to

form a stable system. The ecosystem may then be defined as a unit of the biosphere consisting of organisms and their physical and chemical environment tuned in a machine-like organization and driven by an external energy source, the solar radiation. So long as the system receives energy, it is self-sustaining. Fundamental concepts include the flow of energy via food chains and food webs and the cycling of nutrients biogeochemically.

Ecosystem principles can be applied at all scales equally, for instance, to a lake, an ocean, or the whole planet. The ecosystem represents a distinct combination of air, soil and water (habitat), along with vegetation, animal and microbial life, making it self-sustaining. An ecosystem is any spatial or organizational unit which includes a community of living organisms and non-living substances of environment interacting to produce materials between the living and non-living parts. Further, an ecosystem may be natural as a pond, a lake, a river, an estuary, an ocean, a forest, or it may be man-made or artificial like an aquarium, a dam, a cropland, a city and so on.

As the ecosystem is to harbour both species and genetic diversity, so it holds the conservation strategies and the conservation of three types of biodiversity as a whole. Let us see how the biodiversity conservation itself interprets the conservation of biotic-biotic and biotic-abiotic interactions. The interaction between biotic and abiotic factors means the interaction between living organisms (plant and animals) and the atmospheric non-living materials. On the other hand, biotic-biotic interaction means the interactions among the living organisms i.e. between plant and animals or among animals or

among plants. Biodiversity conservation holds the conservation of energy-flow in nature among the living organisms in the living form. "Conservation of ecosystem is the vital part of the conservation of biodiversity" because ecosystem diversity is one of the three biodiversity types.

Biodiversity conservation is the assemblage of enhancement of species richness, maintenance of species richness, sustenance of species richness, and survival of species richness in an ecosystem. This means the conservation of interaction of all dynamism of interactions among species diversity, genetic diversity and ecosystem diversity. In the hierarchy of interactions plants occupy the first position and characteristically designated as the first trophic level in the system of energy-flow when biotic factors are in the ladder-steps of the energy-flow in the form of "being eaten".

Trophic level is the position of an organism in the food chain, determined by the number of transfers of energy that occur between the nonliving energy source and that position. Trophic levels include producers (photosynthesizers and chemosynthesizers that convert light or chemical energy into living material) and several levels of consumers (animals eating plants, animals eating animal, etc. The trophic level of an organism describes how far it is removed from plants in the food chain. Autotrophs constitute the first (producer) trophic level. The second trophic level contains herbivores (primary consumers) and so forth. An organism cannot always be assigned to one trophic level. Thus, some plants, such as sundews, are carnivores (third or fourth trophic level) as well as autotrophs (first trophic level). Many mammals, such as pigs and humans, are omnivores and also belong to several trophic levels

because they eat both plants and animals.

Ecosystems seldom have more than five trophic levels. This is because there is not enough food or energy in the top trophic level to feed another level. First, not all the food available at one trophic level is actually eaten by animals at the next level. At each level, the biomass, the total mass of all organisms present, is only partly consumed. Second, most of the energy an animal eats does not go to make it fatter; it is used in respiration; for the maintenance and repair of body tissues; and for locomotion, circulation and feeding. As we will expect from the laws of thermodynamics, none of these processes is very efficient. Some useful energy is lost as heat and as entropy each time energy is converted from one form to another. Because of these energy losses from one trophic level to the next, there is not enough energy left to support higher trophic levels. Energy from the sun enters an ecosystem during photosynthesis. Then it passes from one to five trophic levels in the ecosystem's food web.

Now question comes 'whether conservation of biodiversity is the mere conservation of plantation or not'. It is already stated that in the energy-flow system, plant is the basic structural form and first trophic level. This first trophic level is characterized by three characters at a time, whereas the other trophic levels (the animals/different consumers) in an ecosystem are the successive ones and having only two characters. Among the three characters, the plant can convert abiotic energy into biotic molecules and can manufacture its own food (first character); the plant can store the energy in the biotic form (second character); and the plant can transfer the energy to the other trophic levels (to the consumers)



Plant-ecology is serving as shelter and secure place for wild birds. There is no trophic relation of the birds with the sal plant, but in ecological-niche function they are very much related.

(third character) which is occurred by the process of "being eaten".

In an ecosystem, all other trophic levels (the consumers) are only having with the second and third characters of the first trophic level. So, it is evidenced scientifically that no animals can exist and multiply in an ecosystem if the first trophic level is absent. Directly or indirectly an animal has to depend on the plant in an ecosystem. If plants are available, animals get nutrition first and then can take shelter, can mate, can prepare for nesting, can produce offsprings, can perform social activities (where necessary and essential), can cause the speciation, can enrich the species richness, and can sustain the species richness. This sustenance is the conservation of all living organisms in an area; and then the conservation of biodiversity.

The plants are not only used as the nutritional sources for animals,



This is mating behaviour of birdwing butterfly (Troides) by hanging with the specific plant the Aristolochia.

ple of an interaction of the biotic-biotic factors in an ecosystem.

Fast decrease of Modhupur forest biodiversity has been blamed on the "shrinking of forest". Many kinds of wild animals including leopard, wild buffalo, wild cow, wild hog, wild cock, peacock, spotted deer, jackal, wild cat, mongoose, wild goat, red mouth monkey, black mouth baboon, porcupine, squirrel, hare and bocat were found in Modhupur forests only a few decades ago (as reported by the Forest Department). Birds including hawks, kites, vultures, mynah, nightingale, swallow, owl, pigeon, dove, skylark, sparrow, woodpecker, parrot, different varieties of martin, kingfishers were available in the forest in high population. Of the reptiles, snakes were most available like python and poisonous cobra. Different varieties of frogs were described as amphibian fauna. Number of varieties of environment friendly invertebrates included worms (earth-

worms), white ants, different kinds of soil dwelling carabids, most decorative butterflies were mostly available in the Modhupur forests.

To save Modhupur forest-biodiversity it is highly necessary to save the forests meaning as save the plant population and increase the sustenance of plant species richness.

Now the question is why plants and plantation are the major event to go for biodiversity conservation. Because if plant is there initiation of bio-conservation is there, if plant is not there no initiation of bio-conservation. Plantation is the stimulation of the fact-initiation. If there is no stimulation, there is no response; if there is no response there is no fact for happening; if there is no happening (specially among the living beings) there will be no behavioural aspects and then there will be no appearance of conservation functionality in nature.

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