DHAKA FRIDAY DECEMBER 29. 2006

# ENVIRONMENT

### The Daily Star

# **Climate change: An issue of great importance**

stop emitting gases now, the gases

we have already released will have

an effect. However, we must do

everything we can to avoid further

changes and to adapt to the new

Understanding climate change is

apparently somewhat difficult. how-

ever, there is now strong evidence

and almost unanimous agreement

that significant global warming is

occurring. It is also likely that most of

the recent warming can be attributed

to human activities. Human activity

has changed the concentration of

greenhouse gases in the atmosphere

in two important ways. First, we have

cut down forests to develop land for

agriculture. Trees absorb carbon

dioxide so, with fewer trees, more

carbon dioxide builds up in the atmo-

sphere. Also, the agriculture that

replaces the forests can often be a

source of emissions. Second. by

burning fossil fuels like coal, oil and

gas for energy, we release green-

house gases. Currently, burning fossil

situation we find ourselves in.

What causes climate

change?

The only way of fighting climate change is to adapt to the changing situation. So, let's see what adaptation is. Adaptation is the adjustment in ecological, social or economic systems in response to actual or expected climatic stimuli and their effects or impacts. Adaptation itself means changes in processes, practices, or structures to moderate or offset potential damages, or to take advantage or opportunities associated with changes in the climate (IPCC 2001). The following example of adaptation tactics will give an idea about how we should be prepared for climate change impacts. For the example Agriculture and Food security has been used as the thematic area.

climate, such as changes in average

temperatures. In IPCC usage,

climate change refers to any change

in climate over time, whether due to

natural variability or as a result of

human activity. In UNFCCC usage,

climate change refers to a change in

climate that is attributable directly or

indirectly to human activity that

alters atmospheric composition. Our

planet is surrounded by a blanket of

gases which keeps the surface of

the earth warm and able to sustain

life. This blanket is getting thicker,

trapping in heat as we release

greenhouse gases by burning fossil

fuels for energy, and as we cut down

As a result, our climate is start-

ing to change. Scientific research

indicates that, because of climate

change, we may experience more

intense and more frequent extreme

weather events. A gradual increase

in temperature also has major

implications for ecosystems, grow-

ing seasons, animals and their

habitats. Some changes to the

climate are inevitable -- even if we

forests and replace them with agri-

cultural land.

### KHANDAKER LUTFUL KHALED

The climate is changing, and nowadays it is being widely recognized as a serious risk to development. Climate change is an unrelenting threat to development and will add burdens to those already poor and vulnerable. The impacts of climate change bring into being floods, droughts, unseasonal rains and other extreme events. Continuing climate change throws enormous challenges for developing countries and the poorest communities, since their economic sectors are hugely dependent on climate, such as rainfed agriculture, and their limited economic technological and human capacities. Developing and Least

Developed Countries (LDCs) are the worst sufferers of climate change, therefore, these countries have been experiencing disproportionately high level of death, social disruption and economic damage.

What is climate change? Climate change refers to changes in long-term trends in the average fuels emit about 6.5 billion tonnes of carbon dioxide into the atmosphere each year. Since before the industrial revolution, which began in the 18th century, concentrations of greenhouse gases have increased by 30 per cent

### What effects will climate change have?

Even if we stop burning fossil fuels and cutting down forests today, the world's climate will still warm in years to come. There is a time lag between when the emissions occur and when we begin to feel their effects, so we have vet to experience the impact of the greenhouse gas emissions from the last 3040 years. Bangladesh is extremely vulnerable to climate change impacts because of its geographical location, high population density, high levels of poverty, and the reliance of many livelihoods on climate sensitive sectors, particularly agriculture and fisheries. Bangladesh is at risk of the following disasters:

season

Flood

Drought

Cold wave

change?

Sea level rise

Riverbank erosion

 Too much water during monsoon · Creation of grain and animal-Too little water during the dry feed storage facilities at national level

tions

tion

matior

at local level)

Off-farm employment

Insurance

Set up or improve famine relief

Adoption of new crops and situation. So, let's see what adaptalivestock more suited to anticition is. Adaptation is the adjustment pated climatic conditions (e.g. in ecological, social or economic systems in response to actual or



• Irrigation (water management)

- More efficient water use Land tenure reform
- Pursuing alternative livelihoods Rezoning of agriculture
- Encourage systematic use of soil

### Some recommendations for the government

The effects are also being felt

farmers put off replacing their utility

attitude has given new hope to

McCormack, the farmer. For the

past two years he has had approval

to build a wind farm with 31 tur-

bines, but until three weeks ago,

power companies were showing

little interest in the project.

McCormack says they are now

starting a bidding war to build the

resistant income for McCormack.

but he is one of the lucky ones. Few

turbines

The government's shifting

vehicles and four-wheel drives.

Bangladesh is one of the most vulnerable countries in the world in terms of climate change impacts. So, it has become an inevitable,

and also a must, responsibility of ours to fight climate change impacts. In mainstreaming climate issues the Bangladesh government can fit it in national development frameworks, sectoral planning and budgeting processes, and in integrating adaptation measures in the implementation of development projects.

Act on non-energy emissions preventing further deforestation would go a long way towards alleviating this source of carbon emission Reduce consumer demand for heavily polluting goods and services

 Promote cleaner energy and Khandaker Lutful Khaled is a freelance transport technology, with noncontributor to The Daily Star

heavy cars

Raise vehicle excise duty on fuel-

fossil fuels

# Parched in Australia: Drought changes views on warming

Other farmers are struggling on as best they can, and some are not making it. Ridley, of Elders, said suicide rates are climbing rapidly. In response to the crisis, Elders has offered two hours of free counseling for its clients, and its Web page on drought resources provides a selection of emergency hot line contacts for those in need. Last Friday, the rural town of Crookwell organized a "Look After Your Mate" meeting aimed at creating some kind of safety net for rural communities suffering from the drought. They expected somewhere between 150 and 200 people. Over 500 turned up.

### **TIM JOHNSTON**

USTRALIA'S long hot summer has barely begun, but already the dams are running dry, crops are stunted from lack of water, and livestock markets are being overwhelmed by farmers trying to sell sheep and cattle they cannot feed

Australia's drought is now in its fourth year, and out in the vast anses of the Australian outback where farms that can be the size of small nations mold a hardy breed of farmer, there is desperation.

passing through their pens as short-term assistance, in part to stave off farm repossessions by the farmers offload stock at fire-sale prices rather than have them die in banks, which many fear could spark barren pastures. Prices for sheep a collapse in land prices. are down by as much as 80 percent But the biggest change has in some areas, and cattle by 40 been to the government's position

percent. The latest report from the Australian Bureau of Agricultural and Resource Economics paints a dire picture for the country's agricultural sector. More than half the country's farmland is now officially classified as drought-stricken, and the bureau says that production of the three main resource crops -wheat, barley and canola -- will be cut by more than 60 percent this

International Policy. Australians ranked global warming third among critical threats to the country's future, beaten only by international terrorism and nuclear proliferation. 68 percent of the survey's respondents agreed with the statement that immediate steps should be taken to tackle the problem even if doing so involve significant cost.

The Australian government has come under considerable pressure both at home and abroad for its refusal to sign the Kyoto agreement on limiting greenhouse-gas emissions. But until recently it has resisted, saving that because the agreement does not include either China or India, it would achieve on global warming. Surveys have little. Australia is also one of the repeatedly shown that the world's largest users and exporters Australian electorate is worried of fossil fuels, particularly coal, and about the climate, but the drought the government feared that cutting has brought those fears to a head emissions would be costly to the economy

and forced Prime Minister John Howard's governing coalition to Australia did sign up to the Asia-Pacific Partnership on Clean Development and Climate, which promises to search for technological solutions to the challenge of cutting greenhouse-gas emissions. Canberra has accelerated its technology program, recently approving a wind farm and a 420million-dollar solar collector, but the government and Heffernan have hinted that the change in mood might mean that other measures. such as carbon trading, could be reassessed The indirect effects of the Australian drought are being felt worldwide: Global wheat prices recently hit a 10-year high, fueled by supply worries sparked by the

country's dismal crop forecasts. rapidly

In the farming heartland of the western part of New South Wales, throughout the rural economy. farmers are turning livestock loose Darryl Clarkson, a salesman at a on their stunted fields of wheat and car dealership in Goulburn, said that sales are down 20 percent as

They're not even good enough to make hay or silage," Steve Ridley, Australia's biggest rural services 150 liters, or 40 gallons, per resident per day.

said that many farmers are "hanging on by their fingernails."

## **Prospect of bio-diesel fuel** from plants sources

For fulfilling the demand for fuel in Bangladesh in the near future the government should start biodiesel fuel production by establishing small scale projects or small industries. It can be used to cover the shortage of natural diesel fuel or petroleum fuel that we use. The government can encourage the sectors where biotechnology departments are established to start research soon in Bangladesh, though Bangladesh Agricultural University is trying a bit to produce biofuel from jatropha plants.

#### Once built, the wind farm will A B M SHARIF HOSSAIN provide a steady source of drought-

of producing commercially by importing raw materials from Malaysia.

Biodiesel fuel is carbon neutral. OWADAYS the innovative has almost zero carbon dioxide world-class scientists are content, better lubricacy, produces turning to biotechnology to little smoke, and can be used in a invent something different. Still, the diesel engine with little modification. The production cost is also less than

barley "The main crops have failed.

an agent with Elders, one of suppliers, said at his office in the rural town of Goulburn, where drought restrictions are so severe that water usage is limited to just

Around Goulburn, where normally there would be 28 inches, or 71 centimeters, of rain, there has been only 14 inches so far this year. and regions of western New South Wales have had even less. Ridley

other people have an appropriate "It's not only this dry year, it's the site, and to date almost no one else

drought tolerant)

units for rapid dispersion of food aid Expand exploitation of other food sources (e.g. marine, freshwater) How can we fight climate and water conservation measures • Soil and water conservation Long-term interventions The only way of fighting climate change is to adapt to the changing Changing crop/livestock mix

been used as the thematic area.

Adjusting timing of operations

Changing tillage practices

"The crunch has really come," said Alan McCormack, who farms 3,300 hectares, or 8,100 acres, in the heart of the eastern state of New South Wales, about 250 kilometers, or 150 miles, from Sydney. "This spring drought has pushed everyone into the same position. They don't know where they are going to go; they don't know what they are going to do; they don't know how they are going to get through it."

Stock-sale vards in rural towns like Wagga Wagga are seeing record numbers of sheep and cattle

vear The bureau also expects the drought to cut growth in the country's gross domestic product by 0.7 percentage point this year.

The drought is now affecting Australia's political environment as much as its agricultural landscape. In recent weeks, the government has announced 1.1 million Australian dollars, or \$850,000, in assistance for farmers, bringing the

total over the past four years to almost 2.3 billion dollars. It is mostly

abandon its skeptical position and demonstrate its concern. "Certainly, it has taken people beyond the denial phase on climate change," said Senator Bill

Heffernan, a member of the coalition and until recently a rare campaigner within government for more action on global warming.

"For the first time the cities are focused on their worries about the future of water supply." he said. "Everyone has taken for granted that you turn the tap on and water comes out. I think they now can see that that might not necessarily continue to be the case.

In a recent survey by the Sydney- based Lowy Institute for

culmination of five or six dry years. Anyone who had any cash reserves has lost those now and they've aone into debt.'

McCormack, who runs 12,000 sheep and some 700 cattle on his property, has taken on an extra 200,000 dollars of debt over the past four years and expects this year to be even worse. "Our pastures are worn out because we've had years and years of not having the money to put back into the property," he said.

Last season he managed to take 400,000 dollars' worth of hay from his pastures for winter feed. "This vear we'll get zilch, nothing," He will have to buy in this year's winter feed, and prices are already rising

has permission to build one Other farmers are struggling on as best they can, and some are not

making it. Ridley, of Elders, said suicide rates are climbing rapidly. In response to the crisis, Elders has offered two hours of free counseling for its clients, and its Web page on drought resources provides a selection of emergency hot line contacts for those in need.

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broadness of biotechnology is not defined, and is not well known to the that of petroleum fuel. The raw mate people of Bangladesh. Some people rials for biodiesel fuel can be found in think that it is used only in genetics. vegetable oil after cooking, soap But this idea is not true. making fats, wastage from agro-Biotechnology is defined as any products, soybean and mustard oil technique that is used on bioresource (plants, animals and other sources) materials to modify or develop these products for a specific use. Modern biotechnology is an advanced technique under bioscience and is used to modify living organisms in order to improve their characteristics (plant or animal or to develop useful microorganisms e.g. plant biotech, medical biotech, pharmaceutical biotech, microbiological biotech.), or to modify non-living

by-products, jatropha plants, debris from maize, rice husk, organic gar-The process of producing biofuel This liquid is then mixed into the

Biotechnology can be used in agricultural. medical, engineering and pharmaceutical sciences. The following are types of biotechnology that we can use in different fields:

materials to develop industry or

environment development (e.g. bio-

chemically modified biotech., textile

biotech.).

(I) Genetically modified biotechnology (GM), such as crop, fruit, livestock, insect, animal and tree modification by using molecular genetics or specific genes. (II) Hormonal modified biotechnology, such as tree tallness, dwarfness and fruit sweetness by using cytokinin and abscsic acid (growth hormones). (III) Biochemically modified biotechnology, such as alcohol ester (biodiesel fuel) by transesterification vegetable oil transfer to biodiesel fuel) and textile biotech. (IV) Physiologically modified biotechnology, such as transplantation of different organs of the human body in medical science, bark inversion or restriction in plant science. (V) Environmentally modified biotechnology, such as greenhouse effect

safety by reducing obnoxious gases. Diesel fuel, which comes from natural sources (mine), plays a vital role in transportation all over the world. To reduce the consumption of diesel fuel world class scientists related to biotechnology, specially biofuel technology, are going to introduce biodiesel fuel or biofuel from plant or animal sources. Europe, America, Australia and Canada are using 2-3% of biofuel from plant and animal fats. Malaysia is using 1-2% of biofuel from palm oil by-products. Indonesia is going to produce diesel. after achieving positive experimental results, from palm oil. They also used this biodiesel fuel in cars and buses on test. In Japan, the process is still

bage, kitchen rubbish and tea leaf wastage from tea gardens and tea stalls. is called transesterification: that means taking a triglyceride molecule or a complex fatty acid . neutralizing the free fatty acid, removing the glycerol and producing an alcohol ester. This is accomplished by using methanol with sodium hydroxide or potassium hydroxide to make sodium or potassium methoxide. product (vegetable oil or others). After that, glycerine from the mixture settles at the bottom, and methyl

ester, or biodiesel, is left on top. Methyl ester (biodiesel) is then washed and filtered

For fulfilling the demand for fuel in Bangladesh in the near future the government should start biodiese fuel production by establishing small scale projects or small industries. It can be used to cover the shortage of natural diesel fuel or petroleum fuel that we use. The government can encourage the sectors where biotechnology departments are established to start research soon in Bangladesh, though Bangladesh Agricultural University is trying a bit to produce biofuel from jatropha plants. When we establish such a project our fuel import cost will gradually decrease. The private sector also can share with the government in developing biodiesel fuel in Bangladesh.

In Malaysia and other developed countries private organizations also shared their knowledge and technical know-how with the Government to produce large scale biodiesel plants to develop biotechnology in this regard. We believe that the government can be successful if it takes action regarding this by using local expertise, biotechnologists or biodiesel fuel technologists who have achieved higher degree, and much more knowledge and experience on bioresource production, from abroad. In this way we can keep our local brilliant scientists at home, as assets, and can develop the country.

Dr. A. B. M. Sharif Hossain is Researcher, Department of Biotechnology, Institute of Biological Science, University of Malaya, Kuala Lumpur, Malaysia under research, and they are thinking

### Report sounds alarm on pace of Arctic climate change

It is not entirely clear why the Arctic is warming much more quickly than other areas. One factor is probably albedo, or the heat-reflecting value of ice. Once icepacks melt and that reflective power is lost, temperature increases can accelerate more quickly than while icepacks are intact. Scientists have found that melting icepacks are more porous than previously believed, a factor that speeds their melt rate once melting begins. Of particular concern is the rate of melting of Greenland's ice, Corell said. Scientists have estimated that a total melt of that icepack would increase global sea levels by more than 25 feet.

#### JULIET EILPERIN and RICK WEISS

HE most comprehensive international assessment of Arctic climate change has concluded that Earth's upper latitudes are experiencing unprecedented increases in temperature. Earth in the past 100 years. glacial melting and weather pattern changes, with most of those been a dramatic increase in temperchanges attributable to the human generation of greenhouse gases ness of ice." said Robert W. Corell, a from automobiles, power plants and other sources. man of the Arctic climate impact

The 144-page report is the work of a coalition of eight nations that have Arctic territories -- including the United States, which has hosted and financed the coalition's secretariat at the University of Alaska

The findings, which reflect four year that the tundra is hard enough to be driven on or drilled safely for oil. vears of study. confirm earlier evidence that the Arctic is warming far

ature and a decrease in the thick-

senior fellow with the American

Meteorological Society and chair-

assessment group, which produced

having practical impacts, including a

reduction in the number of days each

Those changes are already

the report.

They can be expected to have even greater impact in the near future, the more guickly than the earth overall, report predicts, in terms of agriculwith temperature increases in some ture, wildlife ranges for terrestrial and northern regions exceeding by marine plants and animals, and tenfold the average 1 degree global shoreline flooding because of Fahrenheit increase experienced on increases in sea level caused by melting ice "For the past 30 years, there's

Warming could benefit certain sectors, the report said, by easing marine shipping and improving access to offshore oil and gas resources in the Arctic.

The report is scheduled to be released Nov. 9, but its summary findings were reported yesterday by the New York Times

Gunnar Palsson, Icelandic chairman of the Arctic Council, predicted in an interview last week

that the report "is going to generate a great deal of attention throughout the world "

"Climate change is not something that's going to happen -- it is happening all over the Arctic." Palsson said "The Arctic is sort of a bellwether" for the rest of the earth.

Iceland has had much warmer summers recently and not much snow in Revkiavik the past two years. Iceland Ambassador Helgi Agustsson said. Palsson said Icelanders fear two of their most commercially valuable fish -- capelin and herring -- are migrating to cooler waters, which would have a pretty big economic impact."

The report's authors believe Arctic temperatures will rise several degrees in the coming decades, according to a summary prepared by Gunn-Britt Retter, a technical adviser with the council's Indigenous People's Secretariat. Winters are expected to become warmer, and wet periods in the Arctic are expected to become longer, more frequent or both.

If nations want to temper or reverse that trend, Corell said, they will need to act quickly because carbon dioxide, the gas that is the prime culprit in global warming, typically lingers in the atmosphere 100 years before being recycled

"If you were to put the brakes on importance of moving forward with the president's sensible strategy to right away, it's still going to take a long address emissions in a way that time for that supertanker to slow down," he said. "So there's a time keeps our economy strong."

scale issue here that does relate to how you decide what to do and how quickly." Palsson said that while his country

and a few others are suffering the most immediate effects from warming, other nations would have to take steps to curb climate change. "In order to contain these problems, we cannot think in terms of regional solutions," he said. The Bush administration has

consistently resisted calls for mandatory curbs on carbon dioxide emissions, saving that it would cost too many American jobs. A coalition headed by Sens. John McCain (R-Ariz.) and Joseph I. Lieberman (D-Conn.) is pushing legislation that would establish a pollution trading system aimed at cutting carbon dioxide emissions to 2000 levels by 2010. but it lacks the votes for passage

Dana Perino, spokeswoman for the White House Council on Environmental Quality, said the council's work "is part of the \$8 billion the Bush administration has committed since taking office to climate change research. It reaffirms the

Several sources said State Department officials had guestioned some of the council's policy recommendations, which are to be released Nov. 24. Palsson would not address possi

ble administration resistance to aspects of the report, saying, "the Arctic Council is not a political forum for negotiating policies." But he added, "This is a highly political subject.

It is not entirely clear why the Arctic is warming much more guickly than other areas. One factor is probably albedo, or the heat-reflecting value of ice. Once icepacks melt and that reflective power is lost, temperature increases can accelerate more quickly than while icepacks are intact. Scientists have found that melting icepacks are more porous than previously believed, a factor that speeds their melt rate once melting

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