Disastrous impact of global warming bitterly felt now

MD. ASADULLAH KHAN

Despite the advance warning of the consequences of global warming, most countries exhibit a strange reluctance to combat the phenomenon. If the international efforts do not get off the ground immediately, the world especially poorer countries like Bangladesh, Maldives and even India seem doomed to plenty more misery and disasters than what is being experienced now.

EXPERTS now know that the danger is shining through the sky. The evidence is now overwhelming : the earth's stratospheric ozone layer located between 10-50 km above the ground -- our shield against the sun's hazardous ultraviolet (UV) rays -- is being eaten away by man-made chemicals far faster than any scientist had predicted. No longer is the threat just to our future, the threat is here and now.

This unprecedented assault on the planet's life-support system could have horrendous long term effects on human health, animal life, the plants that support the food chain -- every strand that makes up the delicate web of nature. Any effort to prevent the damage may prove to be futile but the best the world can hope for is to stabilize the ozone loss.

Soon after the ozone hole over Antarctica was confirmed in 1985, many of the world's governments reached a rapid consensus that action had to be taken. In 1987 they crafted the landmark Montreal Protocol, which called for a 50 percent reduction in CFC production by 1999. Three years later as signs of ozone loss mounted, international delegates met again and called for a total phase out of CFCs by the year 2000. But the schedule was not adhered to by the affluent industrial nations and now the grim news spurred new public warnings and call for faster action.

The vital gas ozone being destroyed is a form of oxygen in which the molecules have three atoms instead of the normal two. That simple structure enables ozone to absorb UV radiation -- a process that is crucial to human health. UV rays can make the lens of the eye cloud up with cataracts, which bring on blindness if untreated. The radiations can cause mutations in DNA, leading to skin cancers. Excess UV radiation may also affect the body's general ability to fight off disease.

Just as worrisome is the threat to the world's food supply. High doses of UV radiation can reduce the yield of basic crops. UV- B, the most dangerous variety of ultraviolet, penetrates scores of metres below the surface of the oceans. There the radiation can kill phytoplankton (one celled plants) and krill (tiny shrimplike animals), which are at the bottom of the ocean food chain. Since these organisms, found in greatest concentrations in Antarctic waters, nourish larger fish, the ultimate consumers -- humans -- may face a maritime food shortage. Scientists believe the lower plants and animals can adapt to rising UV levels by developing UV- absorbing cell pigments. But that works only up to a certain point, and no one knows what that point is.

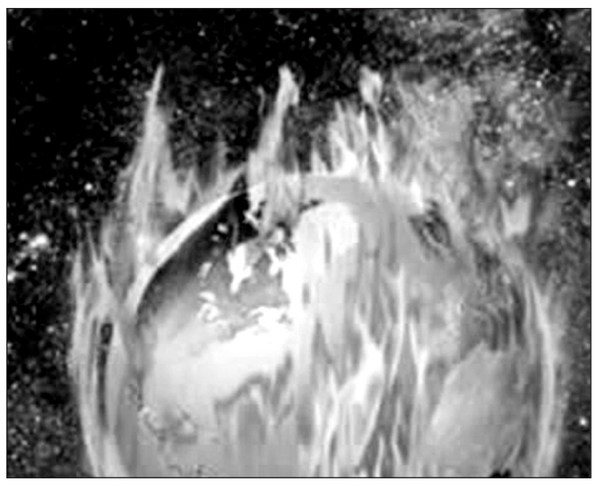
Alarming reports are coming from many parts of the world. In Australia, scientists believe that crops of wheat, sorghum and peas have been affected and health officials report a threefold rise in skin cancers. Scientists are also concerned about the potential effect of ozone depletion on the earth's climate systems. When stratospheric ozone intercepts UV light, heat is generated. That heat helps create stratospheric winds, the driving force behind weather patterns. Weather patterns have already begun to change over Antarctica. Each sunless winter, steady winds blow in a circular pattern over the ocean that surrounds the continent, trapping a huge air mass inside for months at a time. As the sun rises in the spring, this mass, known as polar vortex, warms and breaks up. But the lack of ozone causes the stratosphere to warm more slowly and the vortex takes longer to dissipate. This leads to even more ozone destruction. The polar vortex acts as a pressure cooker to intensify chlorine's assault on ozone depletion.

As early as in 1974, scientists Rowland and his colleague Mario Molina predicted that CFCs would not disintegrate quickly in the lower regions of the atmosphere. Instead the hardy chemicals would rise into the stratosphere before dissociating to form chlorine monoxide and other compounds. The highly reactive chlorine would then capture and break apart ozone molecules. Each atom of chlorine, it was later determined, could destroy up to 100,000 molecules of ozone -- at a far faster rate than the gas is replenished naturally. With worldwide ozone levels declining somewhat, there was an enormous deficit in Antarctica every year. Determined to understand whether CFCs were the culprit, NASA mounted a series of flights over Antarctica that revealed unusually high concentrations -- up to 1 part per billion -- of chlorine monoxide. They had the smoking gun Rowland and Molina had predicted.

According to Rowland and others it was a combination of factors that made the ozone over Antarctica particularly vulnerable. First, the polar vortex collects CFCs that waft in from the industrialised world. Second, the superfrigid air of the Antarctic night causes clouds of tiny ice crystals to form high up in the stratosphere. When the CFCs break down, the resulting chemicals cling to the crystals, where they can decompose further into chlorine monoxide among other substances. And finally when the sun rises after the long winter night, its light triggers a wholesale demolition of ozone by chlorine monoxide. .

What is alarming, as scientists say is the fact that CFCs remain in the atmosphere for decades after they are emitted. Rowland and Molina estimated that CFCs can last 100 years or more. Even if CFC production stopped today, researchers believe that stratospheric levels of chlorine would continue to rise, peaking during the first decade of this millennium century and not returning to anything like natural levels for at least a century. And that is actually happening these days. By now, scientists believe as many as 40 million metric tons of these potent chemicals have been pumped into the atmosphere.

The consequence is horrendous global warming exposing humans around the globe to catastrophic situations. Heaving seas, scorching summers, dying forests and watery end to the coastal towns and villages are some of the penalties people around the globe have to pay, scientists now believe, for failing to do something about global warming.



However Kyoto Climate Change Conference held in December,1997 in Japan reached a consensus that the key culprit to this trend is carbon dioxide. The Kyoto summit set national and regional limits to the release of carbon dioxide, the chief suspect in any global warming, but little was adhered to because of the intransigence of the US, the wealthiest nation having a big role in warming the planet Earth.

This much is virtually certain: gases such as water vapour and carbon dioxide trap infrared radiation warming the world. Water vapour accounts for some 98 per cent of the warming without which the Earth would be 61 degrees Fahrenheit colder. Carbon dioxide accounts for most of the other 2 per cent and the vast majority of that comes from burning fossil fuels (coal, oil, and natural gas). But fiddling with that 2 per cent is like pushing on a long lever: a tiny push can bring huge changes. And the frightening consequences we now see in our part of the world is the rise of global temperatures with several manifestations.

Global temperatures are like bank rates. A small change can make a big difference. A one per cent rise in surface temperature could cause major disruptions in weather patterns that could produce flash floods and unexpected droughts. It could melt the ice shelves in the Antarctica, Arctic and the Himalayas. Much of the warming as experts like Professor Rajendra Pachauri, now head of the UN's Intergovernmental Panel on Climate Change (IPCC), says is caused by a doubling of carbon dioxide levels in the atmosphere, which in turn is the result of excessive consumption of fossil fuels. Such layers of gas act like a globe of glass around the planet and reflect back radiated heat from the sun, raising the earth's temperature to debilitating levels.

A rise in temperature like this is expected to cause major disruptions in weather patterns. Ominously, one tenth of the world's known species of high altitude plants and animals that are found in the Himalayas will be under threat. Apart from wreaking havoc on life and property, global warming is likely to have major impact on foodgrain production. Rice and wheat production is expected to fall by 15 per cent over the next decade because of unfavourable climatic conditions.

Global warming would also melt giant ice shelves in the Arctic and Antarctica as already mentioned, pushing sea levels up by over a metre or two. That would swallow up the coastline of many countries like Maldives, New York, Miami in the US and Bangladesh in our region. The rising sea is expected to increase salinity all across India and Bangladesh's coastline causing a Kutch-like barrenness. As if to remind that global warming is for real, two massive shelves in the Antarctica collapsed in the recent past and formed giant floating icebergs in the Indian Ocean.

The concentration of carbon dioxide in the atmosphere has risen from about 280 parts per million (ppm) before the industrial revolution to about 560 in this century. The world has already warmed more than 1 degree Fahrenheit over the last century. Because sea water expands when heated, oceans have risen about a feet. Moreover the IPCC confirmed through their research findings that there was strong evidence to prove that global surface temperature would go up by 1.4 to 5.8 degrees Celsius in this century. Scientists wonder if this could reflect natural climate swings. Over the past 10,000 years, though, century-to-century variability has seldom been this high.

The most powerful argument for trying to mitigate climate change now is based on chemistry : carbon dioxide stays in the atmosphere for a century, on average. As a result, the world would warm even if we stopped burning coal, oil and natural gas today. But if we wait to act until the greenhouse gas is upon us, it will take decades to turn it around. Even stabilising emissions doesn't stabilise climate: as long as the gases keep rising, even at current rates.

Despite the advance warning of the consequences of global warming, most countries exhibit a strange reluctance to combat the phenomenon. Even after the failure of the efforts made under UN framework that adopted policies and measures aimed at reducing greenhouse gas emissions to 1990 levels, another effort was made under the banner of Kyoto Protocol in 1997 that worked out precise commitments for various nations to meet by 2012. But with the U.S. backing out of the protocol on the ground that its implementation would seriously affect its economy, it ended up as a non-starter. If the international efforts do not get off the ground immediately, the world especially poorer countries like Bangladesh, Maldives and even India seem doomed to plenty more misery and disasters than what is being experienced now.

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Controlling surface and ground water necessary for survival

NASIR UDDIN KHAN

The government has adopted an environment conservation act, and a court to punish the polluters, but this is not sufficient to protect the surface and ground water of the country. Separate acts, like "ground water protection act" and "surface water protection act" should be introduced as soon as possible for the efficient control of those.

THOUGH Bangladesh had always been thought of as an agricultural country, nowadays industries contribute a major portion of its GDP. Textile now plays a major role among other sectors. Previously, the garments industry was limited to only sewing and cutting of fabrics. To support them, a lot of backward linkage industries have been established (i.e cotton spinning, knitting and dyeing units) in recent times.

It is reported that there are around 1500-2000 textile dyeing and washing units, and a few hundred are in the pipeline. All of these industries are extracting ground water and releasing it to the surface water directly, without treatment. Only a few of them have effluent treatment plants (ETP), but they are operating partially or are out of order. As a result, surface water bodies are being contaminated day by day, and the ground water table is being depleted.

There are around 12-13 million people living in Dhaka city. The quantity of potable water supplied is around 47-48 million gallons per day, which covers only 70-75 percent of the population. Only 40 percent of the above is being supplied from surface water treatment plants, and the rest from different deep bore-wells located in different parts of the city. The entire population of the country (around 145 million), along with the capital city dwellers not covered by a reliable potable water supply network, use ground water as the only source of potable water.

There have been more or less 600-700 textile dyeing and washing industries set up around Dhaka, at Narayanganj, Tejgaon, Savar, Tongi and Gazipur area within the last few years, and some more are in pipeline. They are extracting approximately 25-30 million gallons of water everyday in and around Dhaka city; this is almost the same quantity being supplied to the city. The GDP contribution from the textile sector rose up to 70 percent in 2005-2006. Being a poverty driven country, we should consider both the prosperity of the textile sector as well as the water source and water quality of the country.

Scarcity of water is a common phenomenon in Bangladesh. In 2005-2006, there were several demonstrations and protests due to scarcity of potable water. The continuous drawing of ground water is responsible for the depletion. The situation is deteriorating day by day due to the increase in textile and other water consuming industries, and also because of population growth. Those industries are discharging their untreated waste water into the natural streams. So, the surface water body is now vulnerable, aquatic life is endangered and users

are facing serious health problems due to contamination by hazardous chemicals from those industries.

I tried many times to draw the attention of the regulating authority to impose a limitation on ground water use by any commercial user. At this moment we don't have any regulation on ground water use. Ground water is a natural resource. All natural resources of the country are owned by state and the people have the right to use them, but in a limited manner. Every country has it's own regulations on ground water, except Bangladesh.

It is not an unlimited resource, and continuous lowering of groundwater table day by day could cause geological imbalance and meteorological change in the country. All commercial users of ground water should be brought under metering control system, where payment would be exempted for minimum use. To do this we could introduce a separate act, say "Ground Water Control Act" as soon possible.

The present caretaker government has recently taken action to bring all textile mills under legislation, and asked them to install ETP within six months. It is a historic step by the present govt., indeed, like their other initiatives, but it should be better planned. We did a study on this sector in 2004-2005, with the help of a Danish company, to identify the problems in wastewater treatment. We found a few major problems which might hinder the initiatives of the entrepreneurs to install ETP. They are: lack of space, high cost involved, long time taken for installation, lower technical sophistication, high operation cost, poor after-sales service, technically deficient operators etc.

Setting up an ETP is a multidisciplinary, costly and time consuming project, where as most of the service providers in our country are not qualified up to the required level. Most of them are working as local agents of the parent supplier company, without having sufficient infrastructure or experience. Local entrepreneurship for manufacturing ETP has not yet been developed in the country. So, if all the textile dyeing and washing plants decide to install ETP, a supplier gap will be created, which will help some middlemen. Ultimately, the clients will be cheated, and substantial amount of foreign currency will be drained out of the country through the import of poor quality ETPs.

On the other hand, the textile plant owners are not technically sound enough to negotiate an ETP order with the suppliers. To overcome this, the present government should have an integrated plan with a practically viable timeframe, and form a technical committee consisting of relevant experts in ETP who will suggest a sustainable wastewater treatment option, since installing ETP will not be the only solution to water pollution control, it will also relate to ground water use.

It is evident that within 3-4 years all textile, and other major water consuming industries would need to recycle their wastewater for primary use, since they won't get water from the bore well. So they should install an ETP which could be modified easily for the primary use of water in future. That is why a cost effective, small, technically sophisticated ETP, with a provision for future recycling options, should be the only solution for the textile and other water polluting industries.

As I mentioned earlier, there are more than 1500-1600 textile dyeing and washing units in operation without ETP. The consumption of water in textile dyeing and washing process is too high, and an appropriate, cost effective recycling method could be an option for reducing the pollution level and water drawing rate. Arsenic is another threat to human life, which arises due to the use of ground water nowadays.

To get rid of these problems, introduction of easy to use, cost effective and small surface water treatment plants could be another option for reducing the use of ground water as the main source of potable water. As a matter of fact, Bangladesh is a tropical monsoon country, and there is abundant surface water throughout the country during the monsoon, when we could introduce rain water harvesting as well. On the other hand, surface water treatment is easy, and would also be a source of water for the textile and other water polluting industries.

The government has adopted an environment conservation act, and a court to punish the polluters, but this is not sufficient to protect the surface and ground water of the country. Separate acts, like "ground water protection act" and "surface water protection act" should be introduced as soon as possible for the efficient control of those.

In the United Kingdom, all natural water and ground water is called "controlled water," and it is illegal to pump out, or mix anything to, controlled water without having extraction permission or discharge consent. They control it under "Control Water Directives" which is being followed by all EU countries. In addition to that, England has separate "Surface Water Act", "Ground Water Act," "Dangerous Substances Act," "Hazardous Material Handling and Storage Act" which control their surface and ground water. So, to protect the natural environment and endangered aquatic life, to condition lowering of ground water table, and to ensure a reliable potable water supply to the nation, finding an appropriate, sustainable and cost effective solution is vital for Bangladesh.

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Environment friendly HYV paddy can ensure food security

M Z HUSSAIN ARZU

It is the demand of time that a very high-yielding-paddy should be cultivated to mitigate the hanger of vast population. We shall have to adopt the advanced technology and developed seeds no matter where they are invented, only if that suit our climate and are harmless to existing environment.

THE society and civilization of human beings are about eight thousand years old. We have observed great changes in religion, dress, habitat as well as culture but without any significant ones in food habits. For example, rice or paddy still occupies a great part in our life style as a means of satiating hunger. Paddy is the oldest staple crop in Bangladesh and still regarded as the principal food of the people here.

But it is a matter of great regret that Bangladesh has to import six lac tons of rice every year now to meet the household demand. In the sixties of the last century, multifarious laudable attempts were taken both at government and private levels. The attempts included planned irrigation, high quality seeds, insecticide, fertilizer and mechanisation of agriculture. But it was very difficult to keep pace with population increase. Although the growth rate of population has reduced to 2 per cent, the production of agricultural crops have failed to mitigate the hunger of millions of people. According to the Bureau of Statistics of Bangladesh, in the fiscal year 2004-2005 about five lac tons of rice has been imported from Thailand, America, Australia and other countries under both government and private initiative to meet the demand.

It needs to be mentioned that many attempts have been taken over a long period to increase the production of rice. In this regard tireless efforts of the paddy researchers and officials of the Bangladesh Rice Research Institute (BRRI) deserve well-certified appreciation.

Here we can refer to the production of a Boro paddy which has been grown on experimental basis at the Bashundhara agricultural farm in Gazipur. A Sichuan based research centre of agricultural institution of China had expressed interest for marketing its high yielding paddy seeds in Bangladesh. This private agricultural institution has good relation with the professors and scientists of the agri-university of their country (China). In all consideration, marketing of a new seed in a new country is really tough. So, a proposal was raised to the chairman of Bashundhara group in this connection. In turn, the Chinese agro-seed institution also received some from the Bashundhara group. It was decided that steps be been taken to cultivate this high-yielding paddy seed in the light of direct experience so that we can get over all conception about this miracle seed.

If it is found that this seed can be cultivated/grown here without any harm/problem, then institution for producing such kind of seed will be set up in Bangladesh.

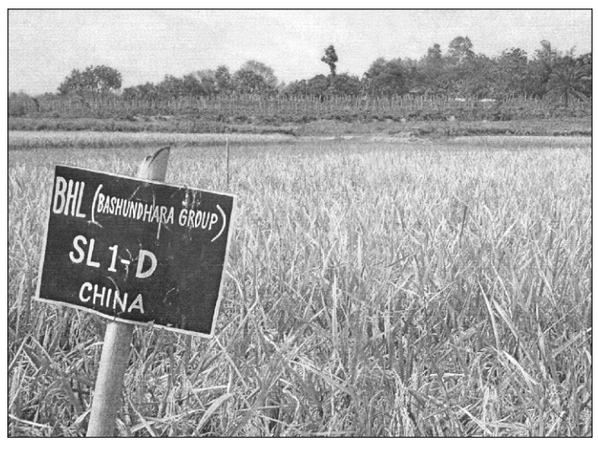
Mainly for two reasons this very high-yielding paddy-seed ufasi has been chosen on experimental basis cultivation. First, the Sichuan province of China, the birth place of this seed/paddy, has great similarity with Bangladesh in weather or climate. On the other hand, the composition of soil and geographical characteristics are also very much similar. As a result, the local entrepreneurs have begun to believe firmly about the success of cultivation of this paddy. The belief of the seed inventors/providers was that this seed could produce 32 to 40 maund rice per bigha. This information worked as a great incentive to test such new paddy seed.

Any bad omen could not create any drawback for this 140-day paddy. Conventional outlook or prejudice could not create any barrier either. The extreme controversy of the occidental and the oriental Genetically Modified Organism (GMO) could not create any impact otherwise on the cultivation of this paddy. Now it has become clear that it is a paddy of new trend with very high yielding capacity.

We had been given four types of Chinese paddy seeds either for marketing or experimental cultivation. For example: a) SL 1-D, b) S1 2-C, c) SL-3C and d) SL-4-D. These seeds required 30 to 35 days to sprout. Very satisfactory result was found in case of sprouting; 95 per cent of the used seeds sprouted very easily. However, proper care, nourishment and supervision were provided at rudimentary stage, but no particular or sophisticated prescription was felt necessary. Rather, the care-nourishment that the traditional indigenous paddy saplings receive at the rudimentary stage was equally applicable for this foreign origin seeds.

For experiment 24.50 kg Chinese paddy saplings were planted per hectare. At the time of final cultivation and physical growth, the worst adversity came from the frequent electricity failure of Kaliakoire upazila. Because of such unprecedented power failure, the field of the planted saplings became severely cleft for want of irrigation. But the instruction was that the paddy field in no way could be made waterless, rather two months from the time of plantation at least one and half inches water should always stand in the field.

Are these any reasons behind not welcoming this sort of new China born



paddy seed in Bangladesh? The most popular two types of paddy that we grow in Bangladesh are BR-29 and BR-28. It has been published in a magazine "Adhunik Dhaner Chas -- the Cultivation of Modern Rice" by Bangladesh Rice Research Institute (BRRI) that the average production of BR-29 is 7.5 metric tons per hectare and the yield of BR-28 is 5.00 metric tons. But on the other hand, from our recent experience we have come to see that the high-yielding Chinese paddy planted on the soil of Kaliakoir has produced 9 metric tons of rice per hectare.

This Chinese paddy will occupy the land of farmers for 140 days in total, while the local high-yielding paddy BR-29 needs at least 160 days. The land will not lose its fertility because of prominence of using organic fertilizer. The same paddy can be cultivated year after year without any sign of danger.

This new variety of Chinese paddy will require less food (pure nitrogen) and less insecticide and is less costly in matters of weeds. The application of bio-fertilizer in cultivating this paddy is very important. Because of the use of bio-fertilizer, the phosphorus, potassium of the soil will increase and it will increase the anti-body resistance of crop. The Chinese paddy which can be produced during the season of boro is of medium structure, white in colour and light in weight. In this consideration it may appear similar to BR-29 and BR-28 in nature. The formal production of this paddy was launched in China in 2004. So, it can be said that we have rather taken a decision to keep pace with the inventor country itself!

The experimental land for cultivation was far away from Dhaka. There are lots of brick-fields. If the sky over that land is not washed by rain, it always remains covered with dust or dark cloud. Despite that, it is our firm conviction that this new paddy has assimilated and overcome this climatic barrier.

At the time of plantation, firstly we had failed to follow the total indication thoroughly. The finishing time of plantation of the boro crops was from mid November to 30 November. But because of unavoidable reasons we started our programme just after one month. The density of plantation was 19cmX16cm. After visiting the plot, the seed inventor/provider institution proposed that if the average density was 22cm X 19cm, it would be possible to produce 11 metric tons of rice per hectare!

Although we live in a precarious condition in matters of food security, we tend to go to the remote past when the people were rich in agro-based foods, and lament. But the system of cultivation of that ancient Bangla can never be a model or a strategy to overcome the crisis we face now, for obvious reasons.

It is the demand of time that a very high-yielding-paddy should be cultivated to mitigate the hanger of vast population. We shall have to adopt the advanced technology and developed seeds no matter where they are invented, only if that suit our climate and are harmless to existing environment. In this particular case, the tireless, relentless agro-scientists, agro-officials and the institutions run under their supervision if united with private enterprises in taking firm steps then it can herald a golden agro-GDP like that in our neighbouring country.

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