

## Warning: End of the world has started

Life to disappear from Earth in 500 million years, US scientists warn

AFP, Washington

Two US scientists have warned in a book released on January 14 that the end of the world has started ... but it will take 500 million years to life to disappear from Earth.

In "The Life and Death Of Planet Earth", Donald Brownlee and Peter Ward describe the way Earth will eventually self-destruct and say this should encourage man to take better care of the planet.

They said that when compared to a 24-hour clock, the planet is currently at 4:30am after about 4.5 billion years of existence.

At 5:00am, the University of Washington professors write, animal and vegetable life will end after one billion years on Earth. By 8:00 am, the oceans will have vaporised and at midday, after 12 billion years, the Earth will have been absorbed by the Sun.

By that time, the Sun will have become huge, destroyed any sign of the human presence and dispersed atoms and molecules across space.

"The disappearance of our planet is still 7.5 billion years away, but people really should consider the fate of our world and have a realistic understanding of where we are going," said Brownlee.

"We live in a fabulous place at a fabulous time. It's a healthy thing for people to realise what a treasure this is in space and time, and fully appreciate and protect their environment as much as possible."

Brownlee and Ward said that the possibility of man moving to another planet in that time is remote. Even if a planet could be found it would be virtually impossible to get there.

But they said it might be possible to send DNA samples on inter-galactic space ships in the future in a move like throwing a message in a bottle out to sea.

At the rate at which the Sun is growing and becoming hotter, it is certain to absorb Mercury and Venus, the two planets closer to the Sun. And even if the Earth were to escape the star's expansion, it would still make life on Earth impossible.

And Man's time will come long before the end of the planet. Rising temperatures will force all living creatures to seek refuge in the sea, the scientists wrote, and those that can adapt will survive for a while. But eventually even the oceans will become too hot to support life.

The Earth's slow death, which has already seen the extinction of dinosaurs, will hand the same fate to elephants, trees, glaciers, oceans and eventually to the last living cells.

"The last life may look much like the first life - a single-celled bacterium, survivor and descendant of all that came before," the authors wrote.

Ward said the predictions are based on what the scientists know already about life on Earth and the existence of other stars and planets.

Ward is a paleontologist and Brownlee an astro-physicist. In a previous book, entitled "Rare Earth" they said that life in its most basic form was once quite common across the universe but that it was able to develop on Earth because of a rare combination of factors.

## Price to pay for oil slick



Some of the dead birds that appeared at the Basque beaches of Zumaia and Ondarreta, in San Sebastian on January 10, as fuel pieces from the oil spill of sunken Bahamas-flagged tanker Prestige reached the beach.

AFP, Dunkirk, France

Around 1,000 birds covered in oil have been found along the east side of the English Channel last week, victims of ships illegally flushing out their tanks in the North Sea, the French Society for the Protection of Animals (SPA).

Three hundred and forty-five birds were found in northwestern France and in Belgium, SPA worker Andre Lastavel told AFP. "If we take into account the birds found dead and the normal ratio of those we can't find, we can estimate that 1,000 birds have been affected."

The polluted area was too far north for the oil to

have come from the sunken tanker Prestige, which has soiled hundreds of kilometres of Spanish and western French coastline.

Tests have also established that the oil did not come from the Turkish tanker Vicky, which has been anchored in Belgian waters since becoming the third vessel to collide with the half-sunken freighter Tricolor, lying on its side in shallow waters off the northern French port of Dunkirk.

The birds were being cleaned and treated, and "so far, the mortality rate of the birds received is low," Lastavel said.

## Water security for all

Today, some 1.1 billion people, more than a sixth of the world population, do not have access to safe water, according to an International Water and Sanitation Center (IRC) estimate. Meanwhile, the New York-based PTI says 76 million people could die of water-borne diseases by 2010. The number of people, with no access to safe water, is projected to reach 2.3 billion by 2025. The signs are ominous indeed, writes Md Firoj Alam, as he takes a look at the water supply scenario

**D**EPRIVATION is not a consequence of shortage of safe water, rather a consequence of inequitable distribution. While the affluent people, both in rural and urban areas, get water first, it is the poor and the marginalised sections of society who are invariably left out. The urban poor seem destined to fetch spilled-over water from the water reservoir of the rich. Similarly, the rural poor queue up at the deep tubewell of the rich. The pattern of water begging is identical in urban and rural areas.

Worse, source of safe water is on

the wane, courtesy of indiscriminate dumping of industrial, human and other wastes into natural water bodies. What's more, injudicious extraction has resulted in arsenic contamination of groundwater in India and Bangladesh. While the rich have triggered the contamination, the poor have suffered the consequences. In Bangladesh, some 55 million people risk exposure to arsenic contamination. Needless to say, most of them are poor.

However, the water security has spelled boon for many. National and multinational companies have made a windfall from sale of drinking water. Global water industry is worth \$7 trillion and has assured itself of profit at least for the next 25 years (Dr Sudhirender Sharma, The Daily Star, April 19, 2002). The third world markets are now flooded with different types of water purification filters, testing kits and accessories. While the water traders are trying to boost their sales with the arsenic-free labels on their bottled water, they are not contributing a penny from their profits to efforts towards sustainable solution to arsenic crisis.

On top of this, the World Bank is pursuing governments to privatise the water supply system for cost recovery from supplied water. If it succeeds, water insecurity will only deepen with millions more rendered vulnerable.

The primary objective of any developing country should be to ensure every citizen access to safe drinking water with special attention given to the poor and the disadvantaged. Water rate should within reach of the people in the lower rung of society. For sustainable management of water resources, the government should involve community participation. In the coastal areas, the DPHE-Danida water supply and sanitation project has provided safe water outlets for the poorest of the poor. The management of the project has been entrusted with the local communities. Similar projects are there in India, Uganda, Ghana and South Africa.

Md. Firoj Alam is a district coordinator for the DPHE-Danida rural water supply, sanitation and arsenic mitigation components in Bangladesh.

Safe water for all

## Non-economic way to check pollution

SHAMSUL A KHAN MAMUN

**T**HE Safe Water Day has been observed a few weeks back across the country with a slogan -- 'safe water for all'. In the backdrop of acute drinking water shortage, it becomes inevitable to ensure safe water supply to the citizens of a country. It is now well recognised that sources of water like rivers in our country are getting polluted to a large extent. Observations indicate that main sources of the pollution are 'manufacturing industries' that have been using streaming water to discharge industrial waste.

It is a very good sign that people in our society has become conscious about issues concerning water pollution and making a collective campaign to bring the issues into concern of policymakers. We see the campaign of "Buriganga Bachao". The government has so far done nothing remarkable that might keep the water stream of different rivers free from hazards.

Theoretically, environmental economists argue that there are two types of instruments that could be undertaken to tackle environmental pollution. One is economic or market-based instrument. The other is non-economic instrument. Pollution tax and tradable permit are two economic instruments. Pollution tax is a charge levied on the polluter or source of pollution. The main rationale behind the tax is that it internalises the cost generated by the polluter. Any tax should have incidence. As to the pollution tax, it should have forward and backward incidence. To remain competitive, entrepreneurs should prefer backward incidence because it will help them keep the price of the product competitive, so the victim is a raw material producer. This is not conducive to industrial development. The tradable permit (TP) turns up as a viable alternative to supplementing tax. The TP is issued to the polluter with a permission to pollute waste to a certain extent determined by the government and this permit is tradable in the market like any commodity.

On the other hand, non-economic instrument means introduction of law with provision for capital punishment associated with water pollution. Non-economic instruments like law might discourage entrepreneurs from taking up industrial venture. It may lead to inertia.

Under such circumstances, the TP, a market-based instrument, is getting popular around the OECD countries. In Australia and New Zealand, for example, there is existence of TP to tackle the problem of fish resources and water resources. In the USA, the same instrument is being exercised to tackle air pollution. Industry is the engine of economic growth. Realising this fact, the government needs to undertake a policy that should address two objectives simultaneously: rapid industrial growth and safe water. The same instruments can be applied to tackle water pollution in Bangladesh and simultaneously ensure industrial growth. As one analyses the problem associated with water pollution, it could conclude that it is nothing but "a tragedy of the common". And tradable permits address the common problems by rationing access to the resource and privatising the

resulting access rights. The first step involves setting of a limit on user access to the resource.

Depending on the specific system, the rights may be transferable to other users. Users who exceed limits imposed by their rights face penalties, including the loss of the right to participate.

Theoretically, the tradable permit approach is based on economic approach to 'optimal resource management'. What is meant by the optimal allocation of a resource depends on how the 'policy target' is defined. The economically efficient allocation of a resource, defined in partial equilibrium terms, maximises the net benefits to society, where net benefits are defined as the excess of benefits over costs.

To respond to an efficiency approach, the tradable permit approach starts from a sustainability perspective. Whereas efficiency may or may not be consistent with a sustainable allocation, the tradable permits programme starts by defining a sustainable target. The sustainable target may or may not be efficient. But it provides a good opportunity to assure sustainability.

The government with consultation with the water expert determines the target of water stream of main rivers where the polluting industries must maintain the level at the cost that is efficient for each industry.

In Bangladesh, there are a good number of industries by the rivers Buriganga, Karnaphuli, Meghna etc and cost, benefit pattern of each industry is different from each other. Moreover, all industries do not

pollute water in the same extent, some are light polluter whereas some are heavy. In such a condition, the industries that pollute substantially will require a large amount of TP.

To keep the cost at the lowest level entrepreneurs will try to keep the level of pollution at lowest level. It will motivate the same to install pollution abatement technology. Now as the industries acquire pollution abatement technology (it may not be equally viable to each industry) to reduce the pollution level it will require few TP, which mean if the industry possesses a large amount of TP it will be able to sell balance TP to other industries that require a large amount of TP to additional supplement cost for pollution abatement technology. Thus, the level of water sustainability could be maintained.

Potentiality of TP to control water pollution is great but definitely some design considerations are required like (a) baseline issue (b) initial allocation method of TP (c) defining the agreed limit (d) adaptive management (e) monitoring and enforcement (f) legal basis of entitlement. These considerations are vital to shape TP approach and to make it effective. In Bangladesh research in those areas is needed to come up with a model but, above all, policymakers have to agree on the application of tradable permit to control water pollution of major rivers.