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Waste to resources

Smart Management of Plastic Garbage

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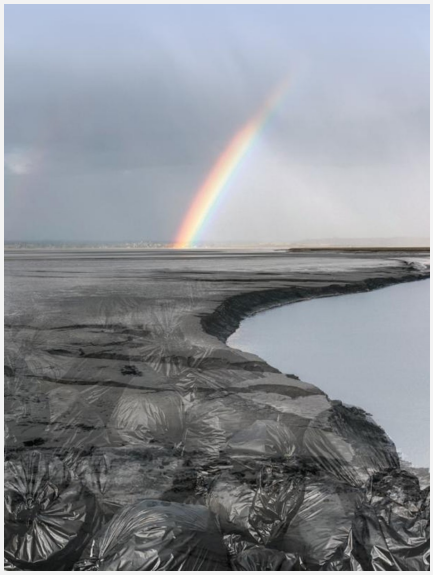
Content



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Conserving Forests Must be Our First Priority

Md. Arafat Rahman

In the third world countries like Bangladesh, forests and forest resources are being depleted at a massive rate. The United Nations Food and Agriculture Organization (FAO) said in a report on forests on July 9, 2018 that 13% of the total land area of Bangladesh is forest. However, the Ministry of Environment, Forest and Climate Change claim that 17% of the country's total area is forest and tree-covered areas. According to the report, 3 lakh 32 thousand acres of forest land has been deforested in the last seven years. Chittagong region is the most advanced in terms of deforestation. In 2010, 60% of the country's total tree resources were in this area. In the last seven years, it has decreased by about 10%.

The causes of deforestation are many. Causes of rapid deforestation include rapid population growth and poverty, cutting down trees in an uncontrolled way, new settlements, illegal logging, dependence on forest wood for fuel, grazing of cattle, purposeful burning of forests, Jum cultivation, commercial cultivation of some crops and fruits, conversion to agricultural land, high collection of economically important plants, such as medicinal plants, cattle feed, dyes, brick kilns and other small scale industries. Also,

rainfall, landslides, erosion, floods, cyclones, tornadoes, increased salinity and some complex tree diseases are significant causes of deforestation and loss of forest resources.

Apart from this, lack of proper maintenance and awareness, the inadequacy of research activities and development programs on natural habitats and reproduction of plants and animals, lack of necessary initiatives for conservation of environment are some of the reasons for depletion of forest and forest resources in Bangladesh. Sometimes there is a difference in the extent and nature of deforestation depending on the type of forest and the geographical location. For example, the forests in the central and northern parts of Bangladesh are largely arid and flat. Due to their geographical location and environmental reasons, they are easily accessible and habitable, so the chances of their destruction are relatively high.

Although the forests of Bangladesh are inadequate for the needs of a balanced economy, these forests play an important role in the economy and overall welfare of the country. That is why the conservation of forest resources is essential for the survival and sustainable development of the people. Government management of the hill forest was initiated through selected tree felling and normal reproduction. Subsequent deforestation and artificial reproduction or tree planting methods were introduced and selected tree cutting and development methods continued. During World War II, these forests came under tremendous pressure and increased demand to meet the growing demand for forest products. Later long and short term afforestation, as well as conservation, was introduced on a large scale.

The Sundarbans is the main component of the coastal region of the Bay of Bengal. The Forest Department has been in charge of managing and managing the Sundarbans since the declaration of the protected forest land. Specific sizes of cuttings of the

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the conservation and development of coastal ecosystems. The IUCN, an international alliance of nature conservation organizations, said in a 2017 report that forests are not only a source of biodiversity and natural resources but also a source of freshwater for trees. As a result, when forest covering area decreases, desertification, landslides and natural disasters increase.

main species of cuttable trees and a period of 40 years are followed in forest care. Later, the deadline was reduced to 20 years. The Sundarbans mangrove forest, along with the surrounding wetlands, is a potentially diverse ecosystem for long-term multipurpose use and integrated conservation practices. For conservation of natural forests, tree felling has been banned in all-natural forests since 1989.

Artificial afforestation is on the rise as an intensive land management activity in Bangladesh. At present, the main objectives of the afforestation project are to increase the overall tree resources of the country, prevent the depletion of forest resources, and strengthen the conservation of forest lands in the identified protected areas and sustainable management of forest resources through the participation of local people. The need for afforestation in coastal areas and the establishment of a vegetation enclosure as a 'coastal green belt' has long been recognized.

The implementation of extensive afforestation program under the Coastal Green Belt Project will make a significant contribution to

In 1979, the country's first national forest policy was formulated. A new national forest policy was adopted in 1994 by amending the national forest policy of 1979 because of the demands of the time and the existing overall condition of the forest sector. This new forest policy emphasizes the conservation and scientific management of forest lands to maintain the economic development and ecological balance of the country.

This forest policy proposes conservation of natural forests by increasing the forest cover of Bangladesh, conserving reserve forests and encouraging investment in afforestation and agroforestry. The National Conservation Strategy was adopted in 1986, recog-

nizing the dependence of sustainable development on the protection and management of natural resources and the favourable ecology of these resources.

Forests and forest resources, i.e. soil, water and biodiversity are conserved practically at the ecological and species level. At the ecological level, forest protection strategies are as follows: management of protected areas, adoption of conservation methods for deforestation or extraction of forest resources from the forest through planned management. Wildlife sanctuaries, national parks are included in the protected areas. The Wildlife Conservation Act sets out the conditions and legal status of the declaration of protected areas. The government may declare wildlife sanctuaries, national parks and hunting grounds through a notification in the official gazette as per the terms.

Recent calculations suggest that carbon dioxide emissions from deforestation and forest degradation contribute about 12% of total anthropogenic carbon dioxide emissions with a range from 6% to 17%. Deforestation causes carbon dioxide to linger in the atmosphere. As carbon dioxide accrues, it produces a layer in the atmosphere that traps radiation from the sun. The radiation converts to heat which causes global warming, which is better known as the greenhouse effect. Plants remove carbon in the form of carbon dioxide from the atmosphere during the process of photosynthesis but release some carbon dioxide back into the atmosphere during normal respiration.

In deforested areas, the land heats up faster and reach a higher temperature, leading to localized upward motions that enhance the formation of clouds and ultimately produce more rainfall. Reducing emissions from deforestation and forest degradation in developing countries has emerged as a new potential to complement ongoing climate policies. The idea consists in providing financial compensations for the reduction of greenhouse gas emissions from deforestation and forest degradation. Deforestation disrupts normal weather patterns creating hotter and drier weather thus increasing drought, desertification, crop failures, melting of the polar ice caps, coastal flooding and displacement of major vegetation regimes.

Deforestation on a human scale results in a decline in biodiversity, and on a natural global scale is known to cause the extinction of many species. The removal or destruction of areas of forest cover has resulted in a degraded environment with reduced biodiversity. Forests support biodiversity, providing habitat for wildlife; moreover, forests foster medicinal conservation. With forest biotopes being the irreplaceable source of new drugs, deforestation can destroy genetic variations irretrievably.

It has been estimated that we are losing 137 plants, animal and insect species every single day due to rainforest deforestation, which equates to 50,000 species a year. Predictions have been made that more than 40% of the animal and plant species in Southeast Asia could be wiped out in the 21st century. Rapidly growing economies also affect deforestation. Most pressure will come from the world's developing countries, which have the fastest-growing populations and most rapid economic growth. Deforestation eliminates a great of species of plants and animals which also often increases disease. Loss of native species allows new species to come to dominance. Often the destruction of predatory species can increase the rodent population which can carry plague. Additionally, erosion can produce pools of stagnant water that are perfect breeding grounds for

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mosquitos.

The provisions of the Wildlife Conservation Act are a complete ban on the entry or residence of any person in the sanctuary, damage or destruction of plants, hunting of wild animals, the introduction of exotic animals, grazing of livestock, arson and water pollution. Hunting, killing or capturing animals within one mile of the boundaries of wildlife sanctuaries and national parks is prohibited.

However, the government may partially or completely relax these restrictions for scientific research, enhancement of natural beauty or development of protected areas and may allow construction of roads, restrooms, etc. in protected areas. The government may allow special hunting of wildlife in certain hunting grounds, specifying the maximum number of wildlife, the specific place and time of hunting.

The mangrove forests of the Sundarbans and the wildlife sanctuaries of these forests have been included in the list of World Wetlands and World Heritage Sites respectively. Development, management, planning and expansion of forests are the responsibility of the Ministry of Forests and Environment. Besides, it has Chittagong Forest Research Institute, Forest College, Kaptai Forest Development and Training Institute and one forest school each in Sylhet and Rajshahi. The National Botanical Garden at Mirpur in Dhaka is also under the Forest Department.

The department is also implementing several projects: forest resource development projects, coastal green belt projects and Sundarbans biodiversity conservation projects. The Forest Department has launched social forestry activities involving the public to rehabilitate deforested and marginal lands. These activities include rural afforestation, nursery

development and training in forests and agricultural farms.

The first forest policy formulated in Bangladesh after independence focused on the supply of fuel wood and timber production. The latest forest policy has three sections: (1) The prerequisites for forest development include: (a) equitable distribution of profits among the people, especially forest-dependent people for livelihood; (b) People's participation in afforestation programs and taking people's views and suggestions in planning and decision making. (2) People-centred goals of forest policy: (a) creation of rural employment opportunities and expansion of forest-based rural development sectors and (b) prevention of illegal occupation of forest land and other forest-related crimes through public participation. (3) The policy declarations include: (a) extensive afforestation of marginal government lands in partnership with local people and NGOs; (b) afforestation in deforested/occupied protected forests in agroforestry model with the participation of people and NGOs; (c) creation of a new department called 'Strengthening of Forest and Social Forestry Department'; (d) to strengthen education, training and research facilities and (e) to amend laws and regulations relating to the forest sector and, if necessary, to enact new laws and regulations.

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Climate Change: Biodiversity is on the Verge of Destruction

Farzana Akter

Climate change is the most used and familiar term to us. Climate change refers, changes in weather pattern over a long period of time including temperature, precipitation and extreme events due to some green-house gases like carbon dioxide, methane, SOX, NOX and CFC's. It's a long term phenomenon. This change can be observed over a few decades or millions of years. This is not an accidental at all. The main fact of this phenomenon is green-house gases effect, which makes the environment warmer. Nowadays, these gases leading to a toxic environment. This happens due to our own activities. Yes, humans are the main reason of all environmental imbalances. We are now in a modern world. Industrialization and urbanization are the first thing to be the part of modern word. Definitely it brings to us a huge comfortable life for leading and great approaches. At the same time indirectly and gradually it is killing our environment. Every day we produce a huge number of green-house gases by fossil fuel burning - coal, gas, oil is the common fact that we are used to do. Fumes from vehicles, industries,

burning of forest, or any other materials emits a large amount of carbon dioxide or green-house gases which breaks the ozone layer and thus happens disaster for our environment.

The impact of climate change is both direct and indirect. Rising temperature is the well-known, most common effect we know, that is direct. Others are rising temperature in ocean, melting glaciers, sea level rise, extreme event. Rising temperature is a slow process but the consequences are devastating. We can notice that, present environment is way more different than before. As a result of rising temperature, world is becoming warmer, environment is getting unsuitable for many species, even migration is a common phenomenon now, glaciers are melting thus many pathogens are showing their existence, sea level has been risen, many low lands gone under water, evaporation rate became faster, that's why precipitation range is higher than before, floods, droughts, all are happening because of rising temperature.

The consequences are beyond description. The indirect effects are, increase hunger and water crisis, increase health risks, economic implications, increasing pest and pathogens, loss of biodiversity, ocean acidification, need of adaptation. Although its impact is very slow, but the impact in the twentieth to twenty-first centuries is very noticeable. In particular, 2020 have perfect example to understand how devastatingly climate is changing. Extreme events in 2020 are forest fire in Australia, Africa and California, temperature rising, flood, drought that are we experienced.

Biodiversity is a broad term for environment which includes both living things in our earth whether it is bacteria or plants and animals. Human beings are also part of biodiversity. Biodiversity is the main prey of climate change.

▶Melting glaciers: As temperature rises due to climate change, the glaciers of the pole area are starting to melt so fast. This is definitely a good thing as new land is coming out. But at the same time, new diseases are emerging and the area is becoming uninhabitable. As a result, many species are being derailed or extinct.

▶Sea level rise: Coastal area are low lands, they will go under water gradually, and that leads to make fauna and flora of coastal area being homeless and extinction. Unfortunately, coastal lands are the most productive all of natural ecosystem. This will lead imbalance in environment. The people of coastal region also suffer.

▶Ocean acidification: Ocean receive 30% of total carbon dioxide that has been in atmosphere which occurs due to human activities. We produce this gas in our daily life. Which leads every environmental problem. Carbon dioxide makes the ocean less in pH, then the living things are unable to live. Phytoplankton to a big mammal, they are becoming vulnerable because of the unsuitable state of water.

▶Coral bleaching: This is a whitening of coral caused when the coral expels their zooxanthellae, a symbiotic photosynthesizing alga that lives within the coral tissues. They provide nutrition to coral also they get benefited. Zooxanthellae are expelled when the coral is under stress from environmental factors such as abnormally high-water temperatures and pollution. Then coral doesn't get food thus they died. Corals are important part of ocean. They maintain the whole ecosystem in marine environment, thus brings a great loss.

▶Extreme events: Extreme events like drought, flood, cyclone, are increased exponentially as a result of climate change. High temperature and melting glacier are the reason.

▶Change in rainfall: If we monitor the past few years, we can realize that, how drastically environment has been changed. Rainfall has been now higher than before, which leads to flood and water logging and urban flooding.

▶Increasing rate of evaporation: High temperature create high evaporation in water body. And also, transpiration in flora. That makes disturbance in ecosystem.

▶Migration of species: The warm climate has become warmer due to climate change. The winter season has been changed. Winters are hot and summers are cold, rain again all year round. It certainly reveals the imbalance of the environment. As a result, the

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animals of the specified season are migrating in search of their own suitable environment.

▶Adaption: As the climate is changing and the seasons are random, no doubt the environment is hotter than before and also cold. Thus, we have to adapt this situation also for fauna. Adaptation is a natural thing that is the only weapon now. Many flora and fauna are extinct now.

It is already known that; climate change is affecting human life in a very bad way. Millions of people are already suffering from the catastrophic effects of extreme events that are result of climate change. Humans are the important part of biodiversity. As a result of the increase in temperature, the heat stroke has been increased. A large number of people are dying every year. Rising temperature and decreasing precipitation leads to increase in ozone and particulate matter, elevating the risk of cardiovascular and respiratory illness and death. Every year we face various natural disasters which are indirectly and directly related to climate change. We suffer a lot in health impact of during and after these events. Increasing sea level rise makes coastal and inland flooding, that are the common phenomenon now. Rising temperature increases salmonella prevalence in foods, longer seasons and warming winters increase risk of exposer and infection. Even climate change affects people's mental health, it increases stress, social impact, and behavioral health disorders.

Everyone knows prevention. But a few numbers of people work to bring about change. We need to start small changes to prevent climate change. We cannot change the situation overnight. We have to start from us.

Reduce wastes-

Everything that is created has a life cycle which generates green-house gases. Reduce emissions by;

1. Recycle whenever we can.

2. Buy recycled products.

3. Reduce the amount of new packaging by buying less.

Energy saving-

Using less energy not only can save the planet but also save our money.

1. Switch the power off when finished with the application.

2. Switch to energy savings light.

3. Read the energy level of new devices and buy the most energy efficient.

Be water wise-

Watch our water usage and use simple techniques to use less, even saving our money.

1. Turn the water off when we have done.

2. Take shorter shower.

3. Use eco wash tablets to wash at cool temperature.

Travel green -

Vehicles are responsible for one third of gas emissions. So, by using less vehicles, we can make differences.

1. Ditch the car and use our bike or walk to place close by.

2. Consider using public transport when we want to go somewhere far.

3. Switch to an electric car or which is more fuel efficient.

Clean Energy -

When we cannot personally Control our local energy plant, we can still make changes by using less.

1. Switch to renewable energy.

2. Install solar panels and generate our own energy. Small changes.

Small changes can make us feel like we are making a difference, and will start to add up.

1. Buy local. The less distance our food has traveled the small the carbon footprint.

2. Plant a tree.

3. Spread the word and sharing what we know about climate change among all our friends and family. This will help to spread these Informative knowledges in the world initially.

We are facing all of the problems that occurs due to climate change. As we are the both reason and victim of this situation, we need to be very strict towards our activities which making environment vulnerable and unsuitable for living. Little by little, what we the ordinary people can do every day, contributes a lot. Climate change is a global disaster that we all are facing and that it is everyone's responsibility to give a hand to prevent it as soon as possible. We should move on eco -friendly activities, and only that can help us to get rid of this catastrophic situation. If we do not change our behavior on the environment thus its behavior won't change to us. If we take care of the environment, then the environment will give us such feedback. From these, we adequately realize how devastating climate change is. This has the potential to extinct our species. This is high time we should change our view, shouldn't be rush and rough to environment. Because the environment is not our part, we are the part of the environment. It is high time we should change our views.

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Smart Management of Plastic Garbage

Captain Arif Mahmud

The government banned polythene bags using the Bangladesh Environment Conservation Act 1995. Bangladesh was the first country to ban plastic bags and over a decade many developed countries are still struggling to emulate this success. Although plastic bags make up only a small percentage of all litter, the impact of these bags is significant along with other plastic garbage materials.

Under the law, there is a complete ban on production, import, marketing, sales, display, storing, distribution, transportation and use of polythene of less than 55 micron thickness for business purposes. The Bangladesh government in 2010 enacted another law, titled the 'Mandatory Jute Packaging Act 2010' for the compulsory use of jute in packaging products instead of plastic materials. Plastic bags are harmful in many ways. The used bags eventually find their ways into drains, canals, rivers, parks, streets causing pollution to the environment.

One of the major impacts of plastic bags in Bangladesh is the effect on the water drainage system. Bangladesh has an annual rainfall of up to 5 meters and holds the world record for the highest rainfall in a period of a single day. Arranging sufficient drainage infrastructure is a major challenge for the Government of Bangladesh and urban flooding is common in this country. Plastic bags clog drains and waterways, threatening urban environments and creating many health issues. Drainage systems blocked by plastic bags have been identified as a major cause of flooding in Bangladesh during monsoon season. Following the 1998 flood it was estimated that up to 80% of the city's waterlog-

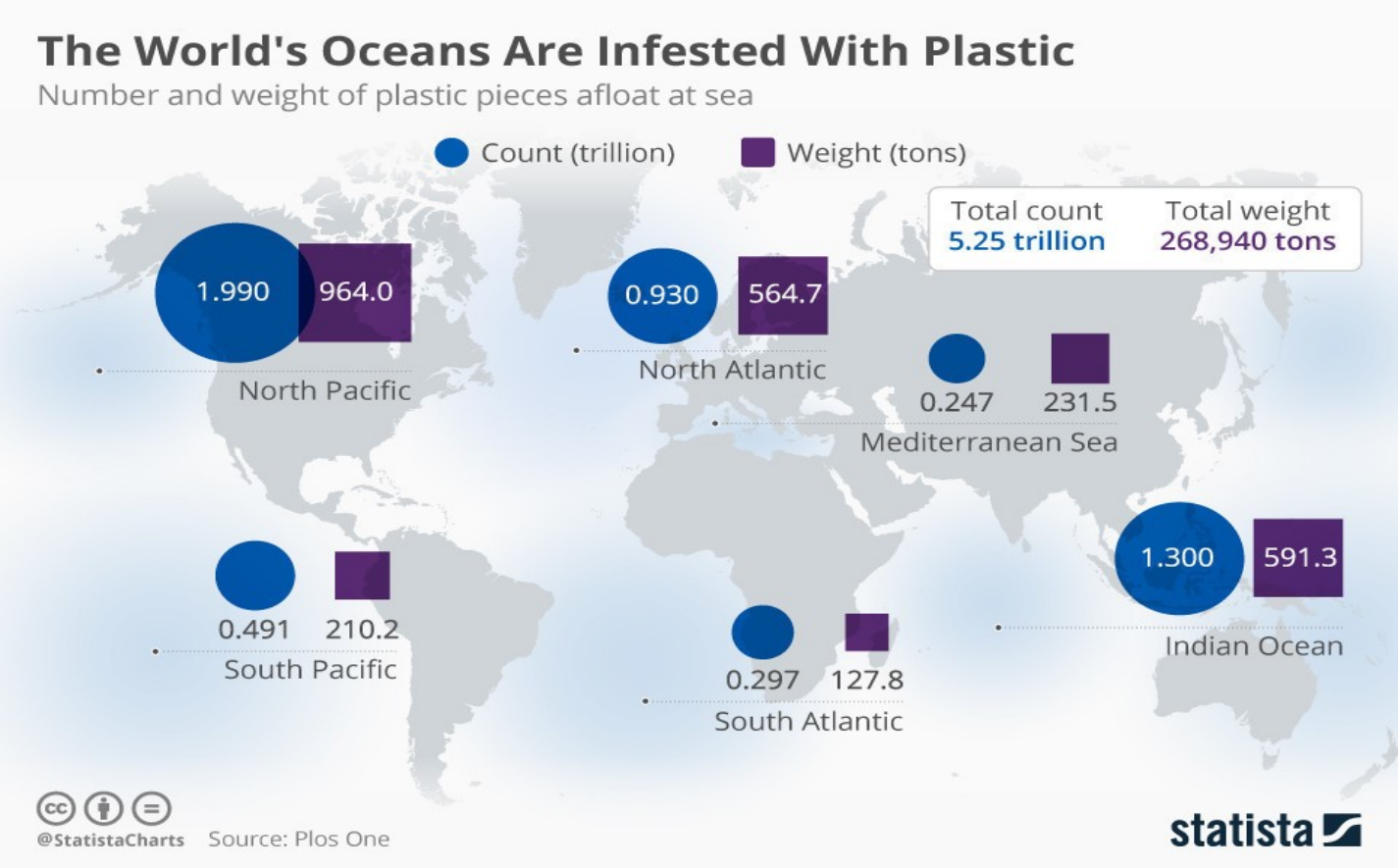
ging was caused by polyethylene blocking the drainage system.

Water pollution by plastic garbage in Bangladesh (Image source: The Internet)

The technical name of the thin plastic bag is Low-Density Polyethylene (LDPE). Apart from plastic bags there are various plastic products that generates huge amount of plastic garbage. For example the mineral water bottles or the carbonated drink bottles are made of Polyethylene Terephthalate (PETE or PET), the more durable plastic bottles such as shampoo or

human beings.

Three major areas of Bangladesh, such as Dhaka, Chittagong, and Sylhet, are in great danger. It is estimated that about 14 million pieces of poly-bags are being thrown out every day in Dhaka city. A report has stated that Bangladesh experienced floods in urban areas in 1998 and 2008 where polythene and plastic materials were one of the major causes for the blockage of



washing liquid is made from High Density Polyethylene (HDPE), the piping materials are normally made from Polyvinyl Chloride (PVC), the food packing materials are made from Polystyrene or Styrofoam (PS) Some hard plastic containers and objects are made from polypropylene (PP). Added to the plastic bags all the above materials generate huge amount of plastic garbage and pollute our environment including canals, rivers, seas and oceans. The floating and submerged plastic garbage are causing harm to the sea birds and various aquatic animals. The oceans are also getting infested with various types of plastic garbage discarded by

the drainage systems. A recent report published by Earth Day Network (2018) ranked Bangladesh 10th out of the top 20 plastic polluting countries in the world. Plastic contributes eight percent of the country's waste, which is equivalent to 800,000 tones, of which around 200,000 tones go into the ocean and rivers. Bangladesh has a great opportunity to reuse its plastic wastes to foster both of economy and protect the environment from pollution.

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dance on streets, roads, fields but ultimately some of these are deposited in water polluting rivers and oceans. Even if there is a good collection system and most of the garbage are collected and stored in some place then after few years more and more of land area will be required to establish garbage dumping grounds. So we must try to find out the smart use of all the plastic garbage. A wide range of products can be generated from plastic garbage.

Garments and shoes from recycled PET bottles

Recycled polyester yarn manufacturing is very easy and economical which are encouraging fabric manufacturers. Sorted and graded plastic bottles are chopped and shredded into small bits that melt and soften with heat. Molten plastics passes through a number of tiny holes which results in thin filaments. These filaments are used nowadays into both woven and knit industry to manufacture fabric. Running shoes, soft shoes, other sports gears like the shorts, vest, jogging suit, sweater, pull over and normal clothing items like T shirt, polo shirt, hoodie, denim and jeans trousers, shirts , ladies

Alternate Use of Plastic Garbage:

People are prone to use plastic bags, bottles and packaging materials as these products are easily available, cheap and light weight. Presently cities are overflowing with plastic garbage and the conditions of towns and villages are getting worse. In some cities there are garbage collection facility but that does not normally cover the whole city. The collection and the dispose system is not very efficient. Normally there are no such garbage collection facility in small towns and villages. Most of the plastic garbage are found in abun-

dress , bags and fleece jackets can be manufactured from these recycled polyester yarn.

Construction of Roads with Plastic waste:

The waste plastic is processed, granulated and combined with regular asphalt for use in road construction and surfacing to extend and enhance the binding properties of the bitumen. All kinds of plastic garbage including the normal plastic shopping bags (Low-Density Polyethylene LDPE), PET bottles, plastic packing materials can be used in the road building process. Experts estimate that these types of roads will be 60 percent stronger than regular asphalt roads and last around 10 times longer when compared with normal asphalt roads. Plastic roads are cheaper, ecofriendly and if built with correct techniques may last more than 50 years.

Roof, Garden, Pavement, Footpath and Car parking area tiles from Plastic waste:

All types of plastic garbage can be used to produce different grades of tiles that may be used on roof, footpath, pavement, car parking and in garden. Plastic garbage is collected and shredded into small pieces mixed with sand or crushed stone powder and desirable color, this mixture is heated and the molten material is passed through hydraulic press to give the shape of the required tiles for pavement, garden, footpath, and pavement and also for roof. All these tiles can be of various color as per the demand of customer. These type of tiles are very durable and they can last for more than fifty years. Most of them are heavy duty and will not break under heavy load. These tiles are fire and heat resistant.

Furniture from Plastic Garbage:

Plastic bags, bottles, packing materials and virtually all types of garbage may be used to manufacture durable plastic furniture. The plastic garbage is collected, cleaned, washed and cut

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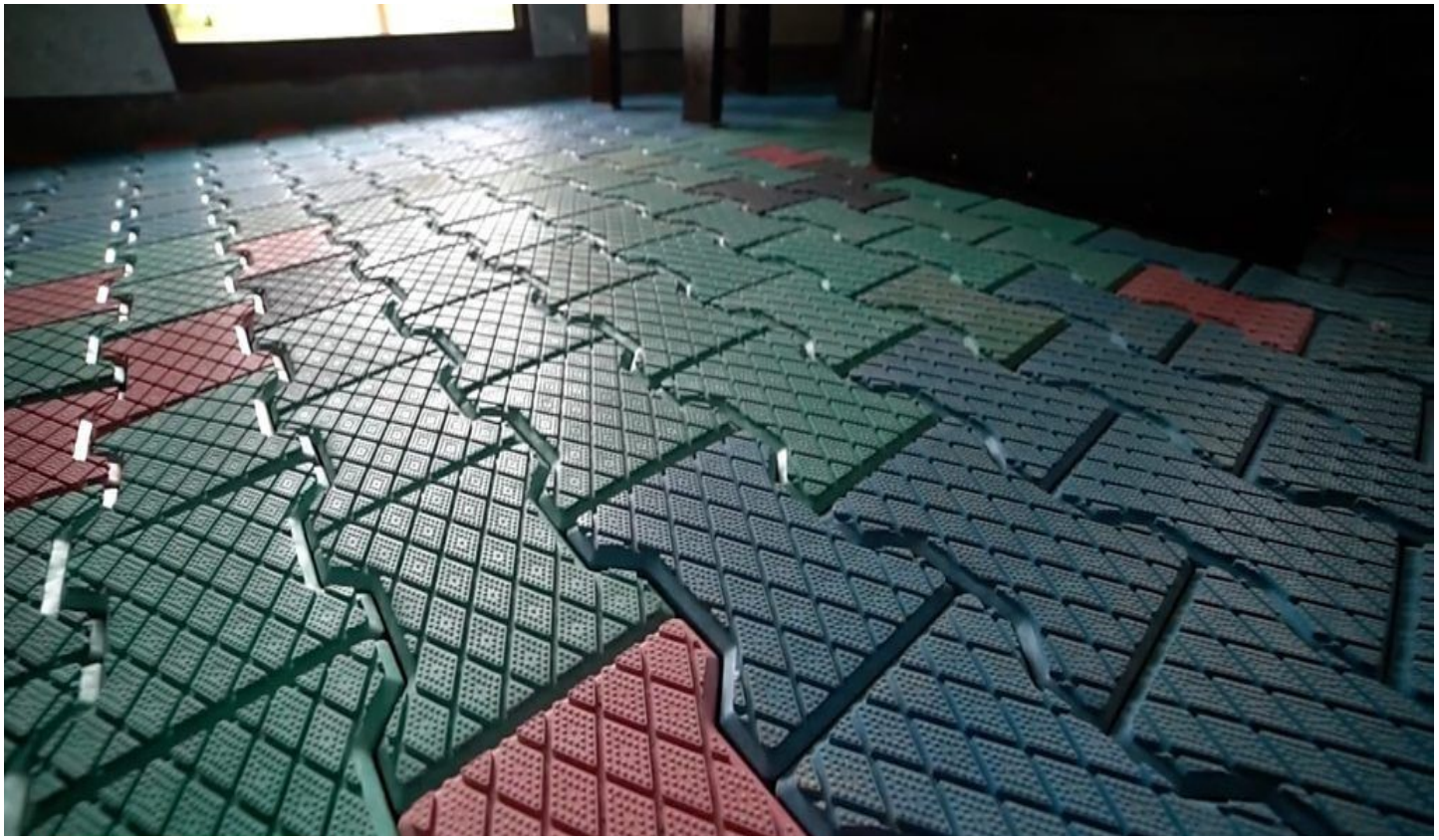
into small pieces. These small pieces are heated and the molten mixture can be used to construct various types of plastic furniture. Many European countries are also using 3D printers with molten plastic to construct furniture with aesthetic designs.

Fuel oil and diesel oil can be manufactured from Plastic Garbage:

Plastic can be burnt at high temperature (450 degree Celsius) with an added catalyst (Fly ash) in the absence of Oxygen. This is called Pyrolysis. By this way the plastic can be converted in to 80% Oil, 15 % Flammable Gas and 5% Carbon Black. The oils that may be generated by pyrolysis are Naphtha/light oil, Low Sulphur Heavy fuel oil, Base oil and paraffin wax. It may be possible to produce diesel oil from Low Sulphur Heavy oil by distillation and purification.

At least four types of flammable gas may be derived from pyrolysis and they are Hydrogen, Methane, Ethane and Butane. Hydrogen can be used in industries, other gases can be used as fuel for industrial or domestic purpose.

The Carbon Black is commonly used in the pro-



duction of vehicle tire to absorb heat. It is also used in photocopier, printing machines and also for making colors.

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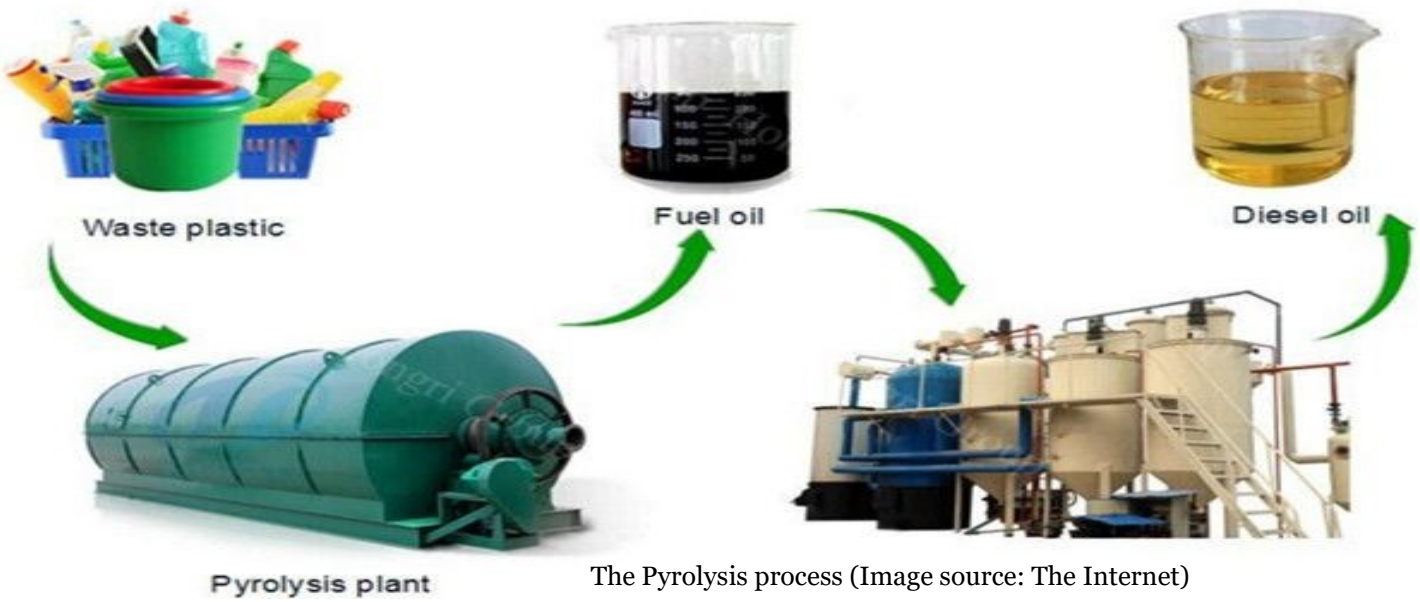

The Pyrolysis process (Image source: The Internet)

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The World Will Survive If The Environment Survives

Md. Rased Hasan Sojib

Although human beings are the best creatures of creation, the environment around them is being constantly changed due to human behavior and negligence. At the same time the balance of the environment is being destroyed. Environmental degradation and pollution is a big problem. Natural disasters such as floods, droughts and cyclones, tidal surges, climate change and other environmental problems are now commonplace. Human actions are mainly responsible for all of these. Arbitrary deforestation, overpopulation, poverty, vehicle black smoke, loud noises, industrial factories and brick kilns in residential areas, etc. are polluting the environment. Climate change is taking place due to the loss of ecological balance.

The conflagration of the world's largest evergreen forest, known as world's lungs has been able to attract the attention of the world. Concerns have been raised that the forest fires could accelerate climate change as well as have a negative impact on people of different nationalities in the region. But another forest just a few kilometers from the Amazon is being deforesting faster. The forest is in the Serado ar-

ea of Brazil. It is said that the tropical Serado region covered with trees and grass covers 5% (percent) of the world's trees. There is a huge potential for carbon absorption. This is considered to be the most biodiversity area in the world, with an area of about 20 million hectares. Regarding the importance of the region in terms of biodiversity.

Mercedes Bastamanat a biologist at the University of Brasilia said that the region has about 837 species of birds, 120 species of reptiles, 150 species of amphibians, 1.2 million species of fish, 90,000 species of insects and 199 species of mammals. According to the World Wildlife Foundation (WWF), there are 4,800 endemic species of otters, tapirs and jaguars in the Serado region. In addition, more than 11,000 species of trees have been found there, which is about half the number of tree species found in the rest of the world. To meet the demand for that meat, cattle farms and the Serado forests for soybean cultivation are being destroyed.

The genetic, species, and ecosystem biodiversity of microorganisms, fungi, plants and animals are closely intertwined. The change of one is the change of another, the destruction of one leads to the crisis of the existence of the other. According to the United Nations Convention on Biological Diversity, the number of biodiversity in the world is 1 (One) crore 30 (Thirty) lakhs. Of these, 17.5 lakh animals and plants have been identified. The sudden rise and fall of food supply, nutrition, weather, and climate is causing catastrophic damage to plants and animals. Biodiversity is threatened as a result of changes in the environment and nature due to natural causes such as fires, cold spells, glaciers, cyclones, landslides, tidal surges, droughts, droughts, floods, earthquakes, volcanic eruptions, dense fog, thunderstorms, etc. Besides, there are man-made reasons.

In modern times the population is increasing and the use of natural resources is also increasing. Soil, water and air are being polluted as a result of industrialization and urbanization. Environmental imbalances are being observed. Unable to adapt to the changed climate, plants and animals are becoming extinct in the end, which means that the diversity of biodiversity is becoming visible.

Every year food crops and cereals are also being destroyed. About 10 percent (%) of the flowering plant species are becoming extinct due to deforestation. On an average, 50 (Fifty) species are disappearing from the earth every day. Acid rain is occurring due to excessive emissions of CFC gas as a result of setting up more factories. Which is causing direct damage to biodiversity. Due to ethnic riots or wars, groups of people are taking refuge in the jungle and destroying diversity. Civilization is crushed by war, nuclear tests, setting up of factories, construction of faulty buildings, mismanagement of various irregularities.

The Global Food Biodiversity Report 2019, released by the Food and Agriculture Organization of the United Nations (FAO) shows that 57% (percent)of the world's biodiversity threats are man-made. Excessive extraction of natural resources is destroying the growing areas of biodiversity and polluting the environment. In the evolution of time many animals became extinct, some almost extinct. Such as- fox, gecko, flying fox, deer, sparrow, conch, tortoise, crocodile, tiger, Mongooses, wild buffalo, kite, vulture, squirrel, hedgehog. According to scientists, cli-

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mate change is affecting almost half of the world's endangered mammals.

According to the United Nations Environment Program, there are about 22 million species in the world. About 70 lakh species could become extinct in the next 30 years. Three-quarters of bird's different species are on the verge of extinction. 30 % (percent) of the fish are on the verge of extinction. The world's largest animal dinosaur has died due to environmental disaster.

The population of the United States is about 5% (percent) of the world's population, but the United States uses 25% (percent) of the world's fossil fuels and emits 22% (percent) of the world's CO_2 (Carbon Dioxide). Developing countries, meanwhile, account for about 78% (percent) of the world's population and use only 18% (percent) of the world's energy. These data suggest that the overdevelopment of developed countries is responsible for most of the complex environmental problems that developing countries face. As global warming increases, sea levels will rise. This will increase floods and cyclones.

Its environmental impact is being felt in other places as well. Bangladesh is also at environmental risk. The country's security and economy are now under threat as a result of climate change. The use of polythene has not been stopped in the country yet. The use of polythene is causing serious damage to the environment. Taking advantage of the lack of control, some unscrupulous people are producing banned polythene. Using polythene is being dumped wherever it is. They are carrying water and falling into the drain. Vehicles without fitness play a major role in air pollution. These low quality vehicles make our environment dusty which is also extremely harmful to human health. Moreover, as it is difficult to control unfit vehicles, deaths of people in fatal accidents are being reported almost every day.

A recent study with the help of Norwegian-based research institute (NILU) has revealed a grim picture of air quality in Dhaka city. According to the study, Dhaka's air has the highest SO_2 (Sulfur Dioxide) presence in the world and most of it comes from low quality vehicles. There are various public and private initiatives to protect the environment. However, Bangladesh is currently the second lowest country out of 180 countries in the environmental index. Bangladesh is ranked 179th in the recently published index of Columbia University. The country ranks 178th out of 178 countries in the Environmental

Health Index. That is the most sinking country. Our country ranks 179th out of 180 countries in the air quality index. In order to protect Bangladesh from the effects of endangered environment, it is necessary to increase environmental awareness as well as proper implementation of relevant laws. Long-term multifaceted plans need to be adopted.

Distinguished scientists in the world have warned that if the current trend of carbon emissions continues, it will not be possible to save the earth in 12 years. Disasters such as wildfires, droughts, floods, and catastrophic heatwave can occur. The UN's International Panel on Climate Change has issued a warning in a special report. According to the report, if no action is taken now, the rate of global warming will exceed 1.5 degrees Celsius between 2030 and 2052. Scientists have highlighted the need for rapid, far-reaching and unprecedented change in all spheres of society to avoid this catastrophic level of global warming.

If we do not protect the environment in a well-planned way, one day the world will be in crisis of existence. The world conscience must be awakened now, from this moment on. There is no time to waste. Global efforts will continue. Our small unconscious and reckless actions are the cause of environmental catastrophe. Changing attitudes is most needed to protect the environment. Everyone needs to take environmental protection and potential seriously in their own interest.

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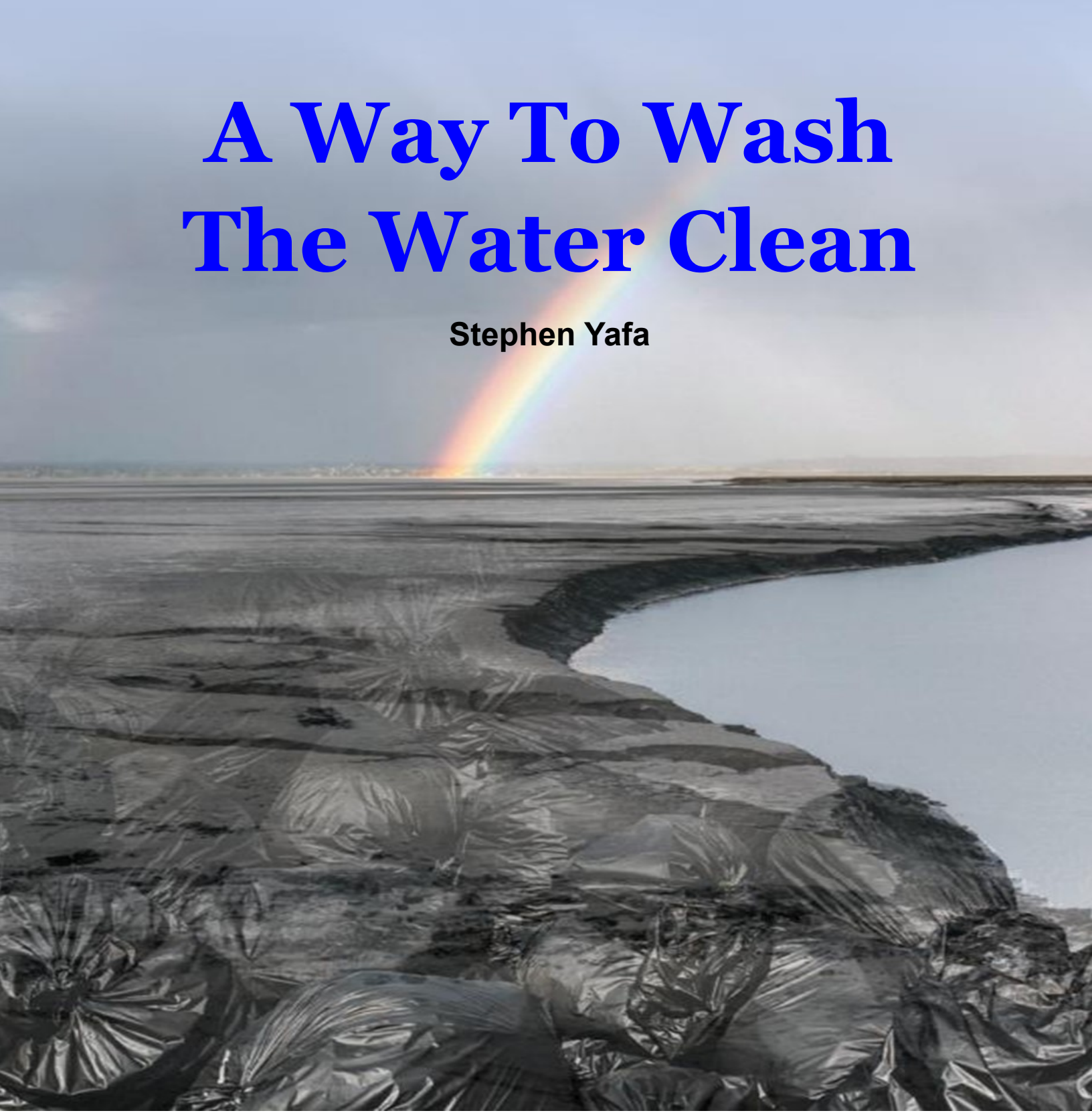
A Way To Wash The Water Clean

Stephen Yafa



From his home in southeastern Australia, Ludovic Grosjean is sounding the alarm. “There are 8.8 million tons of plastic dumped into our oceans every year,” he says. “By 2050, there will be more plastics than fish in our oceans if we do not reverse the situation. Removal is critical, but the solutions start elsewhere.”

That’s because, as a 2017 study revealed, a substantial portion of the plastic that ends up in oceans travels there via rivers — up to 3 million tons annually. Shut down that plastic highway and you’ve made a significant contribution to cleaning up the oceans.

That's where Grosjean, 31, proves himself more than a mere alarmist. An oceanographer with multiple advanced degrees, he was named one of Australia's most innovative engineers in 2019. In November 2018, when Rotary Day at the United Nations was held in Nairobi, Kenya — the headquarters of UNEP, the United Nations Environment Programme — Rotary honored Grosjean, a member of the Rotaract Club of Melbourne City, as one of six young innovators.

But for Grosjean, the awards are secondary. More interested in solutions than salutations, he's focused on eliminating the massive accumulation of plastics and other pollutants that threaten the oceans. Which brings us back to the world's rivers, or, more specifically, to the Niger and Nile in Africa, and the Amur, Ganges, Hai, Indus, Mekong, Pearl, Yangtze, and Yellow in Asia. According to that 2017 study, those 10 rivers account for about 90 percent of the tons of plastic trash that rivers carry into the oceans. "If we can detect and collect that plastic while it's still drifting, we could make a huge difference," Grosjean says.

The young innovator thinks he knows how that can be accomplished, but he also understands he can't do it on his own. To bring his ideas to

>6 million

Plastic fibers released during an average laundry load of synthetic fabrics

$139 billion

Annual environmental cost of consumer plastic use

€6.5 billion

($7.2 billion) Projected savings by 2030 from a European Union directive limiting single-use plastics

10 inches

Depth of all the plastics ever produced if they were spread across Argentina

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fruition, he needs new technologies, financial backing, and a worldwide web of assistants as zealous as he about preserving the planet's natural resources. Grosjean is already at work on the technology, and he's not shy about soliciting the funds he needs. And that global army of environmentally concerned volunteers? That's where Rotary comes in.

Raised in France, Grosjean moved to Australia in 2013, where he is the founder of and principal consultant for OceanX Group, a Melbourne-based business that provides consulting services for water-related technologies. It's Grosjean's responsibility to set up sensors that monitor environmental activity. "For instance," he explains, "when you plan to dredge in a harbor and you want to know if that's going to impact the reefs and marine life, you install an array of data buoys with computerized probes that send back information on turbidity and temperature and so forth. You specify the parameters and monitor to see if there are changes due to human activity."

While Grosjean makes a living from his work for OceanX Group, he relies on contributions (from himself and others) to fund Ocean CleanX, his anti-plastic campaign that combines technology and crowdsourcing. "The project is linked to Rotary," he says, noting that Ocean CleanX was included as a resource in the handbook created by the Environmental Sustainability Rotarian Action Group (ESRAG) for World Environment Day last year. "I can help to get Rotarian projects launched," he says, "and my consultation is free."

Trained to collect and analyze vast amounts of data, Grosjean can recommend technologies best suited to specific oceanic conditions. But unlike many of his peers bewitched by flashing computer nodes, Grosjean does not rely on technology alone to provide solutions. He favors a mélange of high and low tech, linking computerized detectors with human eyes. If you're going to collect all those riverborne plastics, you first have to see them.

To that end, Grosjean hopes to recruit local inhabitants (Rotarians among them) along those 10 notorious rivers, training them to branch out along river banks and report on the heaviest concentrations of discarded plastics and other pollutants. "We enlist people to locate the congested areas," he says. "All they need are a smartphone, an app, a good pair of shoes, and gloves. That doesn't require much funding." Once they report back, Grosjean can set his innovative smart plastic traps — floating booms fitted with monitoring sensors — to collect the plastics and then direct removal equipment to target the most problematic locations. Ultimately, Ocean CleanX would use automated platforms to remove coastal littering.

"It's not as if today's technology doesn't contribute [to solving the plastics problem] with autonomous underwater and surface vehicles, land robots, and so forth," he says. "But people are an essential part of the solution. I've seen firsthand how a river cleanup completely transforms ecology."

The inspiration for Grosjean's mission came in his adopted hometown of Melbourne. For decades, the Yarra River, which flows through that southern Australian city into Port Phillip Bay, acted as a garbage depository for cigarette butts, plastic straws, syringes, and all manner of waste, especially plastic bottles and containers. An estimated 800 million bits of rubbish — 74 percent of them microplastics — were annually entering the bay from the Yarra and Maribyrnong rivers. While the matter warrants closer study, it's likely that fish are ingesting these plastic fragments, which are no larger than a quarter-inch in length. Grosjean participated in a cleanup of the Yarra that, between 2014 and 2017, accounted for the removal of 180 tons of litter. These days he organizes a monthly volunteer cleanup of the Yarra. "All it takes to

make the world a better place is a bit of courage and tenacity," he insists.

For Grosjean, neither is in short supply, and those qualities are augmented by brains, savvy, an effulgent smile, and a gift for attracting attention to his efforts. A few years ago, he began brandishing the bright yellow flippers he uses while scuba diving. Today they have become his signature talisman, as the nearly 1,000 attendees at the 2018 Rotary Day at the UN in Nairobi can attest. "They're flashy and they're a great icebreaker," he says. "They've become my symbol of positive change in helping to save our oceans."

Grosjean has a simple message for the villages and regions where plastics proliferate: "Tell us what you want, and we will help you by empowering local people."

Still in the preliminary stages of his 10-river cleanup agenda, Grosjean is directing his ambition and abilities toward launching a pilot project. He hopes to find funding to build low-cost versions of his automated traps that capture and monitor plastics and to make the traps available to the Rotary world. "If you install them along the rivers, you can tell exactly what types of microplastic are present and monitor where they are coming from," he explains.

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"Then you can send in a team of Rotarians to deal with it. Just having a team help change plastic straws to bamboo straws in coffee shops along a river would have an enormous impact. Even if the water's not drinkable due to other pollutants, it's no longer choked with plastics."

As he prepares to embark on this early stage of his project, Grosjean has a simple message for the villages and regions where plastics proliferate. "Tell us what you want, and we will help you by empowering local people," he promises. "And if in the future Rotary is interested in partnering with me, I'm ready to get the project going."

Gert-Jan Van Dommelen, an environmental activist who co-founded Amsterdam's End Plastic Soup initiative, has seen Grosjean at work and is convinced that his ideas will prevail. "Ludovic has a brilliant mind and the right attitude for the environment and the world we live in, but he also has the can-do mentality," Van Dommelen says. He admires Grosjean's "think global, act local" approach and his grounding in science. "He understands the importance and value of data to focus on the priorities and go to the source of plastic pollution."

Both Van Dommelen and Grosjean are members of ESRAG, as is Karen Kendrick-Hands, its director of communications. "Ludovic is totally committed to Rotary's anti-pollution efforts," Kendrick-Hands says. "A man of ideas and concepts, he's a leader to follow with the social skills and drive to implement his vision and achieve his objectives."

Kendrick-Hands and Van Dommelen speak from in-depth experience: They have engaged Rotaract clubs around the world to perform cleanup actions. "We all have a joint mission, but we translate that locally as each club organizes its own activities for awareness, action, and alliances," Van Dommelen says. "And we can start today by using less plastic." (See "Things You Can Do," page 31, and "Things Your Club Can Do," page 36.)

To Grosjean, the accumulation of plastics in the oceans represents only a small percentage of the total global pollutants that should concern us. To consider ridding the planet of all those pollutants can seem immensely daunting — especially when you consider that the Great Pacific Garbage Patch, a collection of plastic and other litter floating between California and Hawaii, now covers more than 600,000 square miles. That's more than twice the size of Texas.

But, as Grosjean points out, the litter that can be seen in the ocean is only one part of the problem. Many tons of unseen microplastics, some as small as 1 millimeter long, get trapped below the water's surface, where fish and other sea life ingest them. (Fibers from synthetic clothing, which slip through porous washing machine filters, are one of the main culprits, he explains.) Worse yet, Grosjean says, are the nonplastic "forgotten" threats. He rattles off an extensive list that includes nitrate runoff from crop plantings; pesticides; carbon emissions; heavy metals; heat; fishing; turbidity from dredging; and acoustic pollution that has an adverse effect on marine wildlife. "From my point of view, visible plastic is only the tip of the iceberg."

Grosjean has also given considerable thought to what's to be done with all that plastic refuse once it has been retrieved — which seems to be a direction we're headed. After seven years of trial and error (mostly error), the Ocean Cleanup, a nonprofit founded by young Dutch innovator Boyan Slat that relies on a device resembling a gigantic folding arm to catch and contain waterborne plastics, has finally shown some signs of

success. Other solutions are certain to follow, creating a deluge of recovered ocean debris. No worries, says Grosjean. “We can reuse that plastic to build houses and roads and more,” he contends. “We need to raise awareness about those solutions and showcase them. We haven’t invented everything yet. We need young innovators to design the future.”

There is one characteristic that, by his own admission, Grosjean lacks: patience. “I want to enable expert groups to share their experiences across continents, starting right now,” he exclaims.

He reiterated that message at the breakout session he helped conduct at last year’s Rotary International Convention in Hamburg, Germany. “Getting rid of water pollution is one of the most urgent matters for the planet,” he said. “It would benefit millions of people who have poor access to clean water, and it would help the environment to recover. It would also maintain the equilibrium required for a healthy food chain.”

In private conversation, Grosjean makes it clear he’s willing to take a leading role in that effort. “The first way for me to get involved is by educating, communicating, and informing,” he says. “The second way I can help is by proposing a solution. Mine is Ocean CleanX, where you empower people with the right technology so they can achieve goals and measure their results.”

Undaunted by the challenge, Grosjean reveals two more personal traits: optimism and hope. “I’ve seen amazing innovators create incredible technology, so I’m very hopeful,” he says. “I’m very convinced we have a way to do it.”

The author, based in California, is a longtime contributor to The Rotarian. Reprinted by permission from The Rotarian magazine, April 2020.

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Implications of Engineering in Society

Puja Karmakar

Engineering is one of the key influences that shape our society. Engineers don't just work with machines, designs and electronics, they use math and science to provide innovation. Inventions that shape our society and improve the way we live and work. This means that engineers have a responsibility and also a great opportunity to ensure that they have a positive influence on society.

An engineering society is a professional organization for engineers of various disciplines. Some are Umbrella type organizations which accept many different disciplines, while others are discipline-specific. There are many student-run engineering societies, commonly at universities or technical colleges.

Engineer arises from the accepted realization that technology has a significant and rapidly increasing influence on the evolution of society. Engineers play a major role in the development and application of technology and with this role comes a certain responsibility for the direction in which society develops. The scientists develop knowledge and understanding of the physical universe. Science is the pursuit of knowledge in its purest sense without any concern

to the needs of society.

Engineering connects pure science to society. It is a combination of both. Unlike science, in Engineering the environment in which engineers plan, design, build, manufacture and operate continually changes and the role of the engineers has been fraught with challenges and uncertainties. Throughout history, engineers have though creativity, analysis and pure guts met these challenges with success and unfortunately failures too.

Engineering turns science and technology into something tangible and useful to society. It is applied in

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creating various structures, home appliances and other infrastructures and equipment, which make human lives safe and convenient. From Nov. 29 to Dec. 2, Kyoto will host the world engineering Conference and Convention 2015, in which engineers from around the world gather to discuss the importance of engineering and showcase their technologies.

Engineering is a profession in which scientific knowledge and mathematics are used and experimented with to develop ways that benefit mankind, making it extremely important to society for several reasons. It encompasses a whole range of industries that could include on-site, practical construction work as well as evaluating safety systems from an office. They use the knowledge they have within a specific industry to make things work and solve problems, whether this is with transport, medicine, entertainment, Space or the environment.

The health industry has hugely benefitted from engineering. Advances in medical technology are solely down to engineers, and without it, doctors would not be able to treat patients the way they do today; with fantastic success rates. The improvement of medical technology has meant that the discovery of illnesses and treatment has helped to save and improve the lives of many people. Advances in technology, engineers have also allowed us to build satellites and machines that help us to understand the society live and shape our lives daily.

Whilst on the subject of technology, the way we communicate has also vastly improved due to engineering. We can get in touch with people at any time of the day. This has greatly improved the way we do business and how we talk to our friends, family and strangers daily.

Stream engines, jet engineers and aeroplanes are all down to hard work from engineers, and it has allowed businesses to work smarter and faster than ever before. Improvements to travel have changed the way humans connect, opening trades for business and allowing us to literally travel to the other side of the planet in a mere 24 hours.

Visiting space may have been a mere dream in the past, but not anymore. The international space station is the largest and most complex science undertaking ever. It allows scientists and engineers from all over the planet to come together and conduct research that cannot be done elsewhere, finding answers to queries that have been unquestioned for years. The great thing is that engineering is continuing to affect society in a great and beneficial way.

Only rarely do engineers interact directly with society, free from any considerations of their ties with industry, and the products and services society see and sometimes associates with engineers are presented by industry. A couple of decades ago, London Winner wrote (winner 1995); "one might suppose that the technical professions offer greater latitude in dealing with the moral and political dimensions of technical choice. Indeed, the codes of engineering societies mention the higher purposes of serving humanity and the public good, while universities often offer special ethics courses for students majoring in science and engineering.

Engineering in respond to a societal purpose in the measure that such a purpose is well articulated. However, even if well-articulated, social purpose may be detrimental to society and human-kind in general. Engineering as a force of society, can and should intervene in correcting a social purpose it perceives as detrimental. Historically, this has been very difficult to do. Engineering has tended to respond to the social system in which it is embedded: in market economies, it has made unbridled consumerism possible, and in authoritarian regimes, it has provided the technological means that reinforce the power of the regime.

Many engineering developments of this century with immense impacts on our lives have not been accompanied by realistic engineering views of those impacts on the social fabric or the environment. An important point in looking at the social function of engineering is how society makes engineering possible, a complex feedback situation emerges.

The artefacts extend the power and reach of society and the individual. Society, in turn, through its organizations and demands, makes possible the development of complex artefacts and simulates their constant technical evolution and diffusion. Today, to talk about the impact of engineering on society is meaningless without also talking about the impact of society on engineering, and how it shapes the role of engineering.

Engineering affects virtually every aspect of our society and engages a substantial set of the population in carrying out engineer's plans and designs. It can best carry out its social purpose when it is involved in the formulation of the response to a social need, rather than just being called to provide a quick technological fix.

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Politics and Political Economy of Climate Change and COVID-19

Parvez Babul

To understand the politics and political economy of human-induced climate change you do not need to be a scientist or an environment expert. If you merely observe the greenhouse effect, global warming, pattern and frequency of disasters, even COVID-19, Coronavirus outbreak, floods, draught, and other calamities-you will easily realize the worst impacts of climate change. The industrialized countries, producing carbon dioxide, and greenhouse gas are responsible for the climate change, and global warming. Those rich, developed countries are responsible for the death of millions of people due to climate change and different disasters. And very unfortunately it would continue if the responsible countries and the global leaders do not tackle climate change together through perfectly integrated efforts soon globally.

Climate change has been making lives and livelihoods worst across the globe especially of least developed countries (LDCs), and developing countries including Bangladesh. And the coastal areas of Bangladesh are the most vulnerable due to climate change. Research shows that climate change negatively affects politics, economy, culture, society, community, and even individ-

ual. Women and children are always at risk and the most sufferers due to climate change and environmental degradation for being poor and marginalized. In Bangladesh, people of coastal districts are more at risk of climate change impacts.

POLITICAL ECONOMY OF CLIMATE CHANGE

According to the Wikipedia Foundation, "Political economy of climate change is an approach that applies the political economy thinking of collective or political processes to study the critical issues surrounding the decision-making on climate change.

The ever-increasing awareness and urgency of climate change have pressured scholars to explore a better understanding of the multiple actors and influencing factors that affect the climate change negotiation, and to seek more effective solutions to tackle climate change. Analyzing these extremely complex issues from a political economy perspective helps to explain the complex interactions between different stakeholders in response to climate change impacts and provides broader opportunities to achieve better implementation of climate change policies.

Now Climate Change is first and foremost a political issue that has become a widely believed fact. Before tackling the issue, it is important to determine how drastic the effects can be in order to address it in an appropriate manner. When dealing with climate change, the inhabitants of countries must see themselves as 'global citizens' rather than separate entities if any real long-term progress is to be made. In accordance with a global perspective, countries balance legislation regarding climate change in a way that benefits developing nations while refraining from discouraging developed nations from contributing to the effort.

Climate change and global warming have become one of the most pressing environmental concerns and the greatest global challenges in society today. As this issue continues to dominate the international agenda, researchers from different academic sectors have for long been devoting great efforts to explore effective solutions to climate change, with technologists and planners devising ways of mitigating and adapting to climate change, economists estimating the cost of climate change and the cost of tackling it; development experts exploring the impact of climate change on social services and public goods.

Further, the issue of climate change is facing various other challenges, such as the problem of elite-resource capture, the resource constraints in developing countries and the conflicts that frequently result from such constraints, which have often been less concerned and stressed in suggested solutions. In recognition of these problems, it is advocated that 'understanding the political economy of climate change is vital to tackling it", Wikipedia added.

So there are huge examples that climate change goes with the political economy. Climate change hits many sectors include agriculture,

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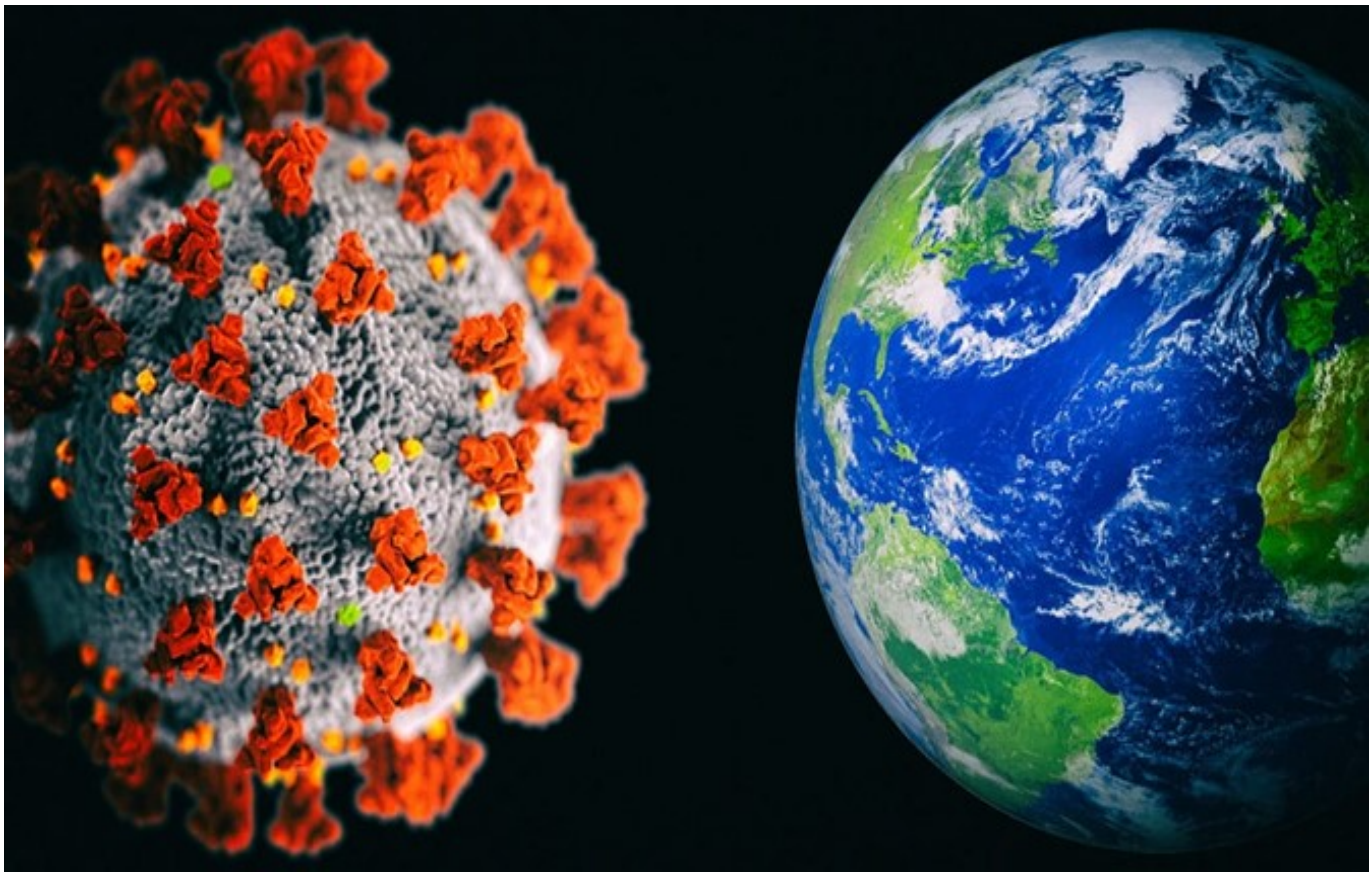
health, job market, migration, education, shelter, food and nutrition, biodiversity, ecology among others.

pacts."

Johann Dupuis of Swiss Graduate School of Public Administration opined in his story: Polit



POLITICS OF CLIMATE CHANGE

Matthew Paterson and Michael Grubb mentioned in their story the International Politics of Climate Change, "climate change became a major political issue during 1988. A series of scientific conferences during the 1980s built up a consensus that human emissions of carbon dioxide (CO_2) and other gases would lead a warming of the hearts' surface, with associated climatic changes that could produce substantial detrimental effects on human society. These possible effects include sea-level rise, changed rainfall and storm patterns, with consequent desertification, and flooding, agricultural migration, and perhaps other unpredicted im-

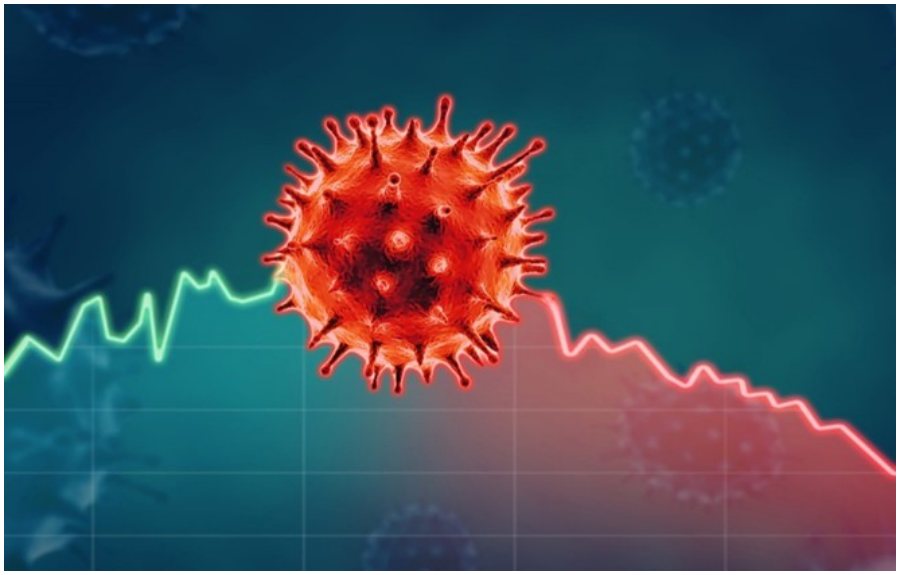
ical Barriers to Climate Change Adaptation that climate change effects are already observable in many parts of the world and, according to the Intergovernmental Panel on Climate Change (IPCC), a continuous rise in mean temperatures for the rest of the century is very likely unavoidable. As knowledge of the benefits of early adaptation and doubts about the future of the Kyoto protocol has grown, climate change adaptation has become an ever more prominent item on political agendas.

It is an established truth based on evidence that climate change is an undeniable political and pressing issue in the world. There is no unaffected country by climate change worldwide.

That's why for many reasons climate change is a global issue of politics.

EPIDEMICS OF COVID-19

Martha Henriques wrote for BBC on Historic epidemics of COID-19 that this is not the first time an epidemic has left its mark on atmospheric carbon dioxide levels. Throughout history, the spread of disease has been linked to lower emissions - even well before the industrial age.



Julia Pongratz, professor for physical geography and land use systems at the Department of Geography at the University of Munich, Germany, found that epidemics such as the Black Death in Europe in the 14th Century, and the epidemics of diseases such as smallpox brought to South America with the arrival of the Spanish conquistadors in the 16th Century, both left subtle marks on atmospheric CO2 levels, as Pongratz found by measuring tiny bubbles trapped in ancient ice cores.

Those changes were the result of the high death rates from disease and, in the case of the conquest of the Americas, from genocide. Other studies have found that these deaths meant that large tracts of previously cultivated land was abandoned, growing wild and sinking large quantities of CO2.

The impact from today's outbreak is not predicted to lead to anywhere near the same number of deaths, and it is unlikely to lead to widespread change in land use. Its environmental impacts are more akin to those of recent world events, such as the financial crash of 2008 and 2009. "Then, global emissions dropped immensely for a year," says Pongratz.

Professor Dr. Saleemul Huq, Director of the International Centre for Climate Change and Development (ICCCAD) at the Independent University Bangladesh recently mentioned in his piece that on the economic front, there has already been widespread disruption of the global economy, but some unintended benefits include a significant reduction in air pollution as well as greenhouse gases. While such economic disruption is not desirable and hopefully we will recover from it, it is worth thinking about whether the recovery can also be made in a much more environment friendly manner.

The final lesson has to do with the inevitable economic chaos and recession that is starting to happen already and will get a lot worse before it gets better. Bangladesh, with its globally linked

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economy, is likely to see significant negative impacts on manufacturing, exports and possibly even our own food production going forward. Hence, even though the worst is yet to come, we must prepare for the immediate economic downturn as well as think about the future path to recovery once the worst is over.

This applies both to the Bangladesh economy as well as the global economy and the silver lining in this Covid-19 pandemic, which is most relevant for tackling climate change, is the opportunity to rebuild the post-pandemic economy as an environment friendly green economy that doesn't simply repeat the destruction of nature and the spewing of greenhouse gases that the old economy used to do. Let us hope that both our national as well as global leaders are up to the challenge," Saleemul observed.

Therefore, considering many local, national, regional, and global issues climate change, environment, and COVID-19 are political, economic, cultural, social, and lives and livelihoods related issues that demand combating/tackling globally together accordingly. The climate change-affected countries must be united to be stronger through strengthening their global platform. And bring the parties for responsible climate change to make sure their accountabilities.

The rich countries always have a dominating, and avoiding attitude to the poor, LDCs, and developing countries. Global platform and events like Conference of the Parties (COP) of the UNFCCC and other international conferences should be the neutral, pro-poor gatherings to fulfil the demands and expectations. Bangladesh and other most vulnerable countries must be selective to nominate highly educated and experienced climate, environment and COVID-19 experts to negotiate perfectly joining the next international table of discussions so that they do not return homes empty hands.

So let us stay home today to save our lives, but let us go out tomorrow to tell the world leaders that stop climate change, combat COVID-19 together to save the planet and the lives and livelihoods of billions of people globally. Sooner and faster are the better to live, because we have no time to waste to prevent death.

Disaster Risk Reduction and Enhance Climate Services

Disaster risk reduction and enhancing climate services are very important issues to address both locally and regionally. There are many reasons that the disaster risk reduction and climate services issues need to handle through regional cooperation in South Asian region. Country to country exchange of data and views are now very essential and helpful for disaster risk reduction and enhancing climate services.

Contemporary human-induced climate change influences many hazards, exacerbating some and diminishing others. Climate change is, in effect, a potential hazard driver or a potential hazard reducer, rather than being a hazard itself. The complexities of the interactions between climate change and specific hazards in specific locations sometimes make attribution

and projections challenging.

The Intergovernmental Panel on Climate Change (IPCC) attempted to analyze links between climate change and hydro meteorological hazard trends and extremes. Few strong associations were found, with daily high temperature being the most prominent. Consequently, climate change's influence on disaster risk is much more on the hazard side than on the vulnerability side, affecting hazard parameters so that sometimes the hazard is exacerbated and sometimes the hazard is diminished.

Disaster risk, by definition, is a combination of hazard and vulnerability, with different approaches taken to combine the two parameters depending on the theory adopted or the practice being pursued. So, we should place climate change adaptation as one subset within disaster risk reduction and climate change mitigation as one subset within sustainable development.

Nepal-based regional knowledge development and learning centre International Centre for Integrated Mountain Development (ICIMOD) has been working on these issues regionally. Recently, ICIMOD, Bangladesh Water Development Board (BWDB), and Flood Forecasting and Warning Center (FFWC) jointly organized a regional workshop on SERVIR Hindu Kush Himalaya (HKH) Applied Science Projects in Dhaka.

I had the opportunity to join the event. Regarding the workshop, the background note mentioned that the ICIMOD is implementing the SERVIR Hindu Kush Himalaya (SERVIR-HKH) initiative. It supports the regional member countries in disaster risk reduction and enhancing climate services by integrating earth observation data and geospatial technologies into the development decision-making.

It's a joint development initiative of the United States Agency for International Development (USAID) and the National Aeronautics and Space Administration (NASA). SERVIR works in partnership with leading regional organizations world-wide to help developing countries use information provided by earth observation satellites and geospatial technologies on key thematic areas of food security, agriculture, land cover, land use change, ecosystems, water resources hydro-climatic disasters, weather, and climate services.

The discussants at the event expressed their views and shared that Bangladesh has 405 rivers, 57 rivers are transboundary. As these rivers traverse country boundaries there is no control over them and data sharing is limited and or controlled. The role of media is important in this regard to cover the issues.

For flood mapping, the question is: where are the highly vulnerable people are living? So, we must think: from where to start? Where is the end? What is our capacity? How to go ahead? How to ensure sustainability, among others priorities need to address. Regional cooperation is vital on Data sharing, and to work on other issues.

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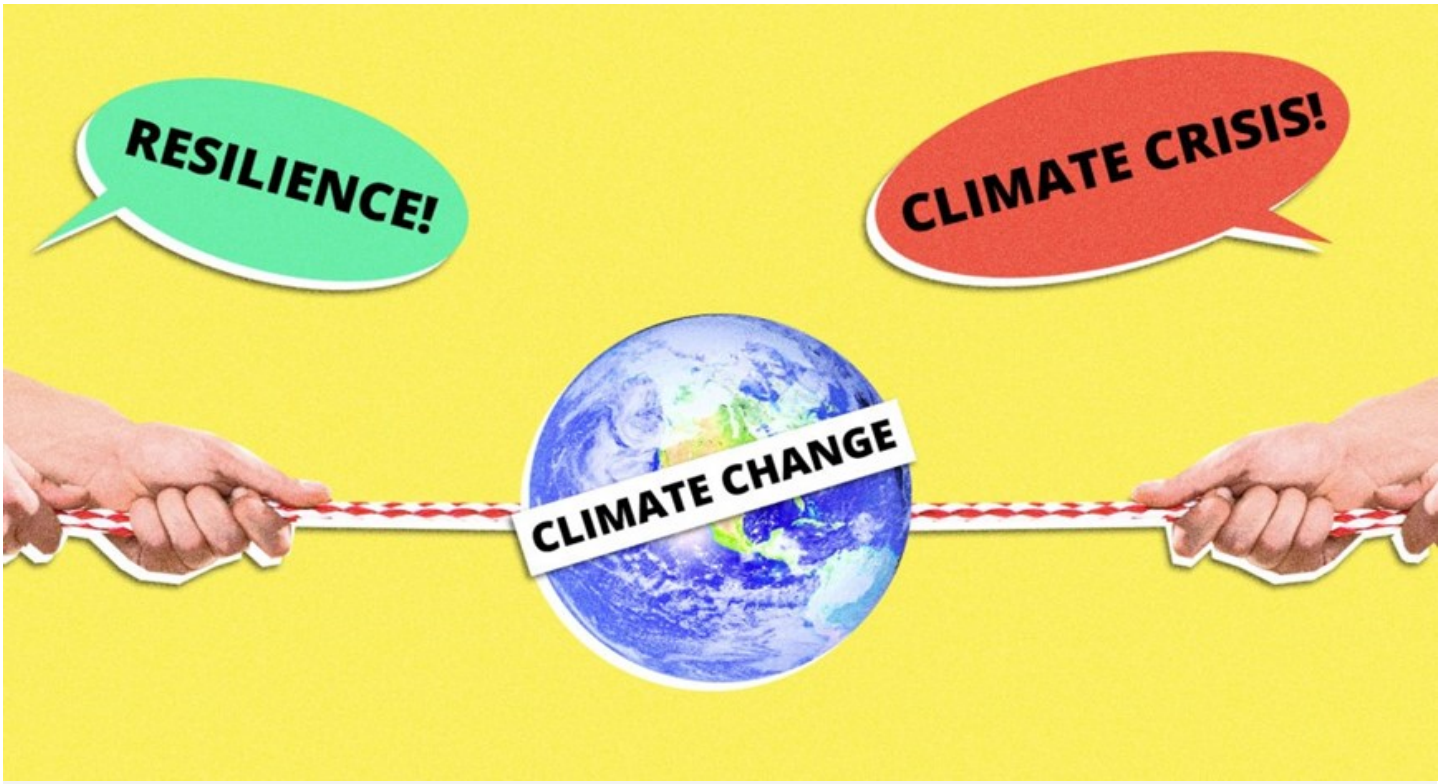

While we discussed the issue, Birendra Bajracharya, Regional Programme Manager, Mountain Environment Regional Information System, at ICIMOD said, "Through SERVIR we bridge research and science with development, connecting space to village. A unique partnership between top universities in the United States, USAID, NASA, ICIMOD and government agencies is in place. There is value-addition in working with experts in the regional member countries and international experts, where we get to share knowledge while learning from each other.

This workshop is the second in a line of events we have organized to fine tune our products to serve our partners better. We organized a similar workshop in Kathmandu, Nepal last year with participation by representatives from government agencies in Afghanistan, Bangladesh, Nepal and Pakistan. This workshop is timely, as Bangladesh and Nepal are currently facing the havocs of thunderstorms, and we are ahead of the incoming floods to fine tune our models."

Mohammad Shahabuddin, Additional Director General of BWDB was optimistic about the partnership with ICIMOD and shared that Bangladesh could benefit a lot from new tools and technologies developed by ICIMOD-NASA joint venture programmes especially in the field of water resource management and flood forecasting technologies. He added, "The new mobile app for flood forecasting and warning services developed with support from SERVIR-HKH at ICIMOD is indeed a milestone for dissemination of flood warning messages more to the community level."

Disaster risk reduction and climate services are interlinked. Disaster risk reduction aims to re-

duce the damage caused by natural hazards like earthquakes, floods, droughts and cyclones, through an ethic of prevention. Disasters often

follow natural hazards. A disaster's severity depends on how much impact a hazard has on society and the environment.

Information about climate, climate change, impacts on natural and human systems, mitigation and adaptation strategies are tailored to the specific user requirements. Climate service users include economic, administrative, political and scientific bodies, within and across sectors and disciplines. The capacity building of national technical services on extreme weather events analysis, the consolidation of a network among scientific, technical institutions to work on shared methodologies to create an objective and harmonized base of information. The aim is to transfer and share the know-how, to expand co-operation in sensitive areas to national, regional level to promote exchanges and collaboration through the application of research products and operational tools. It builds on existing initiatives that have proven to be successful at national level and intends to upscale them to larger geographic areas.

The science examines all climate changes irrespective of the cause of the change, while the international policy process considers anthropogenic climate change only. Both the IPCC and the UNFCCC agree that the human influence on the climate seems likely to push the planet into a climate regime that humanity has not before experienced.

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Ensuring Sustainable Development for Defending The Environment

Zannatul Mouwa Naz

The existence of a beautiful world cannot be imagined without considering the environment. The relationship between environment and development is not contradictory. The environment has a close relationship with development. If the country is not developed by protecting the environment, it will not be sustainable. For this, not only the government or development agencies should work, but every person in the society should work from their own position.

Moreover, Economic development is possible only by saving the environment.

Sustainable development is the development process that can be accelerated by preserving it safe for future generations. The government has taken special steps for this and said, "Bangladesh has implemented the MDGs with great success. With this in mind, the United Nations has formulated the Sustainable Development Goals (2015-2030). Besides, the government of Bangladesh has formulated the National Sustainable Development Strategy Paper (2010-2021) in 2013 and the present government is committed to implementing Vision 2041".

Sustainable development requires maintaining social and environmental balance with economic development. According to the study, 6 billion tons of natural resources were used in 2009. By 2050, 140 billion tons will be used, which will upset the balance of the world. Humans have lost 20 percent of arable land, 30 percent of forest land, and 10 percent of grazing land.

Due to housing and industrialization in Bangladesh, agricultural land is declining by 1 percent every year. Biodiversity is becoming extinct. More than half of the rivers are extinct. The rest is ruined by occupation. The desertification process has started in the north-western part of the country.

According to a World Bank report, Bangladesh is one of the countries most affected by pollution and environmental risks. Of the total number of deaths in Bangladesh every year, 28% are due to various diseases caused by environmental pollution. But the world average of such deaths is only 16 percent.

The level of pollution in urban areas of Bangladesh has reached alarming levels. In 2015, 70,000 people died in different cities in the country due to environmental pollution. According to a report released by the US Environmental Protection Agency (EPI) last year on the role of governments in protecting the environment in 180 countries around the world, Bangladesh's position has slipped 40 places to 189th position between 2010 and 2016. Burundi, a war-torn country in Africa, ranks 180th in the index. Bangladesh is one of the top 10 countries in terms of deforestation, air, water, and plastic-polythene pollution. The continuous deterioration of Bangladesh's position in the world in terms of environmental protection is a matter of great concern and panic for the common man. This is because women, children, and low-income marginalized people suffer the most from environmental pollution.

Polythene is an important issue in the environmental pollution in Bangladesh. The production and use of polythene bags were banned in 2002 to control soil and water pollution in the country. Bangladesh ranks

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tenth in the list of polythene pollution in the world. At the top of the list are China, Indonesia, and Vietnam.

According to a survey conducted in 2016, 65 lakh tons of plastic waste is deposited in the soil and water of Bangladesh. One of the reasons for waterlogging and soil pollution in different cities and villages of the country including the capital Dhaka is the illegal use of these polythene bags.

In a small and densely populated country like Bangladesh, it is very difficult to meet all the conditions of development and environment together. Mill waste is responsible for river pollution around Dhaka, the capital of Bangladesh. Air is being polluted due to brick kilns and black smoke from cars. Buriganga and Turag are being polluted due to tannery waste and polythene. Water is being polluted by killing the rivers around Dhaka.

We want fresh air for a habitable earth. So, we all have to work together.

There are six challenges to sustainable development. These are to create public participation and empowerment at all levels of development. To ensure the protection of economic, social, and environmental interests in the formulation and implementation of development policies. Creating skilled and creative manpower. Integrate wildlife conservation and land management outside protected areas. Creating a framework for policymakers. Creating a science-based database.

Sustainable use of energy is one of the conditions for sustainable development of the environment. It is not possible to move forward with development work without sustainable use of energy. The economy of the country will be protected as well as the individual will benefit if the use of energy is economical. It will also play a role in preventing global pollution. We need to increase the efficiency of our industries in the use of energy. Fuel-saving equipment needs to be increased. In doing so, it is important to ensure that the cost to entrepreneurs does not increase.

It is possible to address environmental risks due to climate change. The Climate Trust has been formed under the direction of the Prime Minister. 424 projects have been taken in this regard. Most of the projects are related to infrastructure. The world has come forward to address climate risks. As a result, it will be possible to do more to protect the environment.

Green nature needs to be created through extensive tree planting to improve the environment due to the changing climate. Only by creating eco-friendly

green nature is it possible to maintain the balance of the environment. To maintain the ecological balance of a country, at least 25% of the total land area should be forested. According to the Forest Department, 18 percent of the country's total land is forest land. According to the Food and Agriculture Organization of the United Nations, the forest cover in Bangladesh is 13 percent. According to a recent report by Global Forest Watch and the World Resource Institute, 332,000 acres of forest have been cleared in Bangladesh in the last six years.

The biggest obstacle to protect the country's forests is environmental pollution. According to the Ministry of Environment, Forests and Climate Change, 1 lakh 8 thousand acres of forest land has been allotted in the name of the government and non-government organizations since independence. But sustainable development of the environment is possible by planting trees. So along with industrial development, new forests have to be created. We have to raise public awareness in this regard.

The three components of sustainable development are environmental development, social development, and economic development. These three must be taken forward together. Excluding the environment, only economic development will hinder social development. Integrated planning is not taken. The plan that is taken is not adequately funded in implementation. The result is not sustainable development. It is not possible to carry out environmental protection activities properly with a small number of people in the Department of Environment. For this, individual owners as well as industry owners need to be aware.

If the environment survives, the country will survive, we will survive. The environment is being polluted due to our unconsciousness. The living space is shrinking. So, each of us must strive to fulfill our responsibilities. Everyone must come forward from their respective positions to protect the environment.

If everyone is not aware, there will not be much success in law enforcement alone. Law enforcement will be reduced if aware. If we work with positive feelings about the environment, the problems of the environment will be solved to a great extent. The media can play a special role in raising public awareness about the environment. We will be healthy if the environment is clean. So sustainable development is needed to protect the environment.

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Sustainable Food System for Sustainable Environment

Deapika paul

Each year, more than 10 million hectares of agricultural land are lost to degradation, much of it due to industrial farming. In agriculture, the concept of sustainability is applied toward the production of food or other plant or animal products using farming techniques and practices that help to conserve natural resources and have minimal impact on the environment. The world has never produced or consumed so much food. And yet it is one of the most troubling moments in the history of food. Gains in productivity have come at an enormous environmental cost. Agro-chemicals have polluted rivers and aquifers. Agriculture and land-use change account for around one-third of all greenhouse gas emissions. In the last century alone, we've lost three-quarters of the world's agricultural biodiversity. If that wasn't bad enough, roughly one-third of all food produced goes to waste.

At the same time, food consumption patterns are changing. The rising middle class is demanding more meat and processed foods are becoming more popular. Many parts of the world are experiencing a "triple-burden": the co-

existence of chronic hunger, malnutrition and over-nutrition. In the world's rapidly growing urban areas, these conditions often exist side by side.

"Sustainable food systems are those food systems that aim at achieving food and nutrition security and healthy diets while limiting negative environmental impacts and improving socio-economic welfare. Sustainable food systems are therefore protective and respectful of biodiversity and ecosystems, as well as human well-being and social equity. As such they provide culturally acceptable, economically fair, affordable, nutritionally adequate, safe and healthy foods in a way that balances agro-ecosystem integrity and social welfare."

Now, it is the example of sustainable food. Such, "Is it sustainable?" It's an increasingly important question to ask when it comes to agriculture and how we eat. Sustainable agriculture enables us to produce healthful food without compromising future generations' ability to do the same.

Sustainable eating is about choosing foods that are healthful to our environment and our bodies. According the 2019 EAT-Lancet commission on healthy diets from sustainable food systems, a global shift toward more plant-based foods including legumes (beans, peas, lentils, peanuts), whole grains, vegetables, fruits and nuts, and less animal-based foods, especially red meat and processed meat, will help feed the world's growing population a nutritious and sustainable diet. Limiting refined grains and added sugars is a smart move as well.

We need to eat sustainable food because:

Sustainable eating involves selecting foods that are healthy for our bodies and the environment.

This means foods that provide a balanced diet for the body but also facilitate the conservation of the environment. Our biodiversity is threatened with tropical forests are disappearing. Many plants and animals are endangered.

Eating foods that are grown locally improves the economy in our community. Choosing meat that is treated humanely results in healthy animals, a healthier environment and healthier people.

So, eat fresh, eat local and eat organic. Intensive food production harms the environment by depleting the soil and damaging marine ecosystem.

Overexploitation of natural resources has put food safety and the availability of drinking water at risk.

The global food system makes a significant contribution to climate changing greenhouse gas emissions

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with all stages in the supply chain, from agricultural production through processing, distribution, retailing, home food preparation and waste, playing a part. It also gives rise to other major environmental impacts, including biodiversity loss and water extraction and pollution. There are four type of limitations. These are as following:

Inadequate distribution of food:

Even with full access to markets, many people cannot buy food because they cannot afford the costs.

The root causes of poor distribution include the lack of infrastructure such as markets and transportation routes, unsustainable prices driven by corruption and waste, inefficiency in markets, and poverty.

Food waste:

One third food is thrown Food waste that ends up in landfills produces a large amount of methane – a more powerful greenhouse gas than even carbon dioxide. With agriculture accounting for 70 percent of the water used throughout the world, food waste also represents a great waste of freshwater and ground water resources.

Bad food habit:

Our food is rich in sugar, meat, fat and salt. Industrial meat is extremely harmful to the environment. Meat and beef production contributes to deforestation and the production of greenhouse gases (notably methane). Beef and lamb in particular are the most harmful meats in environmental terms. To choose a less polluting meat, patronize small farms, where the animals are raised in the open air and fed in pastures.

Sugar is among the crops most harmful to the planet. By replacing habitats rich in animal, plant and insect life, sugar plantations destroy the most biodiversity in the world. In addition to its intensive use of water and pesticides, the cultivation of sugarcane and sug-

ar beet also causes erosion.

Resources depletion:

Our natural sources are under pressure. Sources of fresh water are running dry and existing water resources are getting polluted.33% soils are degraded. Forests are decreasing.

All this might seem daunting, but as with anything, learning and changing slowly is key. We don't have to completely rethink our shopping list. Instead, we can make one or two changes each week or month. We can swap beef mince for veggie mince, choose fair trade coffee or have a go at reducing food waste at home. Educating ourselves is important too. Becoming a regular reader of sites like ours will help. Knowing what is and what isn't sustainable is the first step to leading a more sustainable lifestyle. The second step is using that knowledge to make more informed choices.

There are many ways that we can choose to eat and live more sustainably:

Reduce the amount of eating meat, fish. Animal agriculture is an industry with one of the largest carbon footprints. We don't have to go full on vegan, just reduce the amount of meat and dairy we eat and up the veggies!

Eating less meat and dairy means that you could spend a little extra on sustainably reared produce.

Choose to eat foods that are in season. Seasonal foods haven't had to be artificially ripened and are less likely to have come from overseas. Likewise, foods that have been produced locally have fewer air miles.

Reduce the amount of plastic that we use. Plastic only adds to the problems of sustainability as it's so energy intensive to make and recycle. And choose products that have been traded fairly.

Grow our own herbs, fruit and vegetables. Support our native wildlife and plant life, plant a bee friendly garden.

Our food system must be transformed each steps of the food systems. Production. Processing. Distribution. Consumption needs to be adjusted to ensure healthier food for our growing population and to reduce its environmental impacts. But it is also important to bring all the stockholder together. Government health authorities. Producers,Consumers,Business people to break down the silent thinking, examine all the points of view and work together to find the actions necessary to,

Produce differently: Reduce greenhouse gas emissions.

Eat differently: Decrease of overconsumption.

We all should participate in balanced diet and reducing food waste and shouldn't do any agricultural activities at the cost of environment.

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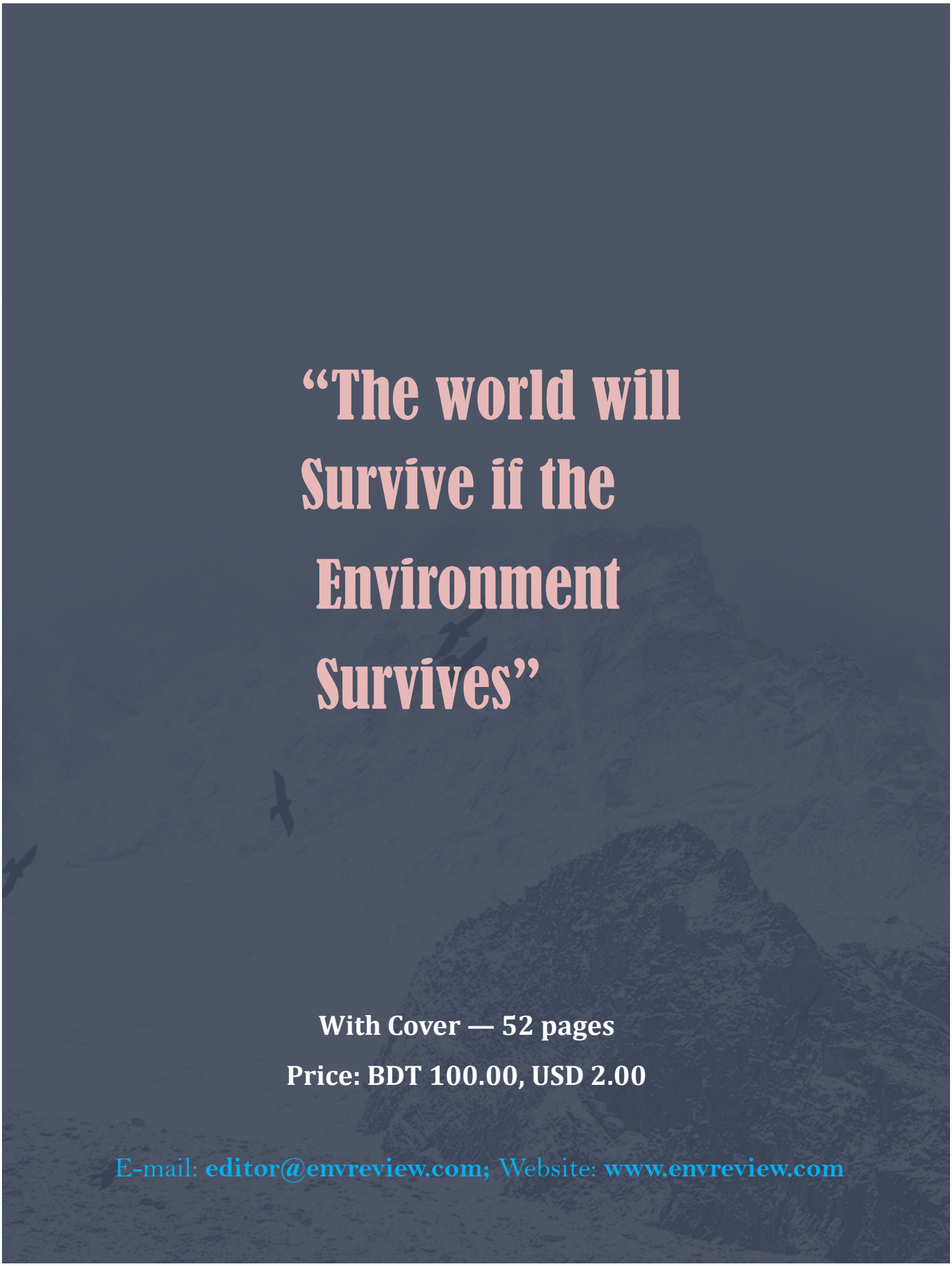

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