

GLOBAL WARMING AND THE PROGRAM OF “EXPANDING THE SHRINKING EARTH”.

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INTRODUCTION :

Global warming is the general term used to denote that “the Globe or the world is warming” i.e. it is getting hotter. Obviously it indicates that the temperature of the atmosphere around the earth is on increase. We find at least three prominent reasons for the earth get hotter. Firstly, the centre of the earth is extremely hot and considerable portion of this heat is being emitted through the volcanoes and cracks. Secondly, considerable portion of the sun’s radiation that fall on earth’s surface is absorbed by the earth. And thirdly, men are constantly creating heat through numerous activities by burning of fossil, atomic fusion etc.

At this point any intelligent person may raise the question, “In the early days the earth was so hot that no life could exist here. That hot earth slowly cooled down to reach the present state. By following the same natural rule it is expected that the earth would cool down further in future. In this situation, what compelled the earth to abandon its tradition of ‘gradual cooling’ and to adopt the new policy of ‘warming’ ? The answer to this question would make us to understand the various aspects of Global warming including its causes and effects.

GLOBAL WARMING :

Of the three sources of heat mentioned above, the first two sources, i.e. (i) Emission of heat from the centre and (ii) Absorption of Sun’s radiation by the globe existed since long ago. The third source, i.e. (iii) Generation of heat due to men’s activities of course is relatively new. In fact it initiated with the birth of civilization and is increasing with the increase of human activities. Science has taught us the truth that “energy is indestructible”. So, once generated the heat energy do not vanish. At times it only changes its form. The perception of heat may change when it is ‘diluted’. Let us take an example. When we build a fire, we feel tremendous heat near the source. This heat however, mixes with the cool air around and we do not feel it at a distance from the source. The common people may take it as “abolition or death of heat”. However, scientists know that this heat exist in the nature and help to increase the temperature, even though it may happen in minute quantity. If we go on constantly generating and adding heat to a medium in the above way, a time would come when we would start feeling it.

The earth is surrounded by a layer of air with about 1000 mile depth. The more we go up the cool we would feel. When we create heat, it rises up and dilutes in the vast expanse of cool air. The heat even reaches up to the outer surface of the air and escapes in the vast void. It is obvious

that in the earlier days the earth used to emit tremendous quantity of heat because its centre was extremely hot. That heat used to dissipate in the outer cool surface and thus helped the earth to become cooler. Since that time the rate of earth's emission has reduced by many times. What has increased by this time is the heat generated due to men's activities. In comparison with the earth's emission of heat, the heat generated due to men's activities is extremely low. So, the net findings are :

- (01) The earth is getting cooler because of the cooling of its core. Naturally it is expected to emit less and still less heat with time.
- (02) The quantity of the sun's radiation on the earth did not suffer from any significant change.
- (03) Human activities are creating additional heat, which however, is quite less in comparison with that of the sun or the earth.

The big question now is, how could this smaller quantity of heat cause global warming that the earlier heat could not do ? The answer is, it is not the man-made heat that has caused the real problem, rather it is the "heat-impenetrable layer that has been caused by black particles and gases, accelerated due to men's activities".

THE IMPENETRABLE LAYERS :

We have mentioned that heat generated from a source dissipates in the cooler media around it and that, if the heat gets a scope to dissipate in vast media then there will be no appreciable change in temperature. That also indicates that if the heat is trapped in a smaller volume, it would increase its temperature. We have the experience that in a cloudy summer day people suffer from hotness. The cloud resists sun's radiation from reaching the earth's surface. But still we feel hot because the heat radiated from the earth cannot escape because of cloud. Men's activities have created the following two layers very near to the earth's surface : (01) Green house gas layer and (02) Black-body particle layer.

(01) GREEN-HOUSE GAS LAYER : Glass has got a special property which is, it allows only one-way journey of heat energy. Utilizing this principle "Green-house" is constructed in the cool countries with glass in order to trap-in heat. Some of the gases escaping from the earth have formed a layer in the atmosphere and this layer acts exactly the way the glass acts. These gases are known as Green House gases. Notable green-house gases and other elements are : Ammonia, Hydrogen Sulfide, Oxides of Sulfur and Nitrogen, Oxides and other pollutants produced by industrial plants and motor vehicles, Ozone, Carbon Di-Oxide, Methane, Chloro-Fluoro Carbon (CFC), Water-vapor etc.

Warming takes place due to the layer of green-house gases in the following ways :

Step 01 : Sun's radiation passes through this layer and reaches the earth's surface.

Step 02 : Part of the sun's heat energy is absorbed by the earth and the rest is reflected back.

Step 03 : The emitted (say from volcanoes and cracks) and reflected heat from the earth cannot escape outward because of the layer of gas.

Consequence : Warming or increase of temperature of the environment below the layer.

(02) BLACK-BODY PARTICLE LAYER : Tons of black-body particles generated due to activities like burning of fossil fuel, emission from volcanoes, exhausts from vehicles, factories etc. escape from the earth and hover in the atmosphere. These black bodies act in the following two ways :

(01) The black-body particles create a layer in the atmosphere that retards entry of the sun's ray. The hot gases and smoke escaping out of the nozzles of the aero planes create a blackish layer in and around the airports. This effect created by the exhaust of the aero planes is known as Con-Tail effect.

(02) Whenever the black-body particles meet cloud in the sky, the tiny water-particles stick around those, make bigger bodies and lead to the creation of a more obstructive layer.

The sun's ray cannot pass through the above mentioned layers, as a consequence of which the earth below these layers suffer from less heat and light. This is known as "Global Dimming".

Global dimming has the following three major effects :

(01) Warming of the air immediately above the layer.

(02) Lowering of the temperature below the layer due to non-penetration of sun's ray. However, in case the earth emits excessive heat, then the temperature may increase because the heat cannot escape.

(03) No evaporation from the earth's surface below the layer.

Methane is formed by decomposition of organic substances in bogs and stomach of the grass-eating animals. One of the principle sources of Methane is the sea bed, where the decomposed sea weeds emit the same. Another notable source is paddy cultivation in wet-lands. The third notable source is the grass-eating animals including cows. Even though men have no control over the sea weeds or wild animals, their dependence of paddy cultivation and domesticated animals have accelerated one of the major sources.

EFFECTS OF WARMING AND DIMMING : The net effects of Global Warming and Dimming are the following :

- (01) Global Warming : Since the layer of green house gases spread in thick to fine layer all over the globe, it resists the outgoing heat and cause warming almost globally. Since air is sucked towards the earth in the north and south poles, the layer of gas is quite thick here. So, increased rate of warming is noticed in these regions. This warming is now causing the polar ice cap to melt.
- (02) Global Dimming : Global dimming do not take place equally all over the earth, but discretely. Its concentration is more near the sources of black-body particles and regions of concentration of clouds. Dimming causes local warming, cooling and less evaporation.

Thus we find the following major effects of Global warming and cooling : (01) Changes (i.e. Increase or Decrease) of Temperature, (02) Changes (i.e. Increase or Decrease) in rains, (03) Reduction of sunlight, (04) Increase of water in the oceans.

(01) CHANGES (I.E. INCREASE OR DECREASE) OF TEMPERATURE : Human being are extremely sensitive to temperature change. Out of an extremely large of temperature variation men feel comfort within an extremely small range, which is 15 to 30 Deg. Celsius. Men's clothing, working environment, living environment etc. in different regions have been designed to keep them comfortable in that range. Now this range changes the environment turns comfortable to them. It needs lots of energy to manipulate and take care of this change. Temperature changes causes rainfall and humidity also to change. Increase of temperature and humidity is directly related with diseases. Changes of temperature and humidity are related also with agricultural and animal growth. It is not possible to predict, who would be benefited and who would not be due to such changes without proper investigations. Even though some regions would be benefited, it is almost sure that most of the other regions would face catastrophe.

(02) CHANGES (I.E. INCREASE OR DECREASE) IN RAINS : We have discussed that one of the effect of dimming is less evaporation from the earth's surface. Since sun's ray cannot reach the water body or moist surface of the earth below there happens no evaporation, resulting in existence of more water in the sea and less rains from the cloud. The second effect is extremely harmful.

At present the huge black-body particles escaping from North America meet the vast layer of cloud that stay stationary over the Atlantic Ocean. The water particles accumulate around the black particles and create large-scale dimming. As a result there happens no evaporation of water. Earlier this cloud used to move over to the sub-Saharan African countries and emptied the water there. This one-time-a-year rain acted as the life-blood for the poor African people by helping their agricultural, animal and forestry production. Due to increasing rate of dimming, there

happened little or no rains during the last couple of years, resulting in draught and tremendous food shortage in Africa.

(03) PERMA-FROST HAZARD : When the environment including the land is considerably cold, the water below the surface of earth is permanently frozen. This earth act as strong foundation required for the construction of houses, factories, roads, railway lines etc. With the increase of temperature, the permanently frozen ice melts creating soil erosion, depression etc. This is known as Perma-frost hazard. It permanently spoils the land for habitation or other uses and increases water in the sea. At present this hazard is approaching from the North towards the south in Siberia at the rate of about 10 meters per year.

(04) REDUCTION OF SUNLIGHT : The reduction of sunlight by the opaque layer would create problem of visibility and affect growth of plants and trees.

(05) INCREASE OF WATER IN THE OCEANS : Probably this one is the worst effect of global warming and dimming. These two phenomenon effect the level sea water in the following ways :

- (a) Melting of polar and mountain ice cap : Little rise in temperature ensures comfort in the cold region and discomfort in the hot regions. The same however, causes the polar and mountain ice caps to melt. By this time ice over three hundred years old has been found to melt from the pick of the Himalayas and to expose the stony surface. Titanic size pieces of ice have been found to have been detached away from the polar agglomeration of ice and to float in the sea. Obviously these release huge water that would raise the level of water in the sea
- (b) Quicker melting of glacier : Even though melting of glacier happens in the natural process, increase in the atmospheric temperature accelerates the process.
- (c) Water from permanently frozen earth : Water released by the permanently-frozen earth in the polar and adjacent regions increases the level of water.
- (d) Lifting of less water from the ocean because of less evaporation : Dimming causes less water to be evaporated, which results in less rains and more water to stay behind in the ocean.
- (e) Deposit of less water on the surface because of less rains : Less rains would cause in arrest of less water in the depressions on the surface of the earth and mountain tops.

The net effect of the factors mentioned above is the rise of water level of the ocean, submerging of low-lying land and shrinkage of the usable dry land of the earth.

SHRINKING OF THE EARTH : The available land for use by human being is shrinking due to two major reasons. These are : (01) Submerging of dry land due to rise of sea water and (02) Spoiling of land due to perma-frost hazard. The experts have been opined that within the coming thirty years a considerable portion of Florida, USA, all of Maldives and southern part of Bangladesh will go under water. While most of the people living in these regions love to think “it won’t happen so” the ironic truth is, it must happen so, even though there may be little change in the time period. What makes the experts to become so become so sure ? Well, decades ago they predicted of melting ice caps and rise of water level, and now they are seeing those with bare eyes. In fact none of the factors responsible for making the sea-level rise has slowed down or stopped. So, when more and more is being added to the ocean and less and lesser of it is taken back to the sky, why should not the sea shore engulf the dry land ?

IS THERE ANY SOLUTION ? : We know the only solution to save the earth from gradual submerging is to stop global warming and dimming. And the means to stop it is to stop the causes behind warming and dimming. So, once again let us look at their causes. These are :

(i) Emission of green house gases, (ii) Emission of black body particles and (iii) Generation of heat energy.

(i) **EMISSION OF GREEN HOUSE GASES :** Of the green-house gases like Ammonia, Hydrogen Sulfide, Oxides of Sulfur and Nitrogen, Oxides and other pollutants produced by industrial plants and motor vehicles, Ozone, Carbon Di-Oxide, Methane, Chloro-Fluoro Carbon (CFC), Water-vapor etc., Methane and Carbon Di-Oxide are quite active and exist in bulk quantities. The principle sources of Methane are :

- (a) Decomposed sea-weeds at the sea-bed,
- (b) Wet-land cultivation of paddy and
- (c) Grass-eating animals.

It is not possible for men to stop emission of Methane gas from the sea bed. Even though it is theoretically possible to stop emission of the same by stopping wet-land cultivation of paddy and eliminating the grass-eating animals, is it at all possible to do that in the present context of the world ? It should be mentioned here that even though CFC gas and aerosol act as green house gas, these are extremely active in destroying the Ozone layer. Ozone layer destruction enhances many lethal diseases including cancer. For this reason, we often hear of banning of these two. However, the phenomenon of Ozone layer destruction is completely different from the global warming / dimming and hence out of our discussion.

(ii) **EMISSION OF BLACK BODY PARTICLES :** The principle sources of black body particles are the volcanic eruption, forest fire, burning of fossil fuel and exhausts from vehicles and factories.

Now men have absolutely no control over the volcanic eruption and very little control over forest or large scale fire. Theoretically, they have control over the burning of fossil fuel and subsequent exhausts from vehicles and factories. But would any sensible person think that it would be possible to keep this civilization running by stopping vehicles including planes and closing factories and industries ?

(iii) GENERATION OF HEAT ENERGY : The major sources of heat that helps in global warming are : (i) Sun's heat energy, (ii) Earth's emitted heat energy and (iii) Heat energy generated by men. All the three types of heat are trapped under the impenetrable layers and causes warming. Of these three sources men have absolutely no control over the first two. Even though they have control over the third one, i.e. Heat energy generated by men, neither its magnitude is large nor it is possible to stop it for the sake of the advancement of the civilization.

WHO IS RESPONSIBLE FOR ITS CREATION ? : What is ironically true in case of the responsibilities of various countries in contributing to this crisis is, the countries most responsible for causing this hazard may not at all be affected due to its ill effects. On the other hand the country who may not at all be responsible for the creation of the hazard may be the worst victim. The responsibilities of various countries in the creation of this hazard may roughly be categorized as follows :

- (a) North America : For producing (i) Carbon Di-oxide from vehicles, aero planes and factories, (ii) Large scale forest fire etc.
- (b) European countries : For producing Carbon Di-oxide from vehicles, aero planes and factories.
- (c) Asian countries like China, Korea, India, Bangladesh : For producing (i) Carbon Di-oxide from vehicles, aero planes and factories, (ii) Methane gas from boggy fields and domestic animals.
- (d) African countries : For producing (i) Carbon Di-oxide from vehicles, aero planes and factories, (ii) Methane gas from grass-eating animals.

In addition countries like Indonesia, Malaysia etc. often suffer from large scale forest fire. If we analyze the whole thing we may arrive at the three decisions :

- (01) Global warming and dimming is being caused mostly due to natural phenomenon's and its man-made component is insignificant.
- (02) It is not possible to stop the man-made activities behind the creation of this crisis.
- (03) No particular country or countries may be held responsible for the creation of this hazard.

But still we hear lots of proposals proposing new technologies and new fuels etc. as its solution. We have seen that both the developed and poor countries are equally responsible for the creation of this hazard. But still a group of experts accuse only the developed rich countries for it. They know, it is not possible for the developed countries to stop their vehicles and factories, nor for the poor countries to abandon paddy cultivation and keeping grass-eating animals. But they accuse only the rich developed countries. The only explanation behind their acts may be to have financial gain by applying pressure on them. Strangely they say nothing against the poor countries because they know these countries are in a position to pay them nothing.

It is obvious that global warming and dimming are extremely dangerous for the mankind of this world. Taking this scope some organizations have been found to make good 'business' by utilizing this sensitive issue. Some companies are after inventing engines and vehicles with less pollution and use 'global warming' as an excuse for their marketing their products. Even though new and superior inventions are always welcome and even though such engines and fuels at times help in ensuring cleaner environment, those have absolutely no positive effect on the deteriorating situation due to warming and dimming.

Let us cite an example from Bangladesh. Earlier auto-tempos using improvised type of engines were used in Dhaka city. Using the pollution those created in the city as an excuse, influential businessmen arranged to import auto-rickshaws using CNG (Compressed Natural Gas) and drove away the auto-tempos from Dhaka. According to them the effect of this change is : a neat and clean environment for the city. Even though the use of such vehicles has created enormous problem for the users in many ways, we shall keep our discussion limited within the perimeter of atmospheric pollution only. A careful analysis in this regard would reveal the following :

There was no improvement, but deterioration in the level of pollution. CNG auto rickshaw's also pollute the environment with green-house gas, even though this gas is not that much irritating to human being. As soon as the auto tempos moved to distant towns those started polluting the environment there, even though that was not that much perceivable. However, the net gain was, a further rise in the quantity of obnoxious gases which are now created collectively by huge number of CNG auto-rickshaw's in Dhaka city and the previous auto-tempos in the distant towns.

GLOBALIZATION AND GLOBAL WARMING/DIMMING : Even though Globalization has made advocated for the utilization of the exploitable wealth of the globe irrespective of territorial boundaries, the same has no program to solve the problem of the globe. Thus the rich countries do now expand their business including trading and manufacture in the poor developed countries and share the benefit. They however, take no responsibility to solve the problems of their

business partners. Thus, the scenic beauty and tourist attractions of Maldives are enjoyed by the rich countries, but no such country seem to have any headache for the country which is getting to be submerged within the coming one decade. Before the initiation of the concept of globalization the governments of various countries used to chalk out programs for the development and countries' safety. They used to take every care to ensure the long-time welfare of the country and their people. The concept of globalization has now given birth to a type of government weak in all aspects including policy making. In this concept the local and foreign private organizations, popularly known as 'multi-nationals' need to be allowed to do everything including tapping and exploitation of the country's exploitable resources in their own financial interest. It is natural that such companies do the same with complete disregard for the environment and welfare of the people. It is no wonder that the companies that invest money for profit would not take up programs in the way in which a national government would have done. With the expansion of the concept of globalization the developing countries have been seen to increasingly face problems in the field of over-utilization of resources (including fossil fuel) resulting in atmospheric pollution.

“EXPANDING THE SHRINKING EARTH” :

Since most of the factors causing global warming and dimming are beyond the control of men and the insignificant factors which are in the hand of men cannot be stopped for the sake of smooth running of the civilization, we can say, there is practically no direct solution of this problem. It is however possible to solve the problem indirectly. When advancing sea water is going to shrink the dry land, endeavors may be to expand land where ever possible by reclamation. The Netherlands has reclaimed considerable quantity of land from the sea. United Arab Emirate has created artificial islands (Palm Beach resort islands) in the ocean by sand filling. These islands are so big that after the great China wall those are the only man-made objects visible from the moon. These two examples prove that it is technically possible to reclaim land from the sea. Some of the continents of the world have wide continental shelves around. Those having shallow water may be taken up for reclamation.

As for the process of reclamation, the Netherlands constructed dam in the ocean and then pumped out water from inside. In case of Palm Beach project, they constructed solid rim around and then filled the inner space with earth from the desert. However, the countries who have such shallow land and adequate natural silt to fill the depression are fortunate. Fortunately Bangladesh, which is one of the worst victims of sea-water rise has got both the privileges. The country has a continental shelf with average width of 60 kilometers on its south. In addition billions of tons of silt from India pour in on this shelf to disappear beyond the steep continental slope. The huge land of the shelf would have risen above water only if some sort of barrier could have been created at the far end of the shelf.

If we can mean that globalization also means sharing of global problems and the victim countries agree to share the benefit of a project with the sponsoring multi-national companies, then it may be possible to see such a nearly imp[ossible problem solved. It should be mentioned here that neighboring West Bengal of India also has got these advantages. In the earlier days no single country could ever think of taking up a giant program of “Expanding the shrinking earth”. After the development globalization, however, it has been discovered that the multi-national firms can jointly form a force, for whom such a project may seem ‘tiny’.

CONCLUSION :

In the poor and developing countries Globalization is being increasingly looked at with confusion, mostly as a tool of the multi-national companies to squeeze valuable wealth from their lands. In order to pacify the probable outburst protest the multi-national companies spend huge sum in sponsoring mostly cultural activities. Through such activities they probably hope to enjoy the wide coverage of the medias. Definitely they achieve the same, even though no one is sure what positive and welfare role those activities play in the poor countries. We have mentioned a program, which we have named “expanding the shrinking world”. What is important in such program is, if the multinational companies share the benefit of such programs, the people of the countries where they work would find no reason to think of themselves as ‘exploited’, because in the case the firms in fact ‘created’ wealth that they later share with the poor countries.

Global warming is an extremely harmful phenomenon. People of the poor and developing countries look at the activities of the multi-national companies in their land as some sort of exploitation. The program of “Expanding the shrinking world” may altogether change the role of such firms and for genuine reasons, may help to create profound honor in the hearts of the poor countries.

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