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Can Energy into Mass Conversion Thwart Global Warming? An Opinion

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Abstract: Global warming is an inherent outcome of the existence of this solar system. Continuous conversion of mass into energy on the Sun's surface leads to the enhancement of total energy content of this solar system which subsequently results in the rise of temperature. Air pollution such as rise in the level of carbon dioxide and other greenhouse gases in atmosphere, accelerates this drift. Ideal approach to combat global warming would be converting the energy back into mass.

Index Terms - Global warming, nuclear energy, sunlight, solar system, megatrend, mass to energy, carbon dioxide, petrochemical, greenhouse gas.

I. INTRODUCTION

Socioeconomic trend, technological transformations, and adaptability are the pivotal aspects of modern life. There are ample megatrends and natural phenomena which are coupled with many small factors, drive these parameters. Global warming is one of such megatrends. It is defined as the rise in the average temperature on the Earth over time. In the USA, about 1.6 degree Celsius of temperature has gone up since 1895 and the most of it occurred after 1970 (1). Although this elevation in temperature appears to be miniscule and negligible, it has capability to disturb all equilibrium processes of the Earth.

The long-term effect of global warming is scary and might be unimaginable. Nation has been witnessing some of its harmful effects during past few years, for example, unexpected and uncontrolled natural calamities. While the entire scientist fraternity believes that greenhouse gases are the major crooks responsible for this issue, in this paper, it is claimed that the mass-energy equivalence is the utmost and fundamental cause instead. This proposal, for the first time ever, is derived by studying, articulating, and analyzing various literatures and expert's thoughts on the topic. The content herein also explicates the plausible antidote to curb global warming.

II. ORIGIN OF GLOBAL WARMING

Continuous transformation of mass into energy as per Einstein's iconic law $E = mc^2$ is the primary origin of global warming (2). Yet, this phenomenon is the fuel of existence of this entire solar system. Sunlight is the pivotal reason of creation and existence of life on the Earth as well. Mass gets converted into energy on the Sun's surface by means of certain fission and fusion reactions to generate nuclear energy. This energy reaches to the Earth and other planets in the form of sunlight. Because of these continuous nuclear reactions, temperature of the Sun's surface is maintained at about 6000 K. This reaction causes gradual diminishing of its weight over time. Physicists calculated the lifetime of the Sun from the current rate of weight loss. It is about 10000 bn years. Age of this solar system is about 5000 bn years. Therefore, approximately another 5000 bn years of lifetime is remaining for this solar system. After this time span, the Sun will vanish which will lead to the complete destruction and subsequent reforming of this entire solar system.

Since there is a continuous conversion of mass into energy in some place (the Sun's surface) of this solar system, rise in temperature is obvious. When mass is converted into energy, huge amount of heat (one form of energy) is produced. If a mass of one gram weight converts, it produces approximately 9×10^7 MW of energy. It is almost a bomb of one gram weight which is sufficient to destroy the entire city of Mumbai. The World witnessed such grim incidents in Hiroshima and Nagasaki in 1945 (the 2nd World war) after the famous and clandestine Manhattan project found its success (3).

The secondary origin of global warming is the human activities on the Earth which are inevitable and indispensable – this is pertaining to the gradual increase of content of carbon dioxide and other greenhouse gases in atmosphere. Carbon dioxide is one of the stable compounds of carbon atom, because of which all organic materials convert to this gas and tend to stay as it is forever, at the end of the carbon value chain.

III. GLOBAL WARMING INEVITABLE?

Technically, the ideal way to suppress global warming is the conversion of energy back into mass – the reverse transformation of Einstein's iconic theory. Thus, massive amount of energy will be drained away from the environment and stored on the Earth, as mass. This process has already been hypothesized (4). However, the concept has serious theoretical and practical challenges. If it is impossible to do this reverse process, this solar system will approach toward the high energy states. At the end, there will be a huge amount of energy present in the solar system along with some mass. In that case, global warming is indeed inevitable, theoretically. Nevertheless, further understanding is required in this field.

The law of thermodynamics states that total energy of the universe is constant. Thus, at some point of time in the far past, there was only energy present in the universe which converted into mass by some catastrophic phenomenon and a part of it resulted in this solar system what we observe today. This indicates that nature has the well cognizance of converting energy into mass. The pragmatic success of this process might create a new paradigm in science.

By means of this conversion (energy to mass), an immense amount of energy will be transformed into mass which on its own does not look like a very simple and conventional process. Even experts predict that although it is possible to convert photon into electron and positron, storing these particles as the rest mass is practically challenging. Thus, possibility of avoiding global warming is also mixed practically.

There is another fact which could save this solar system from overheating caused by global warming. If there are one or more adjacent star families which are cooler than this solar system, heat can dissipate out because of the temperature gradient. However, feasibility of such inter-star system heat transfer is a point of question.

IV. DESIRED TECHNOLOGICAL TRANSFORMATIONS

As depicted in the previous literatures, issue of global warming can be solved by working toward two directions. First, only those technologies should be innovated which have ability to withstand the warm environment in future. In that case, society must accept first that global warming will exist, and thus needs to follow the adaptation protocols. Contribution is needed from every industrial sector majorly, energy, chemicals, construction, transportation, and electronics. Several high-level activities such as plantation, sustainable development, circular economy, reduced emission, renewable resource etc have been already implemented to decelerate the rise of temperature. This set of technological transformations will teach how to survive even if global warming continues to affect the environment (5).

Second, instigate those new technologies which do not allow global warming on the Earth. Thus, a research area of converting energy back into mass should be created across institutions and organizations. Today, none of the process of the Earth converts energy back into mass. Instead, people do reverse (nuclear energy). However, if nation believes that the ideal way of fighting global warming is the draining away of energy from environment, current technologies must be transformed according to the nature's demand.

Another imperative aspect is the man-made cause of global warming. This issue can be largely solved by using carbon dioxide as the major feedstock in chemical industries instead of natural petrochemicals. However, sequestration of this gas is not as straightforward artificially as nature does the same through photosynthesis. Because, atmosphere contains this gas in ppm level. In 2019, global average of carbon dioxide in air was about 410 ppm. Therefore, new materials need to be designed and developed which has high selectivity towards carbon dioxide. Recently, one type of concrete was developed which gets cured by this gas (6).

Carbon dioxide is generated by every combustion engine, many chemical processes, and all living organisms. For example, moisture curable polyurethane resins react with water and it finally produces carbon dioxide as byproduct. However, none of the major chemical processes which are man-made, captures carbon dioxide of air and converts it into synthetic building blocks. Thus, it is highly desirable to develop a spontaneous chemical reaction, in which carbon dioxide will be a reactant and innocuous water could be byproduct. In addition, there are other solutions to the man-made causes such as biopolymers, which are slowly transforming the market, especially in the western countries. These polymers degrade in soil into the chemicals which are food for microorganisms, rather than forming carbon dioxide through incineration.

Sunlight is converted into the usable form of energy (electricity) such that it is not allowed to contribute to rise in temperature on the Earth, and, to minimize the use of fossil fuel. The Earth gets about five thousand times more energy from the Sun, of what it requires for its mankind to live. Even so, it uses only 3% of total energy demand provided by the Sun. This scenario must change for a quick turnaround.

CONCLUSIONS

A unique concept of transformation of energy back into mass is proposed and delineated herein along with the reduction of level of carbon dioxide in air, to eradicate global warming which will help funders to identify and endorse the relevant area of research. Currently, there is a paucity of such concepts in academics and industry.

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