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Why Biofuels Matter for Agriculture And Society

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Biofuels are no longer a hypothesis. They have become inevitable for developing countries like India that import fossil fuels. On World Biofuel Day, its a good time to consider the vital impact they will have on our agriculture sector as well as society.

“This earth, air, soil and water, we haven’t inherited from our ancestors but this is the debt we have taken on account from our next generation. It’s our responsibility to pass on this heritage to our future generations in the same way we received.”

– Mahatma Gandhi

These words of Gandhiji, are coming to my mind today on this occasion of the World Biofuel Day, who made the evolutionary approach of the human race making aware of the reality. After Gandhiji, the fourth generation has now ridden on the chariot of development of India. In this post-independence migration, we are experiencing great transition and radical change. But, while enjoying these fruits of development, we are unknowingly sowing the seeds of destruction for future generations, already resulted in global warming. It would be inevitable now to put into practicing the idea

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of handing over the heritage received from the Mother Earth to the coming generations at least in the same intact form.

Every year on the 10th of August, World Biofuel Day is celebrated. On the same day in 1893, Rudolf Diesel had begun model testing of engines running on liquid fuels, groundnut oil, instead of steam-power. Later, after the Second World War, due to an increased private vehicles usage and the availability of fossil fuels, Biofuel production efforts were lagged behind. After the fuel crisis in the seventies of this century, Brazil and America re-started efforts and initiated ethanol production using the basis of sugarcane and maize crops.

Their success made other nations, to take steps towards bringing this thought forward in practice. Pollution by fossil fuels and global warming are the main reasons which have made the proposition of production of alternative fuel predominant in 21st century. The Royal Society of London, in one of its research amendments published in 2020, has said that the rise in Greenhouse gas emission, the root cause for the global warming, is due to the high outflow from the vehicle emission. In 2018, due to usage of vehicle fuels, in the world, 96.3% of the share was from fossil fuels. Out of the total greenhouse gas emissions in the world, 15% and 23% of the emissions are due to the usage of vehicles, alone.

The dependency on fossil fuel is inexorable and its consequences are graver. Due to the ignition of fuels, the percentage of air pollutants such as carbon dioxide, ozone, sulfate, formaldehyde and benzene is increased in the air. Asthma, pneumonia, pleurisy, sore-throat, burning of the eyes, digestive disorders, brain disorders, cancer, inefficient functioning of organs resulting in fatal diseases can be the result due to this pollution.

On one hand, fossil fuels are causing pollution, and, on the other hand, burning of Biomass, such as crop residue and squandered crops, are promoting the rise in pollution. A survey says, burning of one ton straw results in loss of the nutritional components such as 5.5 kg of Nitrogen, 2.3 kg of Phosphorus, 25 kg of Potassium and more than 1 kg of Sulphur which improve the fertilizing power of the agro fields. Instead of burning the crop residue can be used for production of Advance biofuel such as 2nd generation biofuel.

Agriculture and allied production directly get harmed by pollution and we can see the research amendments from all over the world. Professor Piona Marshall, Department of Environment and Development, University of Sussex, England, says, "due to increased global temperature, there is increase in amount of ozone in the form of trioxygen, found highly at the places having high temperatures and vehicular pollution. Pollution creating industries are shifted and relocated outside the cities, usually near agricultural areas. This has direct effect on the crop production."

In 2030, there is possible rise in the crop residue like straw by 1.5% than in 2010. "In 2010, this stubble was about 55.6 Crore tons and in 2030, will rise to 86.8 Crore tons," the International Council on Clean Transportation (ICCT) has said in a research exercise, "The Future of Biofuel in India", published in December 2019. According to their findings, by 2030, India will have 7.1 Crore tons of agricultural crop residue like straw will be available for Biofuel production. By keeping the required percentage of straw to maintain soil organic health and utilization the surplus for biofuel and other related applications will maintain the soil fertility.

The alternative sources can also be corroborated for the production of biofuels from planting of energy crops on non-cultivated land, using animal dung, wasted cooking oil, solid waste within the municipal limits.

Production biofuels by utilizing above listed carbon sources is better solution than burning of crop residues in the field. Accordingly, MoPNG has guided the Oil marketing companies to set up Twelve 2nd generation bioethanol projects. In phase one five projects are being set up in Punjab, Haryana, Orissa, Karnataka and Assam. Here, using around 5 lakh tons of agricultural stubble, 11 Crore tons of 2nd generation bioethanol will be produced and used for blending in gasoline.

Another scheme of MoPNG called SATAT, under which 5000 CBG plants are going to be set up across India and this will replace existing CNG consumption in transport. The CBG will be procured by Oil marketing companies at the rate of INR 46/kg. Also, MNRE, GoI is providing a grant up to INR 10 Crore to attract investors and entrepreneurs to set up CBG projects in India. Bioethanol from agricultural crop residue and CBG from pressmud, crop residue and animal wastes are considered as the advance biofuels. By product from the process of production CBG is better organic manure and will boost the organic farming.

Most of the nations in the world are inescapably dependent for fuel. With the help of these unconventional, bio-based energy production alternatives, these nations can be empowered. Biofuels, being studied around the world, are more effective in preventing the environmental damage than the fossil fuels. They also result in rural employment generation and increase in farmers' income. A research published last year by the Royal Society of London says, the plantation should be done in additional fields as the 2nd generation ethanol has more potential to prevent environmental damage than the 1st Gen ethanol. Therefore, the usage of Biofuel, an effective means of sustainable development is now a necessity.

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