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Utilisation of Biofuels to Reduce the Impact of Air Pollutants

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Abstract

Biofuel has recommended alternative uses of petroleum and diesel to reduce air pollution from the environment. The utilization of biofuel has used renewable energies such as solar energy, ocean, biomass, and others that reduce the risks to the environment. This research study conducted a secondary data collection method to analyse the impact of biofuel utilization to reduce air pollutants. In the present time, most of the country has taken this strategy to use biofuel. The utilization of biofuel has provided sustainability to the use of fuels. Moreover, this strategy has helped to increase oxygen levels in the air. In this regard, biofuel utilization has reduced Green House Gas (GHG) emissions and other air pollutants in the air and also helped to improve air quality.

Keywords

Biodiesel, Biomass, Green House Gas (GHG).

INTRODUCTION

Biofuel refers to the alternative use of diesel fuel that provides ***hydrogen, clean-up oil, and cooking oil*** as well. In the present time, air pollution has increased rapidly through the use of fuels in vehicles. In this regard, the utilization of biofuels has helped to reduce air pollutants in the environment. The vehicles use gasoline that creates pollution in the air and increases the emission of ***SO2 (Sulphur dioxide), CO2 (Carbon dioxide), NOX (nitrogen oxides),*** and ***CO (Carbon monoxide)***. This research has analysed the impact of biofuels utilization to reduce air pollutants through effective methodological uses.

Describe the utilization of biofuels

Petroleum and diesel negatively affected the environment through disruption of ecological habitat and high emission of greenhouse gas (GHG). Petroleum has been used mainly in the industries and engines of vehicles. Along with that, petroleum has been displaced with biofuels to reduce the pollution level and environmental harm. According to [5]. (2018), these fuels have increased the pollution level of the environment. In pollution of the environment, air pollution is one of the most effective environmental impacts that decline air quality and harm the people as well. Petroleum, diesel, and other fuel have increased the pollutant such as CO2, NOX, CO, SO2. This pollutant has damaged human health including various types of disease (***Cancer, Cardiovascular, Respiratory irritation,*** and others).

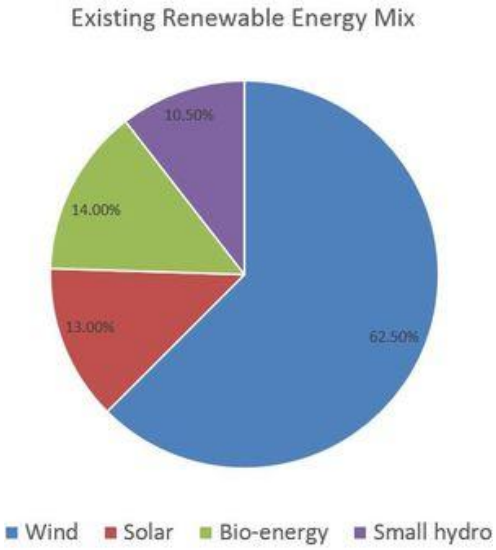

Figure 1: Uses of renewable energy in biofuel production (Source: [10], 2018)

In this regard, biofuel is the most effective process that can reduce the air pollution rate and improve human health problems. One of the most effective aspects of biofuel is the use of renewable energy. Petroleum and diesel is non-renewable energy and for this reason, renewable eco-friendly energy can reduce air pollutant and improve environmental conditions ([10] 2018). Along with the utilization of biofuel, in the present time, energy has been generated from ***sunlight, wind, ocean, biomass, and geothermal resources***. At present, the government has taken the initiative to produce energy through the renewal of environmental components to reduce the use of fuels and improve environmental conditions.

Importance of biofuels utilization to reduce air pollutant

In the present time, air pollution is the most common phenomenon that negatively impacts the environment. In this

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regard, fossil fuel is the most significant element that increases air pollution in the environment. In the environment, the burning of fossil fuels has produced ***21.3 billion tonnes of CO2*** ([8]. 2019). In this regard, the government has taken the approach of using biofuels to reduce risk to the environment. Along with that, in the present time, most of the country has used biofuel production to reduce air pollution from the environment. Nowadays, biofuel production was excised ***4 billion*** worldwide to improve air quality. The use of biofuels has provided benefits to the country economically. Worldwide, ***95% of transportation*** has used biofuel and has provided the strategy to use renewable energy in transportation and reduce the cost of transportation ([8]. 2019).

Table 1: Emission of air pollutants through the burning of fossil fuels

Pollutant	Emission (%)		Emission (g/km)	
	10% ethanol	15 % ethanol	22% ethanol	100 % ethanol
Particulate matter	27	41	0.08	0.02
NOx	4	5	0.45	0.34
Carbon monoxide	20	27	0.76	0.65
Unburned hydrocarbons	-	-	0.004	0.02
Sulfur dioxide	-	-	0.064	0.0

(Source: [8] 2019)

In the use of biofuel green energy is another most effective strategy that impacts the environment significantly. Green energy is produced from natural sources and it does not harm the environment as well. In the present time, to reduce air pollution, green energy is the most important strategy that also ***reduces the cost of energy***. On the other hand, another most effective benefit of green energy is that it can be produced locally. In this regard, biofuel has provided economic benefits to the country. Moreover, another most effective facility of biofuel is ***sustainability*** ([2] 2019). Biofuel has used renewable energy to produce energy, for this reason, this fuel has sustained more than fossil fuels.

METHOD AND MATERIALS

The methodology is the most significant aspect of a research study that increases the relevance of the study through finding proper results. Research methodology is the way that helps to find proper techniques to find the result of the study. In research methodology data collection is one of the most significant parts that have increased the accuracy of the study. Data collection techniques have been divided into two parts one is the primary data collection method and another one is the secondary data collection method ([9]. 2018). The primary data collection method has used mainly case study-based research and secondary data collection is based on online sources. This research study conducted a ***secondary qualitative data collection method*** to find the accurate result of this study. The secondary data collection method has two types: one is quantitative data collection method and another one is qualitative data collection method.

The qualitative data collection method is based on numerical form and the qualitative data collection method refers to descriptive research. This research study has chosen a secondary qualitative data collection method ([6]. 2018). According to the secondary data collection method, the researcher has selected ***thematic analysis*** from online articles, journals, and books. This qualitative research has helped to understand the importance of the research and represent proper findings of the study.

ANALYSIS AND EVALUATION

Thematic analysis

Effect of biofuels utilization on the environment

Climate change has impacted significantly on the environment and harms the people. In climate change, the most significant part is air pollution. The main reason for air pollution is burning fossil fuels. At present, air pollution has increased greenhouse gas emissions through the use of petroleum and diesel in vehicle engines. In this regard, the biofuel strategy has helped to reduce greenhouse gas through land-use change. The conversion of peatlands, rainforests, and savanna lands has reduced the greenhouse balance annually by replacing fossil fuels with carbon ([4]. 2018). On the other hand, another most effective reason for carbon emission is agriculture. In the present time, agriculture has used different types of machines and pesticides that increase CO2 in the air. In this regard, biofuel has provided sustainable practices of agriculture through the use of natural elements that did not harm the environment.

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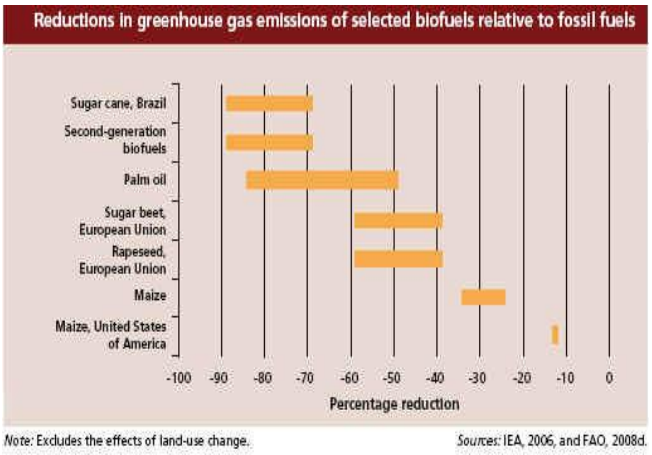

Figure 2: Reduction of agricultural pollutants (Source: [4]. 2018)

Biofuel has provided subsidiaries in agricultural practices to improve air quality practices. On the other hand, in the present time, biofuel production has used different types of technologies to reduce pollutants from the air. In biofuel production tailpipe is the most effective aspect that helps to reduce air pollutants from the environment. Tailpipe has helped to increase evaporation emission from vehicles in the air and reduce air pollutant rate. On the other hand, this strategy has reduced ***90% CO emission, 68% VOC, 22% primary PM,*** and ***13% NH3*** ([3] 2017). In biofuel utilization, the most effective aspect is the use of renewable energy that can reduce air pollutants significantly. Renewable fuels have impacted the emissions of hydrocarbons, nitrogen oxides, acetaldehyde, and ethanol. Renewable energies are eco-friendly gases that help to reduce air pollutants effectively. Moreover, this energy has affected the environment positively and improved the condition of the environment.

Analysis benefits of biofuel utilization to reduce air pollutant

The major reason to support biofuels is to reduce air pollution rate and improve atmosphere quality. In the present time, increasing industrial activity and vehicles has increased pollution levels in the environment. In the words of [1] (2018), along with that, greenhouse emissions have increased rapidly. In this regard, biofuel has helped to reduce air pollution and also improved human health. The ***Environmental Protection Agency (EPA)*** has suggested some biofuels to reduce the pollution of the environment. In this regard, some different types of renewable biofuels are ***conventional biofuels, cellulosic biofuels, biomass-based diesel,*** and others ([7]. 2019). These biofuels have helped to reduce air pollution and improved the environmental condition. On the other hand m, another most effective impact of biofuel is sustainability. In the past decades, fossil fuels have affected the climate negatively and increased air pollution drastically. In this regard, biofuel has fused concerns about greenhouse gas emissions and improved air quality.

Biodiesel has replaced petroleum and increased the percentage of oxygen in the air. In the past decades, petroleum and diesel have reduced the oxygen level in the air and increased other harmful air pollutants. In this regard, renewable biofuel has increased the percentage of oxygen by roughly ***11%*** by weight. On the other hand, petroleum and diesel have consented to the high energy of ***130,000 BTU per gallon***. Therefore, Biodiesel contains less ***than 6-7%*** such as***121, 000 BTU per gallon*** and renewable biodiesel such as ***122,000 per gallon*** ([1] 2018). Green energy has helped to reduce air pollution. On the other hand, biofuel has helped to reduce human health diseases that affected humans negatively. In the present time, the use of renewable energy has increased the sustainability of biofuels. Moreover, biofuels have focused on eco-friendly elements that can reduce the cost of fuels.

CONCLUSION AND RECOMMENDATION

Conclusion

After all these discussions it can be concluded that biofuels are the most effective strategy to reduce air pollutants from the environment. In the past decades, air pollution has increased rapidly through the use of fossil fuels because burning fossil fuels has increased CO2 emissions in the air. Along with that, the utilization of biofuels has focused on reducing GHG emissions through the use of renewable energies. In biofuel production, the use of renewable energy and green energy has increased the sustainability of fuels. On the other hand, biofuels have increased the oxygen level in the air to improve the environmental condition and also reduce human disease.

Recommendations

Biofuel utilization has impacted the environment positively by reducing air pollution from the environment. In the past decades, air pollution has increased and people have faced different diseases. Along with that biofuel has improved the air quality and pollution but it needs to improve its technological uses to produce more biofuel. On the other hand, to improve the air quality and environmental conditions, we need to examine the air pollution rate regionally and according to the examination, we need to utilize biofuel. Moreover, the utilization of biofuel has to be taken globally so that it can be impacted significantly to reduce air pollution.

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