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### RESEARCH ARTICLE

#### INDUSTRIALIZED ANIMAL AGRICULTURE IS THE LEADING CAUSE OF GLOBAL WARMING LITERATURE REVIEW

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#### Abstract

Climate change is now been witnessed all around the globe. The environmentalist was aware of this term and the consequences, yet they were not expecting it to show results in 21<sup>st</sup> century. The unprecedented rains, droughts, hurricanes, floods are happening frequently and this is making global citizen to know the causes of this occurrences. Due to this, the term climate change and global warming hit the various strata of the society. The educated and uneducated both are been made aware of the related terms through print media and social platforms as they are facing the consequences. The evidence of records through satellite images and meteorological data proves that climate change is not a myth and it is evident through the data. This research article is focused on finding out the major factor contributing to the climate change. Factors such as burning of fossil fuels, deforestation, farming, animal farming, etc. of all these factors which is the leading cause can be determined through the literature review in this paper. In this literature study it was also noticed that nobody emphasized on industrialized animal agriculture as the cause of green house gases. This study came to conclusion that the industrialized animal agriculture is the leading cause of global warming.

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#### Introduction:-

##### What is Global warming and how it drives climate change?

Global warming can be explained as heat received from sun by the earth atmosphere is not been radiated from earth surface in the outer space but rather trapped in the earth atmosphere. This result in increased average temperature of earth's atmosphere which have its own consequences. This trapping of heat due to release of other gases is called as greenhouse gases(GHGS). The gases such as CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, etc. are responsible for GHGS. The burning of fossil fuel, deforestation and other such activities which releases these gases are the leading cause of global warming. The trapping of these gases results in increase of average earth temperature and this leads to warming of earth surface and ocean surface. The consequences of increase in this surface temperature are melting of glaciers which result in rise in sea level. The mixing of fresh water in ocean causes the ratio of salt to dilute this affects the warm and cold air current. The imbalance in the air current and wind speed result in hurricanes, typhoons, unseasonal rains and droughts.

The records states in 1812 the human population on earth was 1 billion, in 1912 it was 1.5 billion and then in 2012 7 billion. This sudden explosion of population in last century is alarming. The nos. are far worse when the humans

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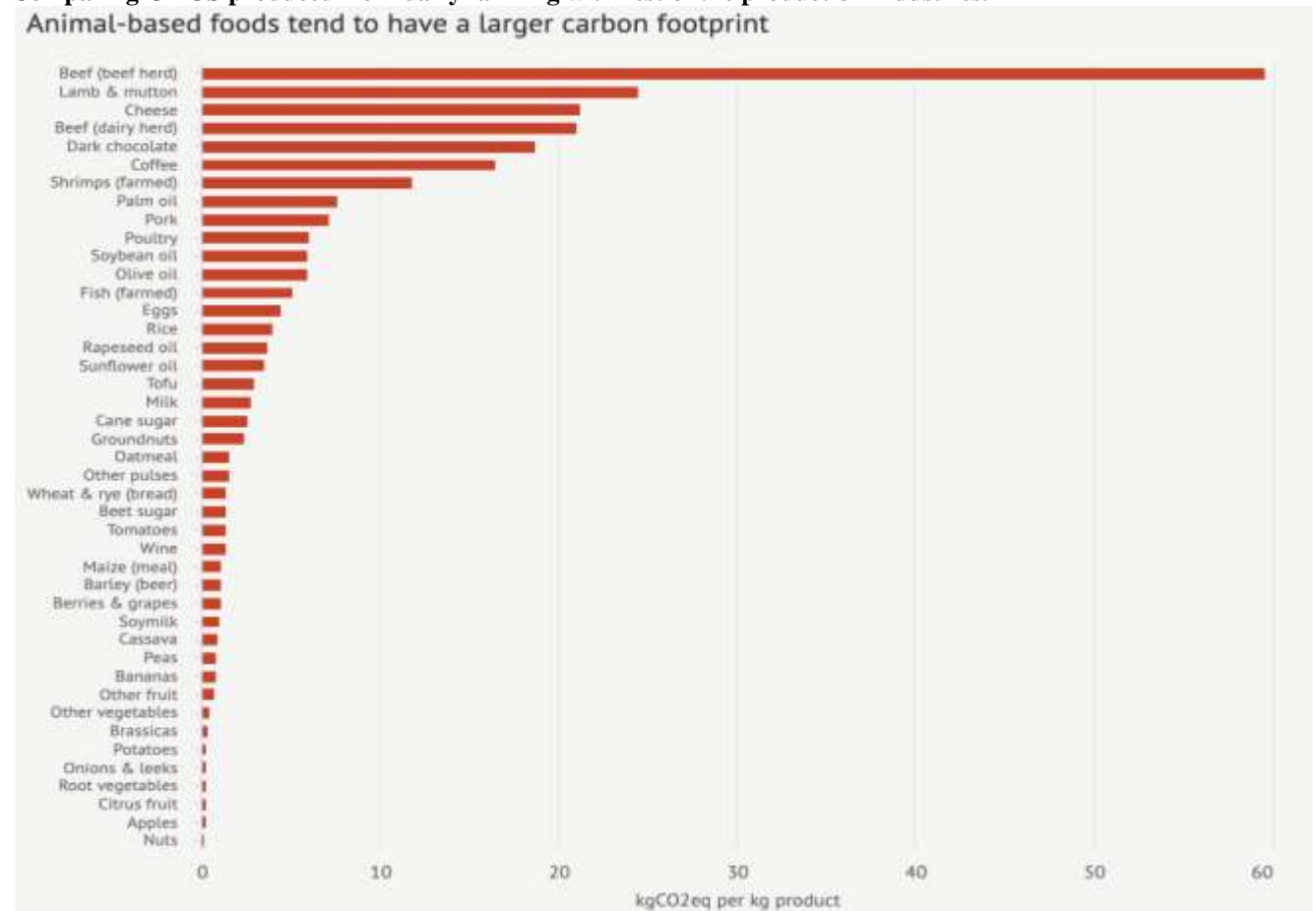
raise world's 70 billion farm animals. The human population drinks 5.2 billion gallons of water every day and 21 billion pounds of food and if you compare these nos. to animal population than 45 billion gallons and 135 billion pounds of food is been consumed by farm animals.(Kuhn, 2014).

**Greenhouse gases (GHGS)**

Scientist term CO<sub>2</sub> i.e., carbon dioxide is the most common and leading GHGS. Methane i.e., CH<sub>4</sub> is another greenhouse gas which is 28-36 times as warming as CO<sub>2</sub> in upper atmosphere of earth. Nitrous oxide i.e., N<sub>2</sub>O is byproduct of fertilizer production or its usage. Black carbon is the produced as the result of incomplete combustion of any fossil fuel, biomass and biofuels. These particles are so small ranging from PM<sub>10</sub>-PM<sub>2.5</sub>. Black carbon is emitted from chimneys and fire and remain in the atmosphere. They absorb sun's heat million times effectively than CO<sub>2</sub>. These particles are than blown away by the winds and get deposited on glaciers and snow mountains which result in melting of snow. Scientist consider black carbon is the second biggest contributor of GHGS after CO<sub>2</sub>.

Apart from burning of fossil fuels, agriculture practices such as farming, feed production, chemical intensive food production, as well as deforestation with the intention of increasing cultivated lands are the leading causes of black carbon formation. Food production contributes to 35% of GHGS, of which 57% is produced through dairy and meat production and only 29% produced through plant-based production. This data accounts all stages of food production from land getting cleared for cultivation, growing of food, emissions released during processing and transporting food. The land which is made clear for cattle to feed or grow animal feed releases large amount of CO<sub>2</sub> in the atmosphere. Cattle, sheep and goat releases considerable methane in the atmosphere during digestion process. The manure releases nitrous oxide. Rice production also causes methane to be released due to the anerobic bacteria thriving in the flooded paddy fields.(Khanna, 2021).

**Comparing GHGS produced from dairy farming with rest of the production industries.**



**Figure 1:-** Greenhouse gas emissions per kilogram for different food groups. Adapted from Dr Hannah Ritchie/Our World in Data (2020) Data source: Poore & Nemecek (2018). Chart by Carbon Brief using High charts.

Restricting meat and dairy consumption can alone reduce 75% of land parcel from agriculture spread, which is equivalent to the land area covering U.S., Australia, Europe Union and China. The creation of pasture lands for animal grazing is the real cause of extinction of wild life from forest areas. Though meat and dairy products provide 18% calorie and 37% protein yet there are consequences which cannot be ignored such as utilizing 83% of farmland and production of 60% of agricultural GHGS. Methane gas is 86 times extremely harmful gas to environment than carbon dioxide from vehicles.(Kuhn, 2014).

Joseph Poore, at the University of Oxford, UK, states that “A vegan diet is the single biggest way to reduce your impact on planet earth, not just greenhouse gases, but global acidification, eutrophication, land use and water use. It is far better than cutting down on your flights or buying an electric car. Avoiding consumption of animal products delivers far better environmental benefits than buying sustainable dairy products and meat.”(Carrington, 2018).

Out of the total food production emissions, beef production was the main contributor with 25% contribution followed by cow milk, pork and chicken. In vegan food, rice production contribution was 12% of the emissions. As per the regions, South and South East Asia was the major contributor to GHGS in food production with major stake in rice production and these are the only region which was non primary meat producing regions. Among countries, China, India and Indonesia were the highest emission producing countries due to plant-based food production. In terms of meat production emissions, South America produces beef at large scale followed by North America and Europe.(Thompson, 2021).

Raising and culling of animals for human food has lot more negative impact than that of growing and processing vegetables and fruit for humans to eat. A research study indicates, meat production is in so much demand that for every human there are three chickens on the earth.(Milman, 21)

Tropical forest absorbs carbon emission and by uprooting them through deforestation produces 8% of annual global GHGS. Figure 1 illustrates apart from meat production; controlled prawn farming is also significant GHGS contributor. The reason is industrial scale aquaculture. Aquaculture often requires mangroves to be cut which then released CO<sub>2</sub> in the atmosphere. During aquaculture, large amount of fish feed is distributed in the farm of which majority is been wasted resulting in other micro-organisms thriving on same and in this process, they release methane in the atmosphere.

United Nations (UN) report warns that rearing cattle produces more GHGS than driving cars.(REPORT, 2006)



**Figure 2:-** Aerial view fish farm in Java, Indonesia, with ponds growing fish and shrimp and other seafood. Credit: Alexey Kornilyev / Alamy Stock Photo.

**Animal farming degrading environment.**

Meat consumption is the leading cause of resource consumption and environmental degradation of planet earth in 21<sup>st</sup> century. (Kuhn, 2014). Animal agriculture industry is the most powerful industry on the planet. This industry influences monetary gains and politics. Animal activist and environmentalists are the no.1 domestic terrorism threat to the nation as per the FBI.

Dr. Will Tuttle, Environmental and Ethics Author said “we have roughly a billion people starving every single day, worldwide 50% of grains and legumes which are been produced are been fed to animals.”

Dr. Richard Oppenlander, Environmental Researcher and the author of “Food Choices and Sustainability” said “82% of the world’s starving children live in countries where food is fed to animals in the livestock systems which are been killed and eaten by limited well off individuals of certain countries such as U.S., U.K and in Europe.”

We can feed every human being on this planet an adequate diet provided we stop the demand of feeding farm raised animals which in turn are killed and given as food to the humans.(Merzer, 2001)

If it is about only protein rich diet than 15 times more protein can be produced from plant-based diet then meat and on any given area of land.

**Conclusion:-**

The literature review elaborated different factors that are responsible for climate change. The reports from UN, the interviews with prominent authors reveals the outcome of the review that industrialised animal farming is the leading cause of global warming. The government body are reluctant to amend the policy which are protecting the industrialists and diminish the meat intake per capita. Therefore, it is advisable to alter individual dietary and promote the sustainable way of eating habits. This awareness needs to be created though social networks, print media, education and policy makers. The literature review also recommended modifying the eating habit can save on billions of carbon emission. This will cumulatively sum up in the overall savings on GHGS production and promote health growth of planet earth.

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