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Research paper

Promoting regionally-sourced food as a means of combatting climate change and creating healthy self-sufficient communities

Key Words:

Carbon Footprint - the total set of greenhouse gas emissions caused by an individual, event or product expressed as carbon dioxide equivalent. Food products that are exported intercontinentally have the highest carbon footprint, whilst meat has the highest carbon footprint due to the prolonged process of it going from farms to consumers plates.

Ammonia - (NH3) a compound containing nitrogen and hydrogen, which is extremely harmful to humans, which causes burns in the nose, throat and respiratory system.

Nitrogen Fertilizer - a type of fertilizer that mainly contains ammonia (NH3). It is currently one of the most used fertilizers in the world, with China in the first place (18.7 Mt), India in the second (11.9) and U.S. in the third (9.1). Nitrogen fertilizer is the main cause of soil imbalance,

where excessive amounts of ammonia are becoming present in foods produced alongside this fertilizer. The release of nitrogen-filled gases causes acidic rains, whilst the soil becomes more nitrogen predominant.

Local Food Products - food produced within 160 km of its purchasing point. A rising trend due to it's low carbon footprint, higher level of freshness and support of smaller businesses.

Chain Reactions - a series of reactions that happen because of a previous reaction, therefore either creating a repeating cycle of reactions or an infinite series of reactions.

Climate Change - the change of atmospheric temperatures during the 20th century due to the increasing amounts of carbon dioxide in the atmosphere. It is mainly caused because of the Greenhouse Effect (a process in which radiation warms the planet's surface, and that heat cannot be released in large masses through the atmosphere, just like a greenhouse).

Mass Production - the manufacturing of large quantities of products by utilizing technology. It is one of the main forms of production in the 21st century. It's most predominant in agriculture, where mass-producers (i.e. Nestle, Coca Cola, Kellogg's) are taking advantage of such a method into creating hormone-filled foods with added extracts and low nutritional values.

Growth Hormones - hormones used in food, especially in cattle, to speed up the growth and reduce the expenses of livestock. It is also dominant in grains, used to create a standard looking and a fast-growing grain.

Nutrition - the science that interprets the interaction of nutrients and other substances in food, relating to maintenance, growth, health and disease of an organism.

GMO (Genetically Modified Organism) - an organism whose genetic material has been altered by engineering methods. GMO's have become prevalent in the daily diet of the 21st century. In order to create more products that are attractive to the consumer and to create abundant, long-lasting products.

Pesticides - substance used to destroy diseases and insects in plants. Some pesticides contain toxic chemicals which are hazardous to animals and the environment.

Introduction:

Everyday, 90% of the food consumed worldwide is produced in major chain factories. These major chain factories, (i.e. Nestle, Coca Cola, Kellogg's etc.) alongside others, create about 30% of carbon emission in the atmosphere. The shift from having insufficient amounts of food in the 18th century to having abundant food in the 21st century was fast. Large factories were built and the production of food became a large part of the industry that such an abrupt incline caused most of the carbon emission in the world.

Climate change has shown its highest rates in 2017, with record-high temperatures; one of the main factors of climate change is food itself. Mass producers such as the United States, India, Brazil, China, are the main reasons why temperatures are increasing. Such producers release carbon monoxide (CO), carbon dioxide (CO2), nitrogen dioxide (NO2) into the atmosphere- all contributing to the green house effect. Food factories that produce meat- poultry, beef, pork- have the highest carbon footprint compared to other food factories.

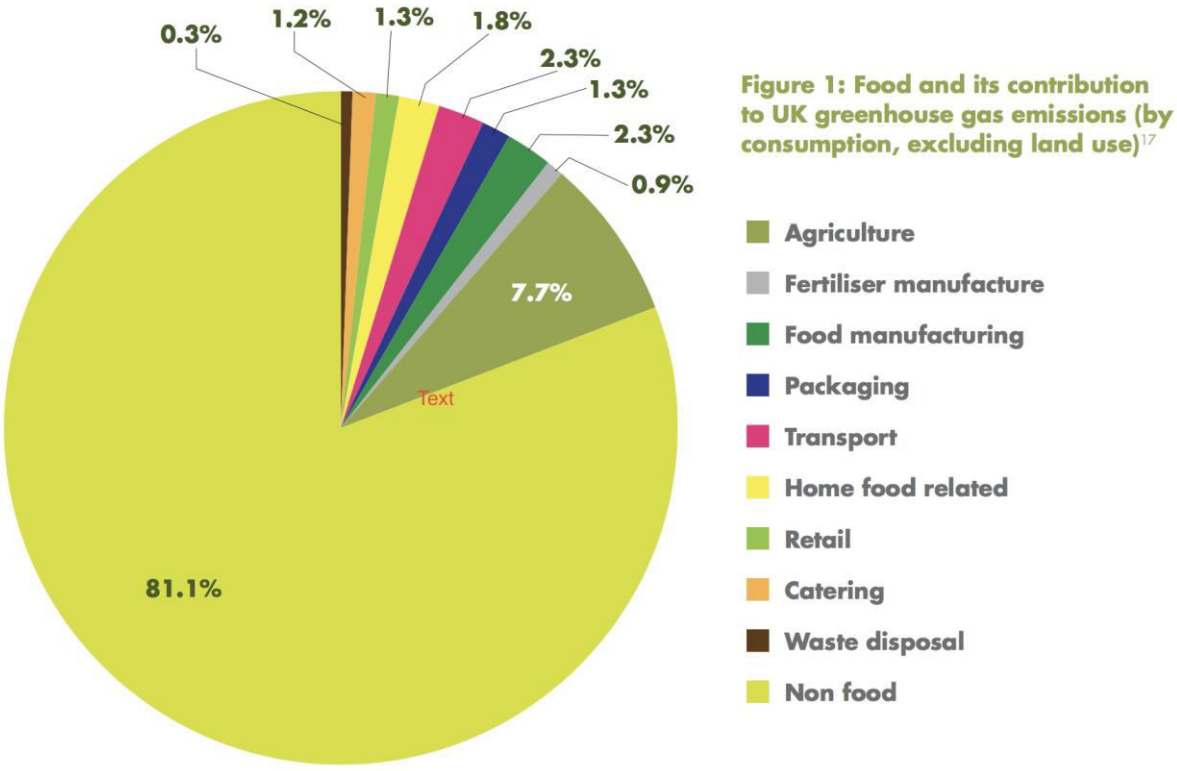


Figure 1: Food and its contribution to UK greenhouse gas emissions (by consumption, excluding land use)[17]

General Overview:

The first signs of climate change showed in the 20th century. After the Industrial Revolution, machinery peaked and became predominant in the food industry. This sudden change in the world caused food producers to take advantage of the new machinery and produce as much food as possible. Following that, factories were built all around the world- especially in China, United States, Brazil, India, France etc. With a lot of factories built in such a short period of time, carbon emission was raised in the atmosphere, and so in the 21st century, temperatures are rising every year. Specific foods such as grains and meat have a greater part in why climate change is occurring, with the highest carbon footprints.

Grains serve as the main energy intake for 90% of the world- confirming the fact that it is the most demanded product in the world. Although there are many different types of grains, they fit in a category. China, the main producer of grains in the world has the highest carbon footprint of all countries in this aspect. In order for grains to grow healthily, fully and quickly, genetic modification has become present in our foods. To eliminate such problems that would create deficit in food, products are being genetically modified to not have that problem anymore, but instead are creating a poorly produced food with no nutrition. Huge plantations of grain cultivated with nitrogen fertilizer and maintained with different types of machinery such as tractors and harvesters release large amounts of gases in the air. Nitrogen fertilizer, a problem not only in the wheat industry, is ruining fertile soil. With high rates of ammonia in it, nitrogen fertilizer not only corrupts the soil, it also transfers amounts of ammonia to the plants itself. These huge factories mainly use nitrogen fertilizer since it is cheap and abundant and has a short term efficiency. On the other hand, after growing and harvesting the grains, most of them need to be processed before selling. The final product is put in plastic bags and sent worldwide, either by ships or trucks. Ships release amounts of toxins in the sea, polluting a habitat, whilst trucks release carbon monoxide in the air, going miles without stopping.

Meat- all forms of it- have the highest carbon footprint of all foods. One of the most demanded products is also the one that requires the most attention and time. In order for one pound of beef to be bought, massive farms from all over the world go through a specific routine. Once the calf is born, such farms intend to raise it as fast as possible and to produce as much edible meat as possible. Growth hormones are given to the calf so they grow in size, but they also create other deficiencies such as making

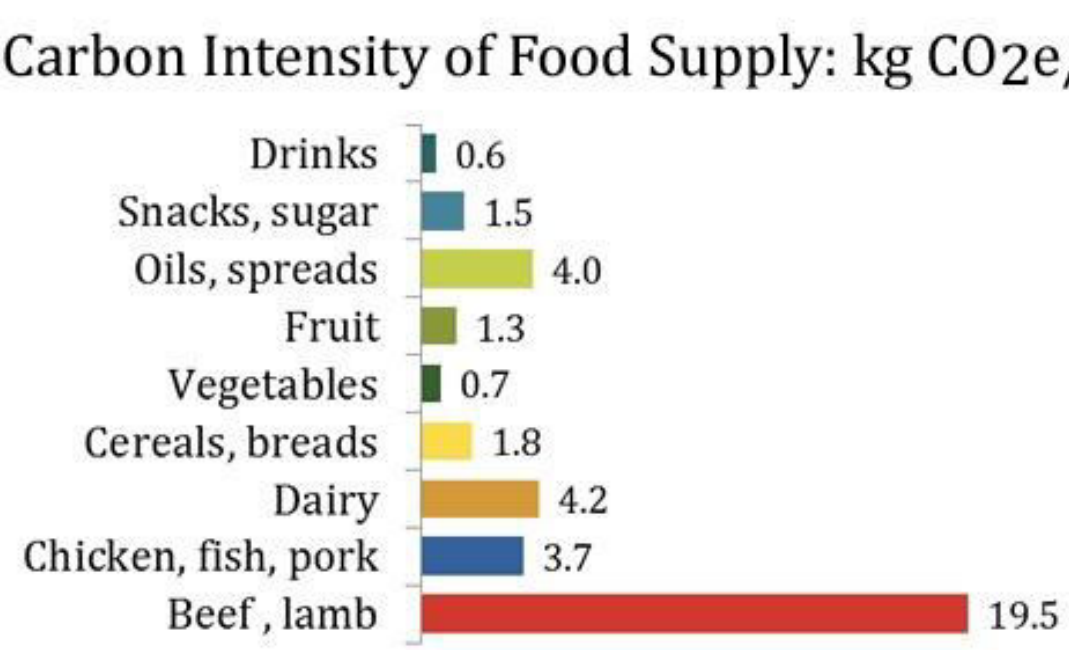
the meat contain less nutrients than a local, well-fed and normally raised calf. The food required to raise calves has a part of its own in the carbon emission in the atmosphere, since the process itself requires a lot of food quickly. When the calves are grown to the point of butchering, machines do most of the parts- separating the edible and non-edible parts, disposing the bones etc. The meat is separated into bags (usually plastic) and frozen to prolong its edibility. When this whole process is done, it is transported with ships or refrigerated trucks as well, only adding more percentages to the carbon emission.

The major gases released by such major producers are carbon dioxide, nitrogen dioxide, methane, and then other toxins such as plastic residues and methane. With the increasing amounts of population and increasing demand for food, the number of factories which create hormone-infested foods with low nutritional values increases every day. The issue of poorly produced food has only been inclining ever since the Industrial Revolution.

Economies are developing to be one-sided. Whilst one country manufactures all of the food, the other countries are left importing most of their foods. Not only does this way of food production create all the problems faced above, the lack of fresh, locally produced food has created health deficiencies, obesity and weaker immune systems.

On the other hand, locally produced food eliminates 90% of carbon footprints. Removing large means of transportation cuts off the carbon dioxide released in the air. Farmers use biologically friendly fertilizers that do not contain ammonia, do not use growth hormones on their livestock and always have fresh food. All of the food consumed would be fresh and would help local economies flourish.

With a diet containing lower amounts of meat and higher amounts of locally bought products, carbon emission in the atmosphere would drop drastically and global temperatures would go back to normal- stopping the incline.



Major Parties and their Views

UK
The United Kingdom has recognized climate change as a recurring problem, therefore has implemented many programs throughout the country to help the population realize the benefits of locally bought food. They support the movement by giving funds to local farmers and spreading pamphlets to increase awareness on the benefits of locally bought food.

AUSTRALIA
In order to fight climate change, Australia has created organizations to help reduce the carbon emission in the atmosphere. By encouraging its citizens to buy at the farmer's market and by buying only what they need to reduce waste, they've witnessed a incline of better dieting.

CANADA
Although they import a large amount of food consumed on a daily basis from its citizens, they have created such programs to help make citizens aware of the large impact food has in climate change. They've also established in many schools a new dietary program, "Meatless Mondays", trying to reduce the amount of meat used in everyday basis, since it has the largest carbon footprint of all.

CHINA
The highest producer in the world that creates the largest emission as well eats its own local food, but since there is an abundance of it, China supplies most of the world with

grains, meat, sugar etc. With a lot of factories on its islands for better strategic positions for ships, China is only continuing to expand its monopoly of food production.

INDIA
India is one of the highest food production countries in the world. Although it contains many chain factories, new reforms have been made that require filters in factories for minimal amounts of carbon dioxide to be released in the atmosphere. They, however, have not solved the issue of poultry making their highest carbon footprint of all.

Possible Solutions and Attempts to Solve the Issue

Although a very complex issue that needs to be confronted in many ways, some possible solutions that have been implemented by different countries as well include:

- using renewable fuels for factories and for means of transportation like trucks and ships
- composting manure in farms and using that organic fertilizer instead of nitrogen fertilizer
- promoting the idea of locally bought food
- insisting on vegan diets

United Nations Framework Convention on Climate Change:
A treaty established in 1992 that had a main object of stabilizing greenhouse emissions and bringing back normal levels of the climate.

Paris Agreement:
An agreement within the UNFCCC, which relates to funding methods of reducing carbon emissions and leveling the climate form 2020.

Food and Agriculture Organization:
An organization within the United Nations which specializes in creating a sustainable world with efficient foods.

The Non-GMO Project:
A project which encourages people to buy non-genetically modified foods in order to pursue a healthier lifestyle and benefiting the world at the same time.

Timeline

1800's- the first Industrial Revolution. Machinery takes over man and is able to create abundantly.

1896- first calculations of man-made carbon emissions.

1930's- first signs of climate change are present. Temperatures have started increasing.

1930-1980- global temperatures have been constantly increasing, the amount of food exported/imported has only been rising. GMO's and growth hormones start taking place in food.

1974- a year of drought in the United States, causing panic about climate change.

1992- UNFCCC get's ratified

21st Century- Climate change awareness increases alongside factories and carbon emission.

2017- new high record for mean global temperature.

Appendix:

Previous UN Document: Regulation (EU) No 1165/2008

For further studies on climate change: https://climate.nasa.gov

Paris Agreement: http://unfccc.int/paris_agreement/items/9485.php

United Nations for Sustainable Development:
http://www.un.org/sustainabledevelopment/climate-change-2/

Bibliography

https://davidsuzuki.org/queen-of-green/food-climate-change/

http://www.foodsystemprimer.org/food-production/food-and-climate-change/index.html

http://www.who.int/mediacentre/factsheets/fs266/en/

http://www.iufn.org/wp-content/uploads/2013/08/Making-local-food-work-2010-Local-food-and-climate-change.pdf

https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-agriculture-and-food-supply_.html

https://foodsecurecanada.org/resources-news/news-media/buying-local-food-products

https://climate.nasa.gov

https://history.aip.org/climate/timeline.htm

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3888022/