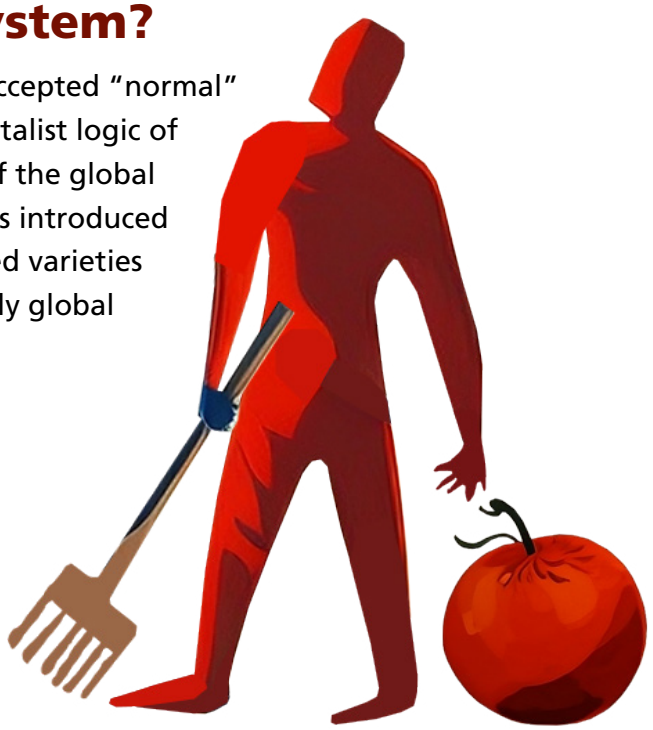
JustTransitions

FACT SHEET 03

Climate change emissions in the industrialised food system

What is the **industrialised food system?**

The industrialised food system has become the globally accepted "normal" way to organise food systems. Developing out of the capitalist logic of mass production from the 1800s, it was spread to much of the global south in 1950s–1960s through the 'Green Revolution'. This introduced high yielding, but water and input dependent, hybrid seed varieties to increase production of a few commodity crops to supply global markets.



Industrialisation has stripped food of its social value and the web of intricate connections to local ecologies and cultures. Instead, it has become a commodity, subject to a linear and rationalised process to make the most profit for the least cost and effort. This so-called "value chain" includes production inputs, transport, processing, manufacturing, retailing and consumption. Identical products are produced across time and place, on a mass-scale requiring uniformity and standardisation across the chain.

PHOTO: CTA ACP-EU/FLICKR

Landscapes are cleared of indigenous biodiversity to make way for uniform crop monocultures and animals with genetics and lifespans geared for the market. To maintain large uniform systems, which are contrary to diverse and complex natural processes, there is extensive use of chemical inputs, such as synthetic fertilisers and pesticides in production, and pharmaceuticals to manage animal diseases. Food is processed using chemicals so that it has a longer life in transport and on shelves. This is accompanied by large-scale mechanisation and digitalisation in the mining and manufacture of inputs, industrial farming, transport and logistics across the chain, and in food processing. Energy consumption has increased across the food system and waste is generated at every step. One-third of food produced worldwide ends up as waste.

This system has resulted in a war on nature with rapidly declining biodiversity, pollution, and destruction of soils; a variety of negative health impacts from toxic chemicals in farming communities and among consumers; and the impoverishment and marginalisation of the communities and workers who actually produce our food.

The industrial food system goes hand-in-hand with corporate influence in decision-making and control over each part of the value-chain, which is increasingly consolidating across the whole production and distribution chain nationally and globally.

This corporate influence has shaped food system narratives, such as needing to produce more food to feed a growing population and needing industrial farming models to intensify production of food, supposedly on less land. However, enough food is produced globally to feed everyone on the planet. But the profit-maximising nature of this system prevents the fair distribution of this food. Also, while the industrialised food system has made a few energy dense foods cheaper over time, these are nutritionally poor, resulting in global epidemics of malnutrition, obesity and non-communicable diseases.

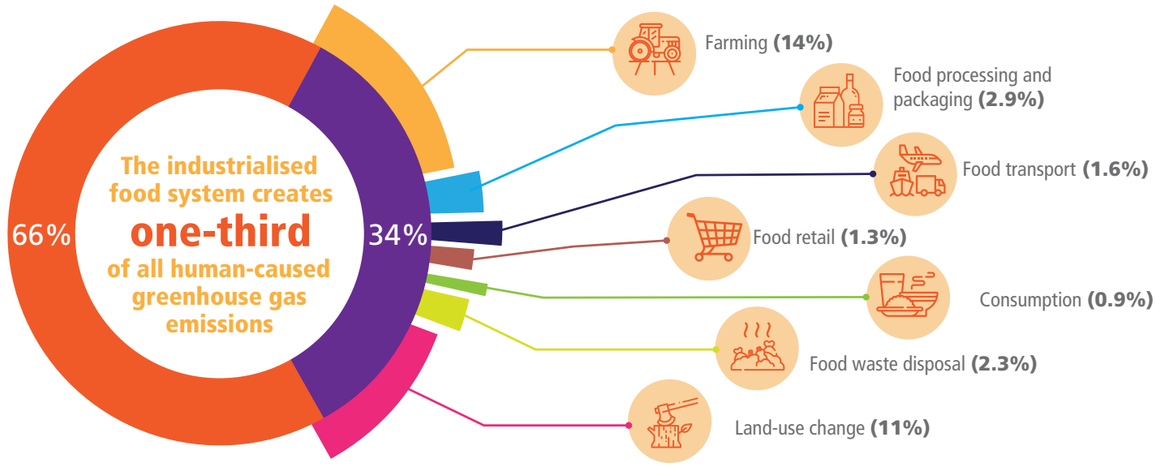
How is the **food system feeding climate change?**

The increasingly industrialised way food is produced and distributed globally not only fails to meet human needs, as hunger and malnutrition rates soar, but is also causing ecological and social crises, including climate change. The global food system is responsible for up to one-third (31–34%) of all human-caused greenhouse gas (GHG) emissions.

In order to reduce emissions and to make a transition to a just and low carbon society, it is critical to address the industrialised food system!

The main gases produced in the food system are carbon dioxide, methane and nitrous oxide. Crop and livestock production together contribute more than 50% of the methane and 75% of the nitrous oxide of human-caused emissions, both of which are significantly more potent than carbon dioxide in their contributions to warming.

Food system's share of global greenhouse gas emissions



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At a global level, the largest share of 25% comes from agriculture – this includes:

- 11% from land use change (such as deforestation to make way for crops or livestock grazing), and
- 14% from the production of inputs, and on-farm emissions including from energy use, livestock, tilling and fertiliser off-gassing.

GHGs from farming alone almost doubled between 1961–2016, with most of this increase coming from increased synthetic fertiliser use, rice cultivation and livestock rearing.

Livestock production alone, and in particular industrial livestock production for meat and dairy, contributes 14% of total global human-caused emissions and is the single largest source from the food system. This is because of:

- Deforestation and the clearing of natural vegetation to create grazing and cropland for livestock feed;
- Growing crops for feed;
- Global transport of feed; and
- Methane released from digestive process of ruminant animals like cattle (called enteric fermentation).

The emissions from the top five global meat and dairy companies are equal to fossil fuel giants like ExxonMobil.

If the meat and dairy industry continue to grow as projected it would constitute more than 80% of the carbon budget and make it impossible to limit global temperature rise to 1.5°C above pre-industrial levels. Half a kilogram of beef requires 6 800 litres of water to produce, at a time when climate change will strain this resource.

Pre- and post-production processes contribute 9% of emissions, with the bulk taken up by food processing and packaging, and food waste disposal. Greater commercialisation and industrialisation beyond the farm gate are key sources of increased GHG emission growth. For example, the emissions from the refrigeration required along food value chains has tripled since 1990 to 5% of food system emissions.

The **climate impact** of South Africa's **food system**

South Africa has a highly developed and dominant commercial food system. While there are about 40 000 recorded commercial farm units, most of our food is produced by around 15 000 of these. This food then travels through corporate-controlled distribution, processing, manufacturing and retailing networks, with substantial profits extracted from this control.

This industrialised food system contributes approximately 18% to South Africa's climate emissions – almost one fifth. This amount may be proportionally lower than the global average due to the oversize contribution of our dirty energy. Of this:

- Farming is responsible for 6%,
- Land use change about 1%, and
- Pre-and post-production processes about 10% of total emissions.

Livestock-raising contributes 70% of South African agricultural emissions, while the production of field crops contributes 11% (57% from the application of synthetic fertiliser and 30% from application of lime). The most extensively grown crops in South Africa – maize, wheat and sugarcane – are the largest crop contributors to GHG emissions, while industrial production of vegetables has the highest rate of GHG emissions.

Food transport, which is mostly by road in South Africa, contributes 1% of overall carbon emissions, but processed foods constitute the greatest share from total road freight transport in the country. This reflects the centralised distribution systems of major food manufacturers and supermarkets, where goods are transported from distant locations to a few manufacturing and distribution points, and distributed out again to retailers across the country.

PHOTO: U.S. DEPARTMENT OF AGRICULTURE/RAWPIXEL

South Africa's industrialised food system both contributes to and deepens vulnerability to climate change

Corporations exert significant influence over government policy, the market, and our diets. They shape these in their favour but at the expense of the right to food, nutrition, health, small farmers, workers, and traders; and the environment. This corporate power and profitability contrasts with the difficulty millions of South Africans face in accessing food produced in this system. Before the COVID-19 pandemic, 20% of South Africans had inadequate or severely inadequate access to food. By March 2021, 35% of households were unable to purchase adequate food and 17% of households experienced consistent hunger. But food corporations continued to make big profits, and agriculture grew economically by 13.4% in 2020 and 8.3% in 2021.

PHOTO: CLIMATE CHANGE, AGRICULTURE AND FOOD SECURITY/FLICKR

The economic performance of the current food system thus has little direct relationship to the social needs of the country, while making significant contributions to intersecting crises, including climate change. The intersection of climate change and inequality will deepen vulnerability, hunger, health consequences and the potential for conflict.

PHOTO: LOTUS HEAD/WIKIMEDIA COMMONS

The poorest households, who already spend as much as 80% of their incomes on food, will be further devastated as climate change fuels rising food prices, expected to increase globally by as much as 84% by 2050.

What can be done?

Targets should be set for reduction in GHG emissions from the food system, in line with South Africa's national and global commitments.

Priority areas are:

- Livestock sector as a whole
- Energy and transport throughout the food system
- Farming practices and synthetic fertiliser use, focusing on conversion to agroecological practices across all farms
- Commercial agriculture should not expand any further into forests and grasslands. These key biomes should be restored and protected, both as carbon sinks and high biodiversity ecosystems. With the right management, free ranging livestock have the potential to help restore grasslands in the absence of wild ruminants (where appropriate), and to be part of integrated food production systems. This requires cattle to play an ecological and nutritional role, rather than simply pursuing increasing meat production for economic growth.

References

This factsheet is an extract from the Biowatch fact sheet: Climate Change and the industrialised food system. Download the factsheet, with the full reference list here:

https://biowatch.org.za/download/factsheet-climate-change-and-food/