International Institute for Environment and Development

Media briefing

28th November, 2023

Subsidising ill health for people and planet

Diverting subsidies from ingredients for ultra-processed foods could promote healthier alternatives that are also associated with lower greenhouse gas emissions.

The story in brief

Through a combination of direct subsidies, tariffs and price controls, the world's major agricultural producers are providing support worth up to US$42.5 billion per year for ingredients such as beef and pork, which are used to create ultra-processed food (UPF).

Significantly less support exists for ingredients that represent lower-emissions sources of protein than those UPF components. For comparison, nuts and pulses receive a combined $5.7 billion-worth of support per year on average. Fresh fruit and vegetables, which are not typically associated with and rarely used in UPFs, were effectively penalised over the period studied as tariffs added $16.3 billion to the costs for producers and consumers.

IIED researchers examined AgIncentives data from 72 countries plus the European Union for seven major UPF ingredients: beef; chicken meat; pork; maize; wheat; soybeans; and sugar. The period covered was 2016 to 2021.

Figures for support for UPFs were derived by using an estimated range for the proportions of each ingredient used for these products. Overall, the commodities studied received support worth $149.2 billion a year on average. Between $14.5 billion and $42.5 billion of that can be counted as effectively a subsidy for UPFs.

All the subsidies examined here are known as 'coupled', meaning they are linked to a specific commodity. Uncoupled support also exists, such as when farmers are paid according to the area of land they cultivate, but because this can't be linked to particular products it has not been included and so these figures don't represent the full extent of agricultural subsidies.

Researchers did not estimate the proportion of greenhouse gas emissions directly attributable to UPFs in the same way they did for subsidies, because emissions vary between countries even for the same commodities due to farming techniques and other factors. Nonetheless, it's clear that products used in UPFs have a large emissions footprint.

Beef production created the equivalent of 1,996 mega tonnes of CO2 equivalent (MtCO2eq) annually, on average, between 2016 and 2021, according to the UN Food and Agriculture Organization. Chicken meat production created 63 MtCO2eq, and pork 196 MtCO2eq. All this is just from the farms themselves and doesn't account for carbon emissions due to deforestation carried out to create agricultural land.

Emissions are heavily concentrated in a few major producer countries, several of which are also among the top subsidisers, including Brazil, the USA, the EU, India and China.

Evidence suggests taking habitat loss into account increases overall emissions significantly. For cattle, another 900 MtCO2eq was attributable to this 'land use change' per year on average between 2010 and 2014, according to a study published in 2019.

The background

Governments can influence the production and sale of foodstuffs, and encourage investment, by deploying direct payments to farmers, price controls, lower or higher taxes on certain goods and tariffs on imported items. Countries whose production of a given crop looms large in the global market – sugar, for example, which happens to be a key ingredient in many UPFs – may wish to maintain that position, and subsidies provide a mechanism for doing so.

UPFs are created by deconstructing food into its basic components, then modifying or recombining them with an array of additives and few, if any, whole food ingredients. Often they are unhealthy snacks, junk and fast food, or ready meals, but not always – UPFs can be beneficial to health or have nutrients added that a whole-food version might not contain. Examples include some supermarket breads and cereals, and whey protein powder.

However, UPF production requires a large-scale supply of raw ingredients usually grown in fuel- and fertiliser-hungry systems linked to high greenhouse gas emissions – both directly and through 'land use change', meaning the loss of natural habitats which previously had acted as carbon sinks. Often these are mono-crop systems with poor support for biodiversity and poor resilience in the face of environmental disruption or disease.

Beef production is an illustrative example of this destructive form of agriculture: not only do cattle farms emit huge amounts of greenhouse gases, particularly methane, they also require large areas of land that is frequently carved out of forests like the Amazon. Additionally, soybean crops – much of which end up as animal feed – have also taken over swathes of what used to be valuable natural habitats.

These production systems can interact in complex ways. For example, extra subsidies for cattle farming in one country may lead to more demand for soybeans produced elsewhere. This increases the price of those soybeans and drives plantation expansion to meet demand, on top of the loss of habitat to the cattle farms.

The link between subsidies and emissions is not straightforward, but the World Bank estimates subsidies have contributed to 4.3 giga tonnes of CO2 equivalent (GtCO2eq) of greenhouse gas emissions over the last 20 years.

Consumers in much of the world live within a system that restricts their food choices and does not always promote the healthiest or most environmentally friendly options. For many, UPFs will offer the cheapest and most efficient way of feeding their families.

But to improve the health of both people and planet, subsidies should be redirected in ways that make nutritious food more easily available and affordable to everyone, while reducing greenhouse gas emissions in line with the Paris Agreement. This must be a global effort.

The numbers

The source for subsidy data is AgIncentives.

Value of support for key UPF ingredients and other commodities (USD)	
	Average 2016-2021
UPF ingredients	
Beef	25,064,655,844
Chicken meat	27,898,757,055
Pork	34,150,586,167
Maize	30,238,143,320
Wheat	15,443,897,190
Soybeans	2,253,432,697
Sugarcane and sugar beet	14,121,710,742
Non-UPF ingredients	
Cereals except maize, rice and wheat	682,045,274
Fresh fruits	-14,103,805,057
Fresh vegetables and tubers	-2,230,814,199
Nuts	4,602,733,975
Pulses	1,133,918,353

Researchers used various sources to produce estimated ranges for the proportion of each ingredient that could be going to UPFs. They are summarised below.

Estimated proportions of ingredients going to UPFs and the value of subsidy				
Proportion of ingredient used for UPFs			**USD value using 2016-2021 average**	
	Min	**Max**	**Min**	**Max**
Beef	5%	20%	1,253,232,792.18	5,012,931,168.72
Chicken meat	2%	10%	557,975,141.09	2,789,875,705.47
Pork	10%	50%	3,415,058,616.71	17,075,293,083.56
Maize	2%	5%	604,762,866.41	1,511,907,166.02
Wheat	10%	30%	1,544,389,719	4,633,169,157
Soybeans	2%	10%	45,068,653.94	225,343,269.72
Sugarcane and sugar beet	50%	80%	7,060,855,371.11	11,297,368,593.78
Total			**14,481,343,160**	**42,545,888,144**

Ingredient	Sources used
Beef	Our World In Data; Rabobank; AHDB
Chicken meat	Our World In Data; USDA; Brazilian Farmers; The Guardian; Poultry World; Zootecnica International; India Retailing
Pork	Our World In Data; Europarl; The Pig Site; AHDB (1) (2); Safe Food
Maize *(used as corn syrup. However, a potentially more important role is as cattle feed)*	Coclanis; beef2live; Erenstein et al; USDA; Engage the Chain; ERS-USDA; Weforum.org; Reuters; Li
Wheat	UK Flour Millers; European Flour Millers
Soybeans *(as direct ingredient. However, again, possibly more important contribution is as feed)*	Our World In Data; International Food Additives Council; Table Debates
Sugar	OECD/FAO; EUFIC; Fortune Business Insights; USDA; European Commission

United Nations data reveals the total emissions from the production of commodities that can be used in UPFs. (Data was only available for sugarcane, not sugar beet.)

	Beef	Chicken	Pork	Maize	Wheat	Soybeans	Sugarcane
All emissions (Mt CO2eq/yr)	1995.92	63.00	196.43	71.92	62.84	25.97	1.53
10 top emitting countries	1249.23	41.27	158.34	57.25	51.54	24.88	1.24
Top 10 emitters % of total	63%	66%	81%	80%	82%	96%	81%
Top subsidisers total	1064.10	9.33	96.05	41.48	25.88	21.33	0.90
Top subsidisers % of total	53%	15%	49%	58%	41%	82%	59%

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