COMPASSION in world farming
ciwf.org

Peter Stevenson
Chief Policy Advisor

Policy Briefing, 2021

HIDDEN COSTS OF INDUSTRIAL AGRICULTURE

Use of fiscal measures to encourage moves to regenerative agriculture and healthy, humane, sustainable diets

Contents

The bleak lives imposed on industrially farmed animals are justified by the assertion that this gives us cheap food. And indeed, industrially produced meat and milk are cheap at the supermarket checkout. But the low price of these products is achieved only by an economic sleight of hand. We have devised a distorting economics which takes account of some costs such as housing and feeding animals but ignores others including the detrimental impact of industrial agriculture on human health, natural resources, and wildlife. The costs arising from these detrimental impacts should be internalised in the price of food. If this were done nutritious, humane, sustainable food may well be cheaper than unhealthy, inhumane food that damages natural resources.

This problem is highlighted by the UN Food and Agriculture Organisation which says: "In many countries there is a worrying disconnect between the retail price of food and the true cost of its production. As a consequence, food produced at great environmental cost in the form of greenhouse gas emissions, water pollution, air pollution, and habitat destruction, can appear to be cheaper than more sustainably produced alternatives."[i]

These various detrimental impacts are referred to as "negative externalities". They represent a market failure as the costs associated with them are not included in the prices paid by farmers for damaging inputs or the prices paid by consumers of livestock products. Instead, these costs are borne by third parties or society as a whole. In some cases, the costs are borne by no-one and key resources such as soil and biodiversity are allowed to deteriorate thereby undermining the ability of future generations to feed themselves.

An editorial in the journal *Nature* in October 2019 stated that the global "food industry, especially, bears responsibility for the fact that 680 million people are obese, but it is largely governments and their citizens who have to pick up the costs of treatment.

When industrial-scale farms draw copious quantities of water to irrigate crops, again it is taxpayers who foot the bill for the water scarcity that can follow. It's the same for agrochemicals and their effects on the health of people and ecosystems. Governments find themselves shouldering the costs of biodiversity loss, and mopping up agriculture's contribution to greenhouse-gas emissions."[ii]

We need to move to an economics that accurately reflects all relevant costs and internalises them in the price paid by farmers for inputs and hence in the price paid by consumers of livestock products.

Calculating the costs of industrial farming's negative impact on health and natural resources

A key driver of farming's negative impact on the environment is the dependence of industrial livestock production on feeding human-edible cereals to animals who convert them very inefficiently into meat and milk.[iii] [iv] [v]

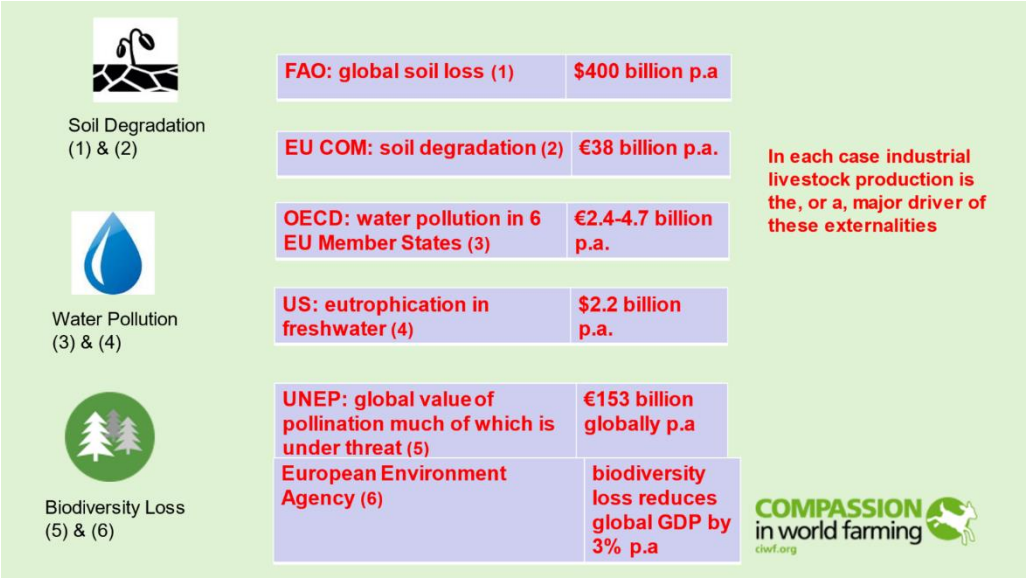
The European Commission states "the EU's cereals are mostly used for animal feed (nearly two thirds)."[vi] Globally 40-45% of cereals are used to feed animals.[vii] [viii] Industrial livestock's huge demand for cereals has played a major part in fuelling the intensification of crop production. This, with its monocultures and agro-chemicals, has led to biodiversity loss,[ix] [x] soil degradation,[xi] [xii] and overuse and pollution of water[xiii].

Antimicrobials are regularly used in industrial livestock systems to prevent the diseases that would otherwise be inevitable where animals are confined in crowded, stressful conditions that undermine their immune systems. Globally, 73% of all antimicrobials are used in animals raised for food.[xiv] The high use of antimicrobials in farming leads to the emergence of antimicrobial resistance, which can be transferred to humans, thereby undermining the treatment of serious human disease.[xv]

An OECD report found that without action to stem antimicrobial resistance, 2.4 million people could die from superbug infections in Europe, North America, and Australia between 2015-2050.[xvi] In the 33 countries examined in the report, infections with resistant microorganisms could in the next 30 years cost up to US$3.5 billion per year.

A range of studies have calculated the massive costs that arise from these problems.[xvii] [xviii] [xix] [xx] [xxi] Some of these are shown in Figure 1.

Figure 1: Some of the costs arising from degradation of soils, water, and biodiversity



References for Figure 1: see footnote[1]

The UN states: "the hidden environmental, health and economic costs of the food system are estimated at almost USD12 trillion a year and are expected to rise to USD16 trillion a year by 2050."[xxii]

A report by the UN Food and Agriculture Organisation (FAO) examines the costs arising from diet-related health problems and greenhouse gas (GHG) emissions.[xxiii] The report calculates that on a business-as-usual basis, global diet-related health costs linked to non-communicable diseases (coronary heart disease, stroke, cancer, type-2 diabetes) will exceed $1,300 billion annually by 2030.

The report compares current dietary patterns with four healthy alternatives each including less meat and dairy. The alternative diets are flexitarian, pescatarian, vegetarian and vegan. The report states that the adoption of any of the four

[1] References for Figure 1:

(1) Livestock's long Shadow, 2006. UN Food and Agriculture Organisation
(2) SEC(2006) 620
(3) OECD, 2012. Agriculture and Water Quality: Monetary Costs and Benefits across OECD Countries
(4) Dodds et al, 2009. Eutrophication of U.S. Freshwaters: Analysis of Potential Economic Damages. Environ. Sci. Technol., 2009, 43 (1), 12-19
(5) United Nations Environment Programme, 2010. Global honey bee colony disorders and other threats to insect pollinators
(6) European Environment Agency, 2015. European briefings: biodiversity

alternative healthy diets would reduce health costs worldwide by an average of 95% in 2030.

The global diet-related costs of GHG emissions associated with current dietary patterns are projected by the FAO report to exceed $1,700 billion annually by 2030. It states that in 2030 "any of the four alternative healthy diet patterns worldwide would reduce projected diet-related GHG emission by 41–74%".

A report by the Food and Land Use Coalition calculated the costs involved in (i) moving to healthy diets, (ii) moving to regenerative agriculture, and (iii) protecting and restoring nature.[xxiv] In each case they calculate that the costs involved are hugely outweighed by the savings achieved in the form of reduced negative impacts on health and the environment and by the business opportunities generated by the transition to improved practices: see Table 1.

Table 1: Economic Benefits of Moving to Healthy Diets & Regenerative Agriculture: figures from Food and Land Use Coalition

	Savings resulting from avoiding negative externalities by 2030	Investment requirements by 2030	Business opportunities by 2030
Moving to healthy diets	$1280 billion	$30 billion	$2000 billion
Moving to regenerative agriculture	$1170 billion	$35-40 billion	$530 billion
Protecting & restoring nature	$895 billion	$45-65 billion	$200 billion

Mending the price system

Olivier De Schutter, former UN Special Rapporteur on the right to food, has said that "any society where a healthy diet is more expensive than an unhealthy diet is a society that must mend its price system". This applies equally to a society where food that respects natural resources and animals' well-being is more expensive than environmentally damaging, low animal welfare food.

So how do we mend our price system in order to incentivise a move to regenerative agriculture including the humane, sustainable use of livestock and to healthy, sustainable diets?

Use of fiscal measures – subsidies and taxation - to drive systemic change in agriculture and diets

A Working Paper by the International Monetary Fund (IMF) states: "Fiscal policy has a central role in promoting a shift from intensive animal agriculture to more sustainable, safer methods as well as natural climate change solutions, and nudging consumers into dietary changes that are both sustainable and healthy".[xxv]

Taxation

Many bodies and reports have recommended using taxation to rebalance our food system.[xxvi] [xxvii] [xxviii] [xxix]

The use of taxation should be based on two interlocking principles:

- Internalisation of the costs generated by unsustainable farming methods and diets
- Provision of sufficient incentives and disincentives to promote systemic change.

Crucially, all revenue raised on taxes on food must be used to subsidise the price of healthy food produced to high environmental and animal welfare standards. There must be no overall increase in the price of food, simply a rebalancing of the relative costs of sustainable and unsustainable food.

The European Green Deal advocates the use of tax measures to drive sustainability. It states that tax reforms can "play a direct role by sending the right price signals and providing the right incentives for sustainable behaviour by producers, users and consumers. … There is a need to ensure rapid adoption of the Commission's proposal on value added tax (VAT) rates currently on the table of the Council, so that Member States can make a more targeted use of VAT rates to reflect increased environmental ambitions, for example to support organic fruit and vegetables".

Subsidies

The repurposing of subsidies is crucial. An OECD report covering 54 countries found that these countries provide support to their agriculture sectors of $619 billion per year. The OECD reports that more than two-thirds of this support tends to have negative effects including harming the environment.[xxx] This huge sum should be repurposed to supporting regenerative forms of agriculture.

In a separate report on biodiversity finance the OECD states that "governments spend approximately USD 500 billion per year in support that is potentially harmful to biodiversity i.e. five to six times more than total spending for biodiversity".[xxxi]

Elizabeth Maruma Mrema, the executive secretary of the UN Convention on Biological Diversity says that billions of pounds of environmentally harmful government subsidies must be redirected to benefit nature.[xxxii]

Supply side measures

Farmers who produce nutritious food to high environmental and animal welfare standards should be compensated for part of the extra costs involved by subsidies. This would not require new expenditure. Existing subsidies should be redirected to funding public goods on the principle of 'public goods for public money'. Public goods are those wanted by much of the public but which the market cannot, or can only partially, deliver.

Taxes should be placed on the damaging inputs of industrial agriculture such as synthetic fertilisers and chemical pesticides and feed containing soy and human-edible cereals. Such kinds of feed as well as agro-chemicals are responsible for very substantial damage to the environment and human health. Accordingly, it is appropriate that taxes are placed on them to internalise these negative externalities.

The funds raised by such taxes and the repurposing of subsidies should be used to support farmers who produce nutritious food to high standards. Such support could include not only subsidies but also an extra tranche of tax-free income and generous capital allowances when calculating net profits for tax purposes.

A UNDP paper on taxes on pesticides and chemical fertilisers states "From a revenue generation standpoint, a single, uniform ad valorem tax is the preferred solution because of its simplicity and low administration costs. From an economic perspective, a differentiated tax that takes account of the environmental damage caused by different types of pesticides/fertilizers is the preferred solution, since it provides more targeted price signals to the market and more adequately reflects marginal damages".[xxxiii]

The UNDP paper points out that taxes on pesticides and fertilisers:

- "can generate a double dividend if the resources mobilized are … reinvested in organic agriculture or other sustainable agriculture practices.
- Directly address market failures by incorporating the social and environmental cost of using pesticides/fertilizers.
- Provide an incentive to shift farmers and commercial agriculture enterprises towards more sustainable cultivation practices".

The use of fiscal measures should not be seen as separate from, or an alternative to, legislation. The UNDP paper refers to the French approach "where a combined system is in place in which a reduced tax rate is imposed on pesticides that are allowed in organic farming, while the regular tax rate is imposed on other pesticides, and a total ban is imposed on some widely used pesticides that are considered to harm bees."[xxxiv]

The IMF Working Paper referred to earlier proposes 'feebates' in which fees are charged for environmentally damaging farming practices, while rebates are given to farmers who adopt sustainable practices such as regenerative agriculture. For the government, feebates are revenue-neutral; they simply entail a redistribution of money between farmers. The IMF paper suggests that feebates could be used "at the farm level (using farm-level data) based on:

- The way animals are bred (lowering the fiscal burden on operations involving animals raised on pasture at lower densities, compared with confined animal feeding operations using forage produced through embodied deforestation or intensive monocrops);
- The type of crops farmed (lowering the fiscal burden on farms producing leguminous, pulses and cereals for human consumption while increasing it for farms engaged in the production of less sustainable produces, like animal forage);
- The type of farming method (lowering the fiscal burden on organic farms relative to industrial/conventional and integrated farms)."

In the cases where the IMF paper refers in the above quote to "lowering the fiscal burden" in our view there should be nil burden and indeed rather a payment to the farmer as under the 'feebates' principal farmers who produce to high standards should receive the monies paid by farmers who produce to damaging standards.

Demand side measures

The IMF paper states, "On the demand side, a (Pigouvian[2]) tax could be applied to foods (notably meat and dairy) associated with high negative environmental externalities." Not all meat should be taxed; only industrially produced meat should be subject to taxation. A tax could be placed on industrially produced meat and dairy, unhealthy food and food produced in environmentally damaging ways.

As indicated earlier, all revenue raised by such taxes must be used to lower the price of healthy, sustainable food such as wholegrain cereals, rice, bread and pasta, nuts, seeds, legumes, fruit, and vegetables. There must not be any unfair impact on poorer people nor any overall increase in the price of food, but simply a re-balancing of the respective prices of good and harmful food.

The World Health Organisation points out that for poor socioeconomic groups a food tax may lead to dietary shifts and so to improved dietary health provided that untaxed, healthy alternatives are available; such health gains may contribute to reducing health inequalities.[xxxv] The OECD has concluded that, of all actions to prevent

obesity "fiscal measures are the only intervention producing consistently larger health gains in the less well-off" across the countries studied.[xxxvi]

One approach to such taxation is through the VAT system. In countries which charge VAT on food, unhealthy, unsustainable food should be charged at the highest VAT rate applicable in that country, while zero VAT should be charged on food that is healthy and that has been produced in sustainable, humane ways.

The European Commission's Farm to Fork Strategy states "Tax incentives should also drive the transition to a sustainable food system and encourage consumers to choose sustainable and healthy diets. The Commission's proposal on VAT rates (currently being discussed in the Council) could allow Member States to make more targeted use of rates, for instance to support organic fruit and vegetables. EU tax systems should also aim to ensure that the price of different foods reflects their real costs in terms of use of finite natural resources, pollution, GHG emissions and other environmental externalities."

The notion that the price of meat should reflect the true cost of its production is not fanciful. At its meat counter, the Penny supermarket in Berlin shows shoppers both the actual checkout price of meat and what the true price (Wahre Kosten) would be if the environmental costs of meat production were included in the price[xxxvii]; see Figure 2. The price on the left is what shoppers will pay. The higher price on the right is what the price would be if the impact of nitrogen, GHG emissions, energy production and land-use change from the meat's supply chain were internalised in the price.

Figure 2: Prices displayed at Penny supermarket in Berlin

A detailed paper by Springmann *et al* (2018) sets out for many countries the level of taxation needed to address the health impacts of the consumption of red and processed meat.[xxxviii] Table 2 sets out the figures given in the supplementary information to the paper showing, in relation to High Income Countries:

- Proposed levels of taxation
- Effect of the taxes on consumption
- Impact of the taxes on health care-related costs.

Most EU Member States and the UK are High Income Countries.

Table 2: levels of taxation proposed by Springmann *et al* in High Income Countries and their impact on consumption and health

	Red meat	Processed meat
Optimal tax (USD/kg)	1.15	7.55
Price before tax (USD/kg)	4.42	3.75
Price after tax (USD/kg)	5.57	11.30
Price change (%)	26.02%	201.33%
Consumption before tax (g/d)	94.91	48.14
Consumption after tax (g/d)	95.72	31.71
Consumption change (g/d)	0.81	-16.43
Consumption change (%)	0.85	-34.13%
Health care-related costs before tax (USD billion)	44.88	163.34
Health care-related costs after tax (USD billion)	45.28	113.90
Change in health-care related costs (USD billion)	0.40	-49.44
Change in health-care related costs (%)	0.89%	-30.27%

Source: Springmann et al, 2018

Compassion in World Farming International is a registered charity in England and Wales, registered charity number 1095050, and a company limited by guarantee in England and Wales, registered company number 4590804.

The registered office is at River Court, Mill Lane, Godalming, Surrey, GU7 1EZ, UK.

Web ciwf.org **Email** supporters@ciwf.org **Phone**: +44 (0) 1483 521 953

[i] FAO, 2015. Natural capital impacts in agriculture
[ii] Nature, 2019. Food audit. Volume 574
[iii] Lundqvist, J., de Fraiture, C. Molden, D., 2008. Saving Water: From Field to Fork – Curbing Losses and Wastage in the Food Chain. SIWI Policy Brief. SIWI. http://www.siwi.org/documents/Resources/Policy_Briefs/PB_From_Filed_to_Fork_2008.pdf
[iv] Nellemann, C., MacDevette, M., Manders, et al. (2009) *The environmental food crisis – The environment's role in averting future food crises*. A UNEP rapid response assessment. United Nations Environment Programme, GRID-Arendal, www.unep.org/pdf/foodcrisis_lores.pdf
[v] Berners-Lee *et al*, 2018. Current global food production is sufficient to meet human nutritional needs in 2050 provided there is radical societal adaptation. Elem Sci Anth, 6: 52
[vi] *EU market: cereals supply & demand* http://ec.europa.eu/agriculture/cereals/balance-sheets/cereals/overview_en.pdf
[vii] Pradhan *et al*, 2013. Embodied crop calories in animal products. Environ. Res. Lett. 8 (2013) 044044
[viii] UNCCD, 2017. Global Land Outlook
[ix] Global Biodiversity Outlook 5, 2020. UN Environment Programme and the Convention on Biological Diversity
[x] UN Convention to Combat Desertification, 2017. Global Land Outlook
[xi] Edmondson *et al*, 2014. Urban cultivation in allotments maintains soil qualities adversely affected by conventional agriculture. Journal of Applied Ecology 2014, 51, 880–889
[xii] Tsiafouli *et al.*, 2015. Intensive agriculture reduces soil biodiversity across Europe. *Global Change Biology*: 21, p973–985
[xiii] Mekonnen, M. and Hoekstra, A., 2012. A global assessment of the water footprint of farm animal products. Ecosystems.: DOI: 10.1007/s10021-011-9517-8
[xiv] Boeckel *et al*, 2019. Global trends in antimicrobial resistance in animals in low- and middle-income countries. Science 365, 1266 (2019)
[xv] http://www.who.int/mediacentre/news/releases/2011/whd_20110406/en/
[xvi] OECD, (2018. Stemming the Superbug Tide: Just A Few Dollars More, OECD Publishing, Paris. *https://doi.org/10.1787/9789264307599-en*
[xvii] OECD, 2012. Agriculture and Water Quality: Monetary Costs and Benefits across OECD Countries
[xviii] United Nations Environment Programme, 2010. Global honey bee colony disorders and other threats to insect pollinators
[xix] Eds. Sutton M.A., Howard C.M., Erisman J.W., Billen G., Bleeker A., Grennfelt P., van Grinsven H. and Grizzetti B., 2011. The European Nitrogen Assessment. Cambridge University Press
[xx] The Food and Land Use Coalition, 2019. Growing Better
[xxi] FAO, IFAD, UNICEF, WFP and WHO. 2020. *The State of Food Security and Nutrition in the World 2020*. *Transforming food systems for affordable healthy diets*. Rome, FAO.
[xxii] UN, 2020. Action Track Discussion Starter: Action Track 3 – Boost Nature-Positive Food Production at Scale https://www.un.org/sites/un2.un.org/files/unfss-at3-discussion_starter-dec2020.pdf
[xxiii] FAO, IFAD, UNICEF, WFP and WHO. 2020. *The State of Food Security and Nutrition in the World 2020*. *Transforming food systems for affordable healthy diets*. Rome, FAO.
[xxiv] The Food and Land Use Coalition, 2019. Growing Better
[xxv] Battini N, Parry I & Wingender P, 2020. IMF Working Paper. Climate Mitigation Policy in Denmark: A Prototype for Other Countries
[xxvi] Willett *et al*, 2019. Food in the Anthropocene: the EAT–*Lancet* Commission on healthy diets from sustainable food systems. The Lancet http://dx.doi.org/10.1016/S0140-6736(18)31788-4
[xxvii] Swinburn *et* al, 2019 The Global Syndemic of Obesity, Undernutrition, andClimate Change: *The Lancet* Commission report http://dx.doi.org/10.1016/S0140-6736(18)32822-8
[xxviii] Nature editorial, 17 October 2019, Vol 574
[xxix] Battini N, Parry I & Wingender P, 2020. IMF Working Paper. Climate Mitigation Policy in Denmark: A Prototype for Other Countries
[xxx] OECD, 2020. Agricultural policy monitoring and evaluation
[xxxi] OECD, 2020. A comprehensive overview of global biodiversity finance

[xxxii] https://www.theguardian.com/environment/2021/may/02/redirect-harmful-subsidies-to-benefit-planet-un-urges-governments-aoe Accessed 3 May 2021
[xxxiii] UNDP, 2017. Taxes on pesticides and chemical fertilizers http://www.undp.org/content/sdfinance/en/home/solutions/taxes-pesticides-chemicalfertilizers.html
[xxxiv] *Ibid*
[xxxv] World Health Organization Europe, 2015. Using price policies to promote healthier diets
[xxxvi] Sassi F, 2010 Obesity and the Economics of Prevention, OECD http://s3.amazonaws.com/zanran_storage/www.eaca.be/ContentPages/956222899.pdf
[xxxvii] https://www.rewe-group.com/en/press-and-media/newsroom/press-releases/penny-labels-its-first-products-with-true-prices/ Accessed 6 May 2021
[xxxviii] Springmann *et al*, 2018. Health-motivated taxes on red and processed meat: A modelling study on optimal tax levels and associated health impacts. PLOS ONE | https://doi.org/10.1371/journal.pone.0204139