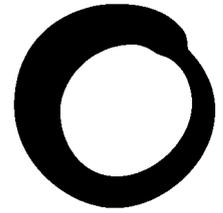


October 2010



**Friends of
the Earth**

Briefing

Factory farming's hidden impacts

Claims that we need to massively increase the amount of food we produce to feed a growing world population are increasingly common. But these claims have been based on inaccurate calculations and on assumptions about further increasing unhealthy levels of meat and dairy consumption. These assumptions are then used to promote ever more intensive production – more commonly known as factory farming. This briefing details how factory farming is not necessary, is failing to feed the world's hungry or support rural economies in the UK and is locking us into an ever-more destructive food system.

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What is Factory Farming?

Factory farming is a method of farming where livestock is raised in confinement in large numbers (and at high density) in a factory-like environment.

The aim of factory farming is to produce as much meat, eggs or dairy at the lowest possible cost. For the system to work, it needs high volumes of cheap animal feed as well as antibiotics and pesticides to mitigate the spread of disease exacerbated by the crowded living conditions. Animals are often confined to small areas, and physically restrained to control or limit movement. Food is supplied inside and is characterised by high protein concentration levels. A wide variety of methods are used to maintain animal health, including growth hormones and antimicrobial agents. Often these systems employ breeding programs to produce more productive animals suited to the confined conditions.

The cheap meat produced has significant hidden costs. The purpose of this briefing is to uncover the hidden costs of factory farming to the environment, farmers and consumers.

Hidden impacts on people

Factory farming contributes to the decline in farm numbers and total farmers as well as the size of the total labour force by (a) reducing the total number of people needed to produce the same if not more food and (b) through increased competition. By being able to produce a large amount of meat and dairy at low cost, smaller farms frequently have little option but to either intensify their own production or go out of business. The introduction of factory farming into a particular livestock sector tends to drive down prices across the sector, making it difficult for farmers to resist intensification.

One of the principle methods for reducing costs within factory farming is reducing the amount spent on wages. This is achieved by mechanisation, increasing the size and scale of farms and production processes, and reducing the income, wages and conditions of farmers and workers. Factory-farmed meat has a heavy human cost both in South America and closer to home.

Farmers in the UK

The UK farming sector is under enormous pressure, as is evident by the long-term decline in both numbers of farmers and numbers of agricultural workers. A quarter of all farmers are living in poverty and the average income for a farmer is £13,300 per year¹.

On average across the EU, one farmer goes out of business every minute² - 480 of Britain's 13,500 dairy farmers went out of business last year and another 400 are expected to stop farming this year³. Proposals for 'mega-dairies' such as the high-profile Nocton Dairy proposal with 8,100 cows and the 2,000 cow proposal in South Witham, Lincolnshire will only further increase the difficulties facing dairy farmers in the UK by producing milk at even lower cost.

With the loss of farms and farmers comes a loss of skills, experience and entry points into the industry. The average age of a farmer in the UK is now over 50, with half being over 55, and almost one quarter over 65⁴. Entry into the industry is

becoming increasingly difficult, especially as a dairy farmer, as the scale and initial outlay for a livestock farm increases⁵. Dairy farming is a common point of entry into the livestock industry, and so the impact of the loss of smaller dairies is potentially wide ranging.

Workers in the sector - migrant labour and casualisation

Alongside of the pressures on small and medium sized farmers there has been a trend towards the increasing casualisation of farm work, with a preference for temporary or migrant workers⁶. Factory farming, with its lower ratios of workers to animals and their basis in producing large quantities of product at low unit cost, also puts downward pressure on wages and benefits of farm workers.

Farmers in South America

Factory farming relies on high protein soy for animal feed imported from South America. The majority of soy plantations are owned by large landowners and multinational companies, where the planting and harvesting is carried out by machines, meaning few people are employed – a mechanised farm has an average of one employee per 200 hectares⁷.

This has had a dramatic impact on rural populations in soy-growing areas. Small landowners, who find soy production is not viable on a small scale, are displaced by the bigger producers, while campesinos (people who live and work in the countryside) are left unemployed. Many have been forced off their land and thousands of others have left rural areas to look for work in the cities.

Communities in the UK

There are a range of negative impacts on communities associated with intensive farming. Two of the most significant are issues associated with animal waste and the negative effects of high levels of antibiotic use⁸.

- **Animal Waste**

The principle impact of factory farming on both local residents and the natural environment in the UK derives from the mountains of animal waste that result from having large numbers of livestock crowded into relatively small spaces.

Animal waste from factory farms is usually put into a pit to be later disposed of. These pits can be vast – the 8,100 head proposed Nocton dairy would generate around 187,000 cubic metres of manure per year⁹ - enough to fill about 75 Olympic swimming pools. These lakes of animal waste can both damage water and soil through run-off and leaks. Nitrogen from the waste causes both eutrophication and oxygen depletion in water, damaging biodiversity and killing fish. 30 per cent of the nitrogen that pollutes water in the EU is due to livestock¹⁰. In addition to nitrogen, animal waste can also pollute water with both pathogens (such as Salmonella and E Coli), antibiotics and hormones, heavy metals and sediments (through soil erosion). In addition to water based pollution, aerial pollutants can also pose a threat to both workers and near-by residents.¹¹

- **Antibiotics**

The high stocking density, the stress of factory farming on animals and the low level of genetic diversity all increase the potential for the spread of diseases amongst

livestock. To stop the spread of diseases, factory farms usually use high levels of antibiotics, often to prevent disease rather than cure existing conditions¹². The large amount of antibiotics used in factory farming is a significant cause of the resistance of many common pathogens to the antibiotics used to treat infections in humans¹³.

An example is the statement by British government scientists that a new, almost untreatable, type of antibiotic resistance in *E. coli*, known as extended-spectrum beta-lactamase (ESBL) resistance, has spread from the handful of farms on which it had been identified, to more than one in three of all dairy farms in England and Wales¹⁴. The rise of ESBL *E. coli* on farms has been linked by a recent study to the increasing farm use of modern antibiotics classified by the WHO as critically important in human medicine¹⁵.

Antibiotic usage is most prevalent amongst the two most intensively farmed animals – pigs and poultry. 96 per cent of farm antibiotics are used in pigs and poultry farming and the total antibiotic usage in the pig sector is 115 times higher than in sheep farming.¹⁶ Sheep, unlike pigs, are usually farmed outdoors and not in intensive factory systems.

Hidden impacts on the planet

Factory farming has particularly adverse direct impacts that derive from the need for high levels of inputs such as high protein feed and oil-based products. There are also a number of 'secondary' impacts such as climate change and biodiversity loss. These impacts are commensurate with the scale of livestock production - livestock production uses 70 per cent of all available agricultural land, consumes around 40 per cent of the world's grain harvest and uses 8 per cent of the global human water supply.¹⁷

Most of the animal breeds used in factory farming are specifically bred to produce massive yields of meat and dairy. This is only possible with huge amounts of high protein feed, such as soy however. The global spread of intensive farming has led to a major increase in the use of high-protein animal feeds, comprising cereals and vegetable proteins such as soy. Producing 1kg of meat through typical industrial methods for example, requires 20kg of feed for beef, 7.3kg for pork and 4.5kg for chicken.

South American Impacts

Soy accounts for 65 per cent of all proteins used for animal feed in Europe, and 40 per cent in the UK.

Over three quarters of the soy imported to the UK comes from just two South American countries – Brazil and Argentina¹⁸. Soy production in South America has more than doubled in the last 15 years. This rapid expansion is driving the conversion of forests and grasslands to cropland and grazing, devastating vast areas of wildlife habitat with wide-ranging effects on the global environment. It is estimated that a further 100 million hectares of pasture could be converted for crop land in Brazil alone.¹⁹

Much of the soy in South America is grown from Monsanto's Roundup Ready genetically modified (GM) seed, prompting growers to use even more intensive

farming methods and to use large amounts of the herbicide Glyphosate.²⁰ Glyphosate has become a major source of pollution which contaminates surface water and aquifers, damages human health and kills other vegetation.²¹

The soil on soy plantations is exposed to wind and rain and therefore vulnerable to erosion. Brazil loses 55 million tonnes of soil through erosion each year. Intensive farming methods deplete the soil's nutrients and require fertiliser to compensate.²²

Large quantities of mineral fertilisers are used in soy producing areas to compensate for the degraded soil, causing excess nutrients to build up in the soil and in the water, alongside a cocktail of pesticide residues.²³

Biodiversity loss

The livestock sector is one of the most significant threats to global biodiversity (see South American impacts). The FAO reports that, through habitat change, climate change, overexploitation and pollution, "livestock play an important role in the current biodiversity crisis, as they contribute directly or indirectly to all these drivers of biodiversity loss, at the local and global level".

Intensification of livestock production in the UK also threatens wildlife locally through removal of habitat and pollution of water. Only 2% of grassland in the UK is rich in biodiversity. But extensive grazing on species rich pastures, unlike intensive zero-grazing systems can make a positive contribution to biodiversity, whilst also providing livestock with protein in the form of clover removing the need for imported soy.

Water

Livestock production already uses 15 per cent of all irrigated water globally. Around 2 billion people currently suffer from water scarcity, with this figure set to increase to between 4 and 7 billion by 2050 – more than half of the projected world population. The water used by livestock production is projected to increase by 50 per cent by 2025.

Climate change

Factory farming is sometimes put forward as a way of reducing greenhouse gas emissions because compared to grazing animals less methane is emitted. But this ignores important sources of emissions related to intensive farming.

The livestock sector generates a significant proportion of greenhouse gas emissions throughout the production process – 18 per cent of the global total. Although attempts have been made to tackle UK emissions, because of the large quantities of feed crops and food imported from South America much of Europe's greenhouse gas emissions from livestock have been exported rather than reduced. The conversion of forest and grassland to cropland releases stored carbon and reduces the global capacity for absorbing carbon dioxide. Globally, the land-use change set in motion by livestock farming leads to the release of 2.4 billion tonnes of carbon dioxide a year – equivalent to around 6 per cent of global greenhouse emissions and a third of all of the livestock sector's emissions.²⁴

Manufacturing animal feed also generates emissions through fertiliser production and processing. Soy is a particularly energy-intensive crop because of the process used to extract oil from the bean.²⁵

By contrast extensive grazing, such as in the uplands has the potential to play a vital role in regulating the climate through the storage and sequestration of carbon²⁶.

Hidden impacts on our wallets²⁷

In England, factory farming is propped up with vast amounts of public money - over £700 million each year. The money is spent through the EU's Common Agricultural Policy (CAP).

The CAP has delivered cheap animal feed to factory farms, via subsidies on both its cereal and protein components. This has been delivered via:

- Large payments for cereal production and high tariffs on its import, which promoted over production of cereals in the UK.
- Zero import tariffs on soy ensured access to cheap protein from abroad.

Despite changes to the CAP in 2005 removing the direct link between payments and production of specific crops and livestock, CAP is still driving and supporting intensive factory farming in the following ways:

- Payments are still made per hectare of land so the biggest farms still receive the most money
- Payments still calculated on a historic basis mean overproduction continues to be rewarded
- The absence of environmental and social safeguards acts as a hidden subsidy for intensive production
- Pre-2005 CAP policies have created a system of intensive production which will not change without significant targeted measures. 95per cent of UK CAP payments are untargeted, perpetuating business as usual.
- Import controls such as tariffs on certain agricultural products - and the lack of tariffs on others - continue to affects production decisions.

Hidden impacts on our security

Intensive farming systems like factory farming are highly dependent on international commodity markets, both for their inputs (such as animal feed and oil) and the sale of their outputs (such as meat and dairy products). Their dependence on these markets increases the exposure of UK farmers and consumers, and farmers in feed-producing countries to high levels of financial risk and uncertainty.

Grain and feed commodities

As Olivier De Schutter, the UN's special rapporteur on food has recently reported, the entry into markets for basic agricultural and food commodities by large institutional investors (such as Goldman Sachs, Merrill Lynch, etc) since the 1990's has greatly increased both prices and market volatility, creating a series of speculative bubbles²⁸.

One of the immediate effects of these speculative bubbles is to increase the price of feed for livestock farmers²⁹. In the UK, the speculative bubble in 2010 caused

agricultural input prices to go up faster than farm gate prices, leading to a real term loss of income³⁰. It also contributed to large increases in the prices of basic foodstuffs like bread and meat. While this speculation started after drought in Russia caused a failure in wheat production³¹, it spread to other commodity prices rising, even though stocks were sufficient to cover demand³². The World Bank reported that *“Recent volatility of domestic staple prices appears higher than that prevailing before the 2008 global food price crisis³³.”*

Oil and fertilizer dependency

The production of large amounts of high protein feed requires high levels of both fertilizer and oil (for powering machinery). Fluctuations and speculation in both markets acts to drive up input prices for UK farmers³⁴, as well as directly affecting their own oil and fertilizer usage³⁵. In addition to food market speculation in 2008, speculation in the oil market had a significant effect on the food riots and price inflation.

Conclusion: beyond the dead end of factory farming

“To argue, as we do, that continuing to focus on production alone will undermine our agricultural capital and leave us with an increasingly degraded and divided planet is to reiterate an old message. But it is a message that has not always had resonance in some parts of the world. If those with power are now willing to hear it, then we may hope for more equitable policies that do take the interests of the poor into account.”

Professor Bob Watson, Director of IAASTD

The recent International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) report³⁶, conducted by over 400 scientists from around the world, concluded that the best way forward towards sustainable agricultural was away from intensive factory farming and towards sustainable low input and small scale farming. As states:

It is certainly clear that we cannot indefinitely go on producing evermore meat and dairy for an increasing population. WWF have estimated that we are already using more of the Earth’s resources that is sustainable³⁷. Any increase in intensive factory farming will only increase our unsustainable use of the world’s resources

There are other options for feeding the world without trashing the planet. Friend’s of the Earth’s report *Eating the planet*, shows that we can produce enough food for an increased population in a sustainable, humane and fair fashion. Key to this is reducing the amount of meat and dairy consumed in the global North and moving towards low input livestock production. Reducing the use of imported feeds, and making more use of home grown alternatives is essential. Our report *Pastures New* shows that we could replace about 50 per cent of livestock feed with UK crops.

We need to reform the Common Agricultural policy to better support sustainable farming practices in the EU and remove subsidies for unsustainable factory farming. We need to make changes at a UK government level. The Sustainable Livestock Bill, that aims to measure and reduce soy usage as animal feed (among other things) will take us in the right direction. Finally, a fairer system of pricing for farmers and further research into sustainable livestock production in the UK are both needed urgently.

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- ² <http://www.stwr.org/imf-world-bank-trade/farm-subsidies-the-report-card.html>
- ³ <http://www.independent.co.uk/news/uk/home-news/new-battle-of-britain-as-plans-for-factory-farm-revolution-looms-2010107.html>
- ⁴ Pg 11 <http://www.sac.ac.uk/mainrep/pdfs/leergworkingpaper17.pdf>
- ⁵ *Ibid*, pg 4
- ⁶ Campbell, I., May, R., and Burgess, J. (2006) Pathways from Casual Employment to Economic Security: the Australian Experience; Sharpe, L. (2009) 'Food as if Fairness Mattered: Social justice and the UK food system; an investigation of institutions, risks, winners and losers' (unpublished paper, New Economics Foundation).
- ⁷ *Ibid*
- ⁸ Other issues include increased risk to water safety, increased traffic and noise and lower nutritional value of intensively reared meat and dairy
- ⁹ Not in my cuppa: The case against Nocton-style factory milk and for a sustainable British dairy industry. <http://notinmycuppa.com/>
- ¹⁰ Beyond Factory Farming: Sustainable solution for animals, people and planet, Compassion in World Farming
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- ¹² Nathan, C., 2004. Antibiotics at the crossroads. *Nature* 431:899-902
- ¹³ Shea, K.M., 2003. Antibiotic resistance: what is the impact of agricultural uses of antibiotics on children's health? *Paediatrics* 112(1):253-258
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- ¹⁵ A study by the VLA found that farms which had used 3rd/4th generation cephalosporin antibiotics in the previous year were four times more likely to have ESBL E. coli than farms which had not. Data from the VMD that the use of these antibiotics on farms has itself increased four-fold since 2000. Cited, <http://www.soilassociation.org/News/NewsItem/tabid/91/smid/463/ArticleID/1225/reftab/57/Default.aspx>
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- ¹⁷ Livestock's Long Shadow, UN FAO, 2006, Executive Summary
- ¹⁸ What's feeding our food?, Friends of the Earth, December 2008
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- ²⁶ *Ibid*
- ²⁷ More information on CAP can be found in our report *Feeding the beast*. It is available at: http://www.foe.co.uk/resource/briefings/feeding_the_beast.pdf
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- ²⁹ <http://www.farmersguardian.com/home/business/business-news/feed-prices-set-to-soar/33559.article>
- ³⁰ <http://www.farmersguardian.com/home/business/business-news/input-costs-rising-faster-than-food-prices/33949.article>
- ³¹ <http://www.guardian.co.uk/business/2010/aug/06/commodity-prices-food-inflation>
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