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Europe Needs a Food not Feed Policy

Philip Lymbery, Peter Stevenson and Carol McKenna

Compassion in World Farming, River Court, Mill Lane, Godalming, GU7 1EZ, UK
philip@ciwf.org.uk



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EUROPE NEEDS A FOOD NOT FEED POLICY

Abstract

Current European agricultural policies serve to prop up industrial animal agriculture, which doesn't produce food but wastes it. A sustainable food policy would focus on producing healthy food for people, and not feed for animals, whilst protecting the environment.

When considering sustainability in value chains, a key fact commonly overlooked is that nearly two thirds of EU cereals are fed to farm animals, with enormous associated loss of ~70%: for every 100 food calories of edible crops fed to livestock just 30 calories are produced in the form of meat and milk. If this human-edible grain were fed to people, it could feed an extra 3 billion. Such losses are not restricted to grain: around a quarter of the world's landed fish catch never reaches a human mouth, much of it is diverted to feed industrially reared fish, pigs or poultry.

Animals' inefficiency in converting human-edible crops into meat and milk brings other inefficiencies in its train:

- It is a wasteful use not just of the crops but also of the land, water and energy used to grow them.
- Because of its dependence on feeding cereals to animals, industrial livestock production generally uses more arable land and surface- and ground-water than other forms of animal farming.
- It also usually leads to greater water pollution.
- The need for crops to feed industrially produced animals has led to the intensification of crop production with the use of monocultures, chemical fertilisers and pesticides. These have eroded soil quality.

A European food not feed policy would not only promote human health but would also prevent further expansion of global cropland at the expense of forests and grassland, further loss of wildlife and substantial greenhouse gas emissions as well as reducing numerous forms of pollution. Simple policy measures to divert food currently used to feed animals to instead directly feed billions of people include: moving livestock back onto grass; feeding them forage, by-products and food wastes; reducing meat consumption; and reducing food wastage.

Public debate should be encouraged regarding internalising health and environmental costs into foods at the point of sale so as to further promote sustainable and healthy choices.

A move away from an agricultural policy founded on producing feed for animals to one that produces food for people would represent a major step towards a healthy, humane and sustainable food policy in Europe.

Introduction

This Seminar poses the question: "Does Europe need a Food Policy?" It asks: "whether agricultural policy should develop into a food policy?" The answer must be a resonant "Yes".

We need a food policy in order to address the high levels of diet-related ill health, environmental damage, greenhouse gas emissions and poor animal welfare that arise from Europe's current models of food production and consumption.

At present, inasmuch as there is any policy, it is fragmented, operating in silos. A cohesive, integrated food policy is needed that seeks to fulfil a range of objectives regarding health, resource-efficiency, the environment, climate change, farmers' livelihoods and animal welfare.

This paper will argue that one factor more than any other – industrial livestock production – is responsible for much of the harm arising from Europe's current food and farming system. We start by covering the environmental and health issues arising from industrial livestock production and then explain what is driving these problems. We then describe potential policies that might create a more sustainable food production.

Resource efficiency

In a world of finite resources and rising populations, resource-efficiency is crucial. And yet we have created a livestock system which, as will be seen below, experts describe as “staggeringly inefficient”,^{vii} “colossally inefficient”^{viii} and “a very inefficient use of land to produce food”.^{liii}

The source of this inefficiency is the dependence of industrial livestock production on feeding cereals to livestock that could instead be used for direct human consumption. This matters because the nutritional value consumed by animals in eating a given quantity of cereals is much greater than that delivered for humans by the resultant meat and milk.

The scale of this inefficiency in the EU is immense. European Commission market data show that 56% of EU cereal production is used as animal feed.ⁱ Indeed the Commission's website states that “Nearly two-thirds of the EU's cereals are used for animal feed”.ⁱⁱ

Studies show that for every 100 calories fed to animals in the form of human-edible crops, we receive on average just 17-30 calories in the form of meat and milk.^{iii iv} One paper indicates that the efficiency rates may be even lower for some animal products. It concludes that for every 100 calories of grain that we feed to animals, we get only about 40 new calories of milk, 22 calories of eggs, 12 of chicken, 10 of pork, or 3 of beef.^v

The paper also looks at protein conversion. It reports that for every 100 grams of grain protein fed to animals, we receive only about 43 grams of protein from milk, 35 from eggs, 40 from chicken, 10 from pork, or 5 from beef.

Furthermore, the UN Food and Agriculture Organisation (FAO) has said “When livestock are raised in intensive systems, they convert carbohydrates and protein that might otherwise be eaten directly by humans and use them to produce a smaller quantity of energy and protein. In these situations, livestock can be said to reduce the food balance”.^{vi}

Chatham House also state that the feeding of cereals to animals is “staggeringly inefficient”^{vii} and points out that the “use of crops and arable land for livestock production indirectly places rich meat and dairy consumers in competition for calories with poor crop consumers.” The International Institute for Environment and Development stresses that using cropland to produce corn, soybeans and other crops for animal feed rather than to grow food for direct human consumption is “a colossally inefficient” use of resources.^{viii}

The sheer scale of the losses entailed in feeding cereals to animals means that this practice is increasingly being recognised as undermining food security. Olivier De Schutter, former UN Special Rapporteur on the right to food, highlights the importance of “reallocating cereals used in animal feed to human consumption”.^{ix} He stresses that “continuing to feed cereals to growing numbers of livestock will aggravate poverty and environmental degradation”^x. The FAO warns that further use of cereals as animal feed could threaten food security by reducing the grain available for human consumption.^{xi}

Wasteful and damaging use of natural resources

Because of the poor efficiency with which animals convert human-edible cereals into meat and milk, industrially farmed animals generally use and pollute more ground- and surface-

water^{xii xiii} and use more arable land^{xiv} and energy per unit of nutrition produced than animals whose feed contains little or no human-edible crops.

Water: The UN states that “Intensive livestock production is probably the largest sector-specific source of water pollution”.^{xii} A key study analysed the water footprint of food production.^{xiii} It concluded that animal products from industrial systems generally consume and pollute more ground- and surface-water resources than animal products from grazing or mixed systems. The study concludes that the anticipated further intensification of animal production systems globally will result in increasing blue (volume of surface- and ground-water used) and grey (pollution caused) water footprints per unit of animal product due to the larger dependence on concentrate feed in industrial systems.

Land and soils: Animal products from industrial systems generally use more arable land than animal products from grazing or mixed systems.^{xiv} The need for huge amounts of crops to feed industrially produced animals has fuelled the intensification of crop production with its use of monocultures and chemical fertilisers and pesticides. These have eroded soil quality. The Commission points out that “45% of European soils face problems of soil quality, evidenced by low levels of organic matter”.^{xv}

A UK study concludes that “modern agriculture, in seeking to maximize yields ... has caused loss of soil organic carbon and compaction, impairing critical regulating and supporting ecosystem services”.^{xvi} It highlights “the extent to which modern agricultural practices have degraded soil natural capital”. It adds that poor soil quality is thought to be constraining productivity.

Research shows that soil biodiversity is under threat in 56% of EU territory, with intensive agriculture being a key factor in loss of soil biodiversity.^{xvii} A recent study examined soils in four European regions: southern Swede, southern UK, western Czech Republic and northern Greece.^{xviii} It concluded that intensive agriculture has reduced soil biodiversity in all these regions. It stresses that “future agricultural policies need to consider how to halt and/or reverse this loss of soil biodiversity”.

If less grain was needed as animal feed, arable land could be farmed less intensively. This would enable the quality of agricultural soils to be restored by methods such as the use of rotations, legumes, green manure and animal manure.

Biodiversity: Industrial agriculture is associated with a major decline in Europe’s biodiversity.^{xix xx xxi} The European Environment Agency has concluded that “Biodiversity in agro-ecosystems is under considerable pressure as a result of intensified farming”.^{xxii}

Farmland birds are considered to be a key indicator of the health of the countryside. Europe’s common farmland birds have declined by 30% since 1990; this has been linked to increased intensification as well as habitat loss.^{xxiii} The drive to grow more animal feed has been a major factor in the intensification of cereal production. This has entailed the loss of mixed farming, the erosion of habitat diversity and the development of monocultures, all of which result in less diverse opportunities for foraging and a reduction in the insect populations on which birds feed. Intensive agriculture has also played a major role in the decline in pollinators such as bees through its use of insecticides and herbicides.^{xxiv xxv}

Nitrogen pollution: Nitrogen is one of the major environmental challenges of the twenty-first century.^{xxvi} The *European Nitrogen Assessment* (ENA) concludes that excess reactive nitrogen (N_r) in the environment results in damage to water quality, air quality (and hence human health), soil quality, the greenhouse balance and ecosystems and biodiversity.^{xxvii} Agricultural emissions of nitrogen in the EU dwarf those from traffic and industry.^{xxviii}

The ENA points out that most production of N_r in Europe is used for fertiliser to grow feed crops for animals.^{xxx} It concludes that “the full chain of animal protein production generates much more losses to the environment than plant protein production”. It is industrial animal production that is dependent on feed crops and hence that has primary responsibility for livestock’s massive contribution to nitrogen pollution.

Unhealthy diets

The negative impact on health of industrial livestock production arises from several factors.

Non-communicable disease: The consumption of high levels of red and processed meat that have been made possible by industrial farming can lead to obesity, diabetes, heart diseases and certain cancers.^{xxx xxxi}

Nutritional quality: The FAO states that the modern western diet lacks nutrient quality and highlights the need to integrate the dimension of nutritional quality into food policy.^{xxxii} Free-range animals – that consume fresh forage and have higher activity levels – often provide meat of higher nutritional quality than animals that are reared industrially. Meat from free-range chickens contains substantially less fat and generally a higher proportion of the beneficial omega-3 fatty acids than meat from chickens reared industrially.^{xxxiii} Similarly, pasture-fed beef has less fat and higher proportions of omega-3 fatty acids than grain-fed beef.

Antibiotic resistance: Industrially farmed animals are routinely given antibiotics to suppress the diseases that would otherwise be inevitable when large numbers of animals are kept in crowded conditions. This contributes to the emergence of bacteria that are resistant to certain antibiotics used in human medicine.^{xxxiv} The link between industrial farming and high levels of antibiotic use is highlighted by the fact that the Veterinary Medicines Directorate’s data show that around 90% of all UK farm antibiotic sales are for pigs and poultry, the two most intensively farmed species.^{xxxv}

Air pollution arising from agriculture

Agriculture is a major source of three important air pollutants: ammonia, particulate matter and nitrous oxide. Air pollution is a serious problem for human health as it contributes to conditions such as bronchitis, asthma, lung cancer and congestive heart failure. One article analysed the health costs arising in Europe from Denmark’s air pollution.^{xxxvi} The study found that the main Danish sector that contributes to health costs arising from air pollution is agriculture; its contribution (43%) outweighs those of road traffic (18%) and major power plants (10%). A recent report by the French Senate concludes that air pollution is mainly caused by four sectors: agriculture, transport, industry and residential.^{xxxvii}

Industrial livestock production is also responsible for the majority of EU ammonia emissions. The European Environment Agency has reported that around 93% of EU ammonia emissions come from agriculture.^{xxxviii} Of the reported annual ammonia emissions declared under the Industrial Emissions Directive, 85.5% originate from intensive livestock production.^{xxxix}

What is driving our unhealthy diets?

When one points out that our current food system is unhealthy, environmentally damaging and cruel, EU policy makers invariably respond by saying: “We can’t tell people what to eat” even though this is not what we are suggesting. What is being proposed is that we as a society need to rethink our attitude to food, to develop a new food culture that attaches importance to the nutritional quality of food and values farming methods that protect the environment and animals. Like any social change, this will be a gradual process as we reassess our values and priorities; it will not consist of telling people what to eat.

Similarly, food businesses tend to say: “We’re just giving consumers what they want” as if these wants had arisen of their own accord. There is, however, a counterview that suggests that consumer demand for certain foods has been manipulated by years of advertising. For

example, a recent paper in *The Lancet* concludes that “Today’s food environments exploit people’s biological, psychological, social, and economic vulnerabilities, making it easier for them to eat unhealthy foods.”^{xi} It continues: “This reinforces preferences and demands for foods of poor nutritional quality, furthering the unhealthy food environments. Regulatory actions from governments and increased efforts from industry and civil society will be necessary to break these vicious cycles”.

The paper adds that “The high profits that come from the successful exploitation of vulnerabilities are often the driving force behind environmental changes that promote overconsumption of food.”

The paper points out that “Incentivised to maximise profits, the food industry manipulates ingredients, such as sugar, fat, and salt, along with flavour enhancers, food additives, and caffeine, to increase the reward value of foods. Many ultra-processed foods are also depleted of fibre and protein, two components that can enhance satiation and slow absorption of ingredients, such as sugar, into the bloodstream. Research using rats suggests that exposure to ultra-processed foods high in added sugar, fat, and salt leads to behavioural and neurobiological changes, consistent with an addictive process. Neuro-imaging of human brains has also shown that food intake and drug use trigger similar brain activity.”

What should a food policy look like?

In light of the problems arising from our food system, a food policy is clearly needed. We will now examine some of the tasks awaiting a food policy including the need to:

- Stand up to the powerful interests that benefit from industrial farming and Western diets
- Substantially reduce the use of human-edible crops as animal feed and recognise that such use is a form of food waste
- Promote quadruple win diets that are good for health, the environment, climate change and animal welfare
- Internalise farming’s negative externalities
- Deflate the ‘we need to produce 70% more food’ myth.

Because the EU has a farm policy (the CAP) but not a food policy, thinking in this area tends to be skewed towards the interests of farmers and the companies that provide farming inputs. Government at EU and Member State levels must come to realise that their duty is to serve the interests of all who have a legitimate involvement in food and farming. Of course, farmers must have decent livelihoods, but health, natural resources and animal welfare should not be seen as subservient to this.

The undue influence currently given to industry is highlighted by the recent Decision of the European Ombudsman in her inquiry concerning the composition of the Civil Dialogue Groups (CDGs) brought together by the Commission’s DG Agriculture.^{xii} The CDGs provide a forum for dialogue with representative associations and civil society on matters relating to the CAP; they also provide advice and expertise to DG Agriculture on all CAP matters.

The current system of CDGs was put in place by Commission Decision 2013/767/EU. Article 4(3) of this Decision requires a “balanced representation” of interests in the Groups and, in particular, balanced representation as between “economic and non-economic interests”. The Ombudsman’s inquiry found that “the final weighted average ratio of economic to non-economic interests in the 13 CDGs is roughly 80% to 20%”. This suggests that economic interests continue to overwhelm other considerations in the formulation of agricultural policy.

The imbalance is also illustrated by information published by the Commission about its meetings with lobbyists. This shows that since December 2014 the overwhelming majority of lobbying meetings with members of the Cabinet and senior officials in DG Agriculture have been with farming and industry bodies, with only a small minority being with civil society

organisations.^{xlii} This does not respect the requirement of the Commission President that “Members of the Commission should seek to ensure an appropriate balance and representativeness in the stakeholders they meet”.^{xliii}

Corporations that provide inputs to farming (fertilisers, pesticides, commercial seeds, livestock genetics and pharmaceuticals) and that trade in agricultural commodities such as grain have a huge interest in the maintenance and further expansion of industrial agriculture. Demand for their products would be much reduced if farming were to move away from the industrial model that dominates in the West and that is increasingly becoming embedded in the developing world.

The weight of these interests can be seen from the fact that the EU fertiliser industry has an annual turnover of €13.2 billion.^{xliv} 51% of EU fertilisers are used for the production of wheat and coarse grains;^{xlv} 56% of these crops are used as animal feed.^{xlvi} Another 23% of EU fertilisers are used for grassland and forage crops. A further 10% is used for oilseeds; oilseed meal is used extensively in animal feeds.^{xlvii} The EU pesticide sector has an annual turnover of €7.7 billion.^{xlviii}

Societal interests (health, environment, animal welfare) are in general undermined by industrial agriculture. A key role for an EU food policy would be to ensure that these interests are not overwhelmed by farming interests and the agri-input and commodity trading businesses which tend to promote industrial agriculture as it is this sector that generates demand for their products.

An example of this is provided by the damaging symbiotic relationship between the EU’s arable sector and its pig and poultry sectors. 56% of EU cereals are used as animal feed^{xlix}; most of this is used in the intensive pig and poultry industries and in the intensive part of the dairy and beef sectors.^l

If EU animal production were to move away from the use of cereals as feed, the EU cereal sector would experience the loss of much of its principal market. Thus the EU cereal sector as currently formulated is highly dependent on demand from industrial livestock production, while the latter’s survival hinges on the supply of plentiful cheap subsidised cereals. So we have the anomaly of a subsidised intensive crop sector that erodes soil quality and biodiversity that would not need to be intensive but for the fact that it has to feed industrial animal production which contributes to unhealthy diets. This is a vicious circle of mutually reinforcing damage.

Food not feed

A prerequisite of making progress on the environment, health, greenhouse gas (GHG) emissions and animal welfare is to substantially reduce the use of human-edible cereals as animal feed. The key quality of any efficient livestock system is that the animals are fed on materials that cannot be eaten by humans. The following approaches all share this characteristic:

- *Raising animals on pastures or other grasslands:* The benefits of extensively reared ruminants is that they convert grass and other inedible vegetation into food that we can eat and are able to use land that is generally not suitable for other forms of food production. Also, semi-natural grasslands support biodiversity and store carbon. However, care must be taken to avoid overgrazing that reduces soil quality and, in semi-arid, marginal lands, can lead to desertification. Nor should new pastures be created by deforestation.
- *Integrated crop/livestock production:* The World Bank is extremely positive about the benefits of such rotational mixed farming as crop residues can be used to feed animals.^{li} Moreover, their manure, rather than being a pollutant, fertilises the land
- *The use of by-products and unavoidable food waste.*

Bajželj et al (2014) identify grazing on pasture and use of crop residues and processing co-products as efficient forms of feed. They say that “together these support about 30% of current [global] livestock production; the remaining 70% has to be seen as a very inefficient use of land to produce food”.^{lii}

Ending the food waste involved in feeding human-edible crops to animals

Governments rightly emphasise the need to end food waste at the retail and domestic levels. The Commission states that, every year in the EU, 180 kg of food per person is wasted. However, we waste more – at least 234 kg per person per year - by using human-edible cereals as animal feed.^{liii} This figure does not refer to the total cereals fed to animals; it is the amount that is *wasted* due to several plant-derived calories being needed to produce one calorie of meat. The EU must recognise that feeding human-edible cereals to animal is a form of food waste. It should adopt measures to reduce this form of food waste.

Certain diets provide quadruple win: for health, environment, climate change and animal welfare

A key starting point for food policy is the substantial body of research that shows that diets that are healthy are generally also supportive of the environment and help reduce GHG emissions.^{liv lv lvi lvii} In addition, they are likely to foster farming systems that have a high potential for good animal welfare. Healthy diets tend to entail reduced meat and dairy consumption, plenty of fruit and vegetables, low levels of salt, sugar and fat as well as the use of whole-grain starchy foods.^{lviii}

Research concludes that reduced consumption of red and processed meat would lead to reduced risks of heart disease, diabetes and colorectal cancer.^{lix lx} A study published in *The Lancet* concluded that a 30% decrease in intake of saturated fats from animal sources in the UK could reduce the total burden from ischaemic heart disease by 16%.^{lxi}

A 2014 study examined the health implications of a 25% and also a 50% reduction in EU consumption of meat and dairy products.^{lxii} It was only the 50% reduction that brought consumption of red meat and saturated fats below the maximum intakes recommended respectively by the World Cancer Research Fund and the World Health Organisation (WHO).^{lxiii} The 50% reduction provides protein intakes that, while lower than under current diets, are still higher than those required under WHO recommendations.

Studies show that a substantial reduction in meat and dairy production in the EU would provide important environmental benefits. These are shown in Table 1.

Table 1: Positive environmental impacts of a 50% reduction in EU consumption of meat, dairy and eggs

| Factor affected by reduction in meat consumption | % reduction from current levels |
|---|--|
| Soybean use as animal feed | 75% |
| Use and pollution of surface- and ground-water * | 20% |
| Cropland use | 23% |

| | |
|--------------------------|--------|
| Nitrogen emissions | 40% |
| Greenhouse Gas emissions | 25–40% |

* In this case the figure in column 2 refers to a 45% reduction in meat consumption

Sources:

Westhoek *et al* 2014. Food choices, health and environment: Effects of cutting Europe's meat and dairy intake. *Global Environmental Change*, Vol 26, May 2014 p196-205.

Vanham D, Mekonnen M and Hoekstra A, 2013. The water footprint of the EU for different diets, *Ecological indicators* 32, 1-8

Hilal Elver, the UN Special Rapporteur on the right to food, stresses: "The world's current consumption pattern of meat and dairy products is a major driver of climate change and climate change can only be effectively addressed if demand for these products is reduced".

^{lxiv} She adds: "Nations with emerging economies must increase awareness of the implications of meat consumption, while developed countries should demonstrate a willingness to modify consumption behaviour and avoid food waste."

Bajželj *et al* (2014) show that it is unlikely that global temperature increases can be kept below 2°C without a shift in global meat and dairy consumption.^{lxv} They show that, on a business-as-usual basis, agriculture's global GHG emissions will increase by 42-77% by 2050. However, all sectors must reduce their emissions if we are to keep below 2°C.

They conclude that agriculture's emissions can only be reduced if there is a 50% reduction in food waste and a shift to healthy diets. The proposed healthy diets in this study vary between regions. They involve a 60% and 23% decrease in meat and milk consumption respectively in West Europe. The decrease in East Europe would be lower: a 45% and 4% reduction in meat and milk consumption respectively.

Hidden costs, distorted prices

The Lancet paper referred to earlier points out that "in high-income countries, energy-dense and nutrient-poor foods tend to be inexpensive, thus saturating low-income neighbourhoods with unhealthy options".^{lxvi} It is totally unacceptable that the poorer members of society find themselves having to rely on poor quality, unhealthy food. Olivier De Schutter, former UN Special Rapporteur on the right to food, stresses that "any society where a healthy diet is more expensive than an unhealthy diet is a society that must mend its price system."^{lxvii}

The low cost of industrially produced animal products is achieved only by an economic sleight of hand. We have devised a distorting economics that takes account of some costs such as housing and feeding animals but ignores others including the detrimental impact on human health and natural resources of industrial agriculture.

This is confirmed by a new FAO report that points out that 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".^{lxviii}

Compassion in World Farming's forthcoming report *Cheap Food Costs Dear* pulls together a wide range of studies that examine the economic costs that arise from the ill-health and environmental damage that result from industrial livestock production.

The report shows that the costs of industrial livestock production's negative externalities are immense. These costs, however, are not borne by the consumers of industrial animal

products but by taxpayers, 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 undermining the ability of future generations to feed themselves.

The UK Foresight report stressed: “There needs to be much greater realisation that market failures exist in the food system that, if not corrected, will lead to irreversible environmental damage and long term threats to the viability of the food system. Moves to internalise the costs of these negative environmental externalities are critical to provide incentives for their reduction.”^{lxi}

Legislation, fiscal measures, codes of practice and standards set by food businesses can all internalise external costs. Taxation measures can be used to internalise the negative externalities of the production of meat and dairy products – i.e. including them in the price of the product.

Such a tax would discourage certain forms of food production and consumption. Crucially monies raised by such taxation should be used to incentivise positive externalities or assist those who wish to reduce negative externalities. It should also be used to reduce the price for consumers of healthy, environmentally-friendly food produced to high standards of animal welfare.

Taxation measures could be used to reduce the cost of good food to both farmers and consumers. Farmers could be offered more generous capital allowances for investments in sustainable, animal welfare-friendly farming. In those countries that charge VAT on food, the cost to consumers of healthy, sustainable, high welfare food could be reduced by placing a lower or nil VAT rate on such food.

The CAP should be reconstituted as a *Common Food and Farming Policy*. Subsidies should be totally reconceived with public money only being used to fund public goods i.e. those nutritional, environmental and animal welfare standards that benefit the public but which the market cannot, or can only partially, deliver.

Challenging the productionist paradigm

One thing more than any other drives current food policy: the carefully cultivated notion that we need to produce 70% more food to feed the extra 2.6 billion people that will be alive by 2050.

The UN Environment Programme (UNEP) calculates that the cereals which, on a business-as-usual basis, are expected to be fed to livestock by 2050, could, if they were instead used to feed people directly, provide the necessary food energy for over 3.5 billion people.^{lxx} If a target were adopted of halving the amount of cereals that, on a business-as-usual basis, would be used for feed by 2050, an extra 1.75 billion people could be fed.

Furthermore, a report by the High Level Panel of Experts on Food Security and Nutrition states that worldwide 25% of food calories are lost or wasted.^{lxxi} If loss and waste could be halved an extra 1.3 billion people could be fed.

Based on figures in an interim report by the World Resources Institute^{lxxii}, we calculate that an extra 310 million people could be fed if the number of people who are expected to be obese and overweight by 2050 were reduced by eliminating obesity and halving the number who are overweight.

If all the above steps were taken, an extra 3.36 billion people could be fed, more than the anticipated 2.6 billion increase in world population.

We are not arguing that no additional production is required. Increased production is needed in certain regions but, in light of the various forms of loss and waste referred to above, we believe that the claim that a 70% increase in global food production is needed by 2050 substantially overestimates the quantity of extra production needed.

Mechanisms for implementing a food policy

Above all, the EU institutions will need to recognise – and communicate to citizens – the compelling need for a fundamental policy shift. A wide range of measures will then be needed to implement a food policy that, rather than harming, will actually benefit the food security - health – environment - climate change - animal welfare axis. These include the following policy measures.

Public information and education

The EU should develop programmes to increase public awareness of the implications of different livestock farming methods and consumption levels for health, natural resources, food security and animal welfare. This will entail a major change of direction as, to date, the EU and the industry tend to conceal the existence of industrial livestock production and to obfuscate its adverse impacts; for example their materials about farming invariably portray animals being kept in green fields rather than in the barren indoor conditions that are common in today's farming.

Honest labelling

Consumers should be empowered to play a greater part in driving improvements. Eggs must, by law, be labelled as to the farming method used. Extending this requirement to meat and dairy products would enable consumers to make informed choices when buying food. Food businesses should be encouraged to adopt labelling that informs consumers as to the environmental burden of food.

Creation of a new food culture

The current food culture gives great weight to factors such as low prices and convenience. There is no part of this culture that invites consumers to think about how low-cost meat, eggs and milk are produced. A new food culture must be created that considers the nutritional quality of food and values farming methods that protect the environment and animals. As we know from areas such as smoking and gender equality, the development of a new culture is a lengthy and complex process but it can eventually lead to new ways of thinking and behaving.

Fiscal measures

As indicated earlier, taxation and subsidies can be used to internalise externalities and to encourage farmers to produce and consumers to choose high quality food. Wherever possible, taxes should be positive, rewarding through reduced taxes rather than penalising through increased taxes.

The use of fiscal measures is recognised as a legitimate tool for influencing behaviour. For example, the UN *Political Declaration on Non-Communicable Diseases* (NCDs) identifies unhealthy diets as a key risk factor for NCDs. It urges Governments to advance interventions to reduce the impact of unhealthy diets on NCDs through, *inter alia* “fiscal measures”. There is also a possibility of REDD+ payments being directed at pasture-raised silvo-pastoral farms that sequester carbon.

Public procurement

Public sector bodies should, when buying meat, dairy products and eggs, use their buying power to augment the market for food produced to high standards. This need not increase costs. For example, a number of US hospitals are involved in a programme whereby they reduce the quantity of meat they use in their meals but use more sustainably produced meat. Although this is more expensive, the savings made by reducing the quantity of meat

purchased cover the extra cost of the higher quality meat and allow the hospitals to reduce their expenditure on food. The result is several 'wins': support for sustainable, high welfare farming, healthier diets for patients and reduced spending on food.^{lxxiii}

Ending undue industry influence

The Commission and the Member States must take steps to ensure that societal goals are not treated as being of less importance than the interests of industry. To achieve this, much greater transparency regarding industry lobbying is needed. In addition, an appropriate balance must be achieved with the Commission and Member States being as willing to meet and give due weight to those that represent societal concerns as to industry lobbyists.

Moreover, the Commission and the Member States must be prepared to give much more serious consideration to peer-reviewed scientific papers and reports by UN bodies that reveal the adverse impacts of current food and farming systems. At present the tendency is to dismiss or ignore such papers and reports.

Need to be able to challenge lawfulness of Commission action and inaction at European Court

The Court of Justice of the EU has for many years interpreted the Treaty as not allowing civil society organisations to institute proceedings at the Court to challenge the legality of Commission actions or inactions. As a result the Commission knows it can act with impunity in ignoring its legal obligations in areas such as health, the environment and animal welfare. The Treaty should be amended to allow civil society organisations to institute judicial review proceedings at the Court of Justice to challenge the lawfulness of acts and omissions by the Commission and other EU institutions.

Innovation and research should focus on sustainable agriculture rather than on reinforcing industrial production

Public funding should be aligned with a healthy and sustainable food supply. At present, however, EU and Member State funding (e.g. that of Innovate UK) for agriculture research and development tends to be directed to agri-tech which generally favours - and indeed serves to entrench - industrial farming. Such funding should instead focus on sustainable farming such as agro-ecology, agro-forestry, circular agriculture and the restoration of soil quality.

Investors

Private and corporate investors (including pension funds) should be encouraged to divest from industrial agriculture and instead invest in sustainable, humane farming.

Conclusion

Much of the current food system is driven by the outmoded machine of industrial livestock production. This plays a part in antibiotic resistance and promotes unhealthy diets that contribute to climate change. Its need for huge amounts of crops has fuelled intensive crop production, which results in degradation of soil, biodiversity loss and pollution of water and air. It is responsible for immense animal suffering. The absence of a coherent food policy has contributed to this. The EU needs to develop a food policy whose core objective is the sustainable and humane production of healthy, nutritious food for people.

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- Commission data show that each year on average 168 million metric tonnes of cereals are used as animal feed in the EU
 - As indicated above, for every 100 calories fed to animals in the form of human-edible crops, we receive on average just 17-30 calories in the form of meat and milk. Even taking the higher figure of 30%, this means that 70% of the cereals fed to animals are wasted
 - 70% of the 168 million metric tonnes of cereals used annually in the EU as animal feed is 117.6 million metric tonnes (i.e. 117,600 million kg)
 - The EU population is 503 million
 - As overall 117,600 million kg of cereals are wasted each year, the waste per person per year in the EU is 233.8 kg of cereals annually.
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