

Measures to make livestock production sustainable

(Ron Ockwell)

[This article is adapted from a project report prepared in 2016 for an Environmental Governance certificate of advanced studies course at the Graduate Institute, Geneva.]

Effects of livestock production and meat consumption



Livestock production is a major contributor to climate change and air pollution, to deforestation, soil and water degradation, and biodiversity loss.¹ The production of beef uses by far the most land and energy, and has the highest

global warming potential, followed by pork, chicken, eggs and milk² although, globally, pork and chicken are produced in larger quantities.³ At the same time, processed meats and high levels of consumption of red meat⁴ may contribute to a number of serious human health problems.⁵ All these problems are set to increase substantially in the coming years as demand for livestock products continues to rise, with incomes, in many countries.⁶



Eighty percent of all agricultural land is dedicated to grazing and feed-crop production which, alone,

is a contributory factor to biodiversity loss in many terrestrial global hotspots. (Steinfeld et al, 2006: 25)

² (Scollan et al, 2010: 4)

³ (FAO, 2009: 16)

⁴ 'Red meat' refers to all mammalian muscle meat, including, beef, veal, pork, lamb, mutton, horse, and goat [<http://www.who.int/features/qa/cancer-red-meat/en/>]

⁵ The consumption of red meat, especially processed, in quantities substantially greater than needed to meet nutritional needs, is believed to contribute to heart disease, stroke, type-2 diabetes, obesity, certain cancers, and earlier death. (jhbshp)

⁶ Driven by increased demand, the global production of meat is projected to more than double by 2050. The bulk of this growth is predicted to occur in developing countries, with China, India and Brazil already representing two thirds of current meat production (Scollan et al, 2010: 1)

occupies 33% of all arable land.⁷ Expanding livestock production is a key factor in deforestation.⁸ About 20% of the world's pastures and rangelands have been degraded, mostly through over-grazing, compaction and erosion created by livestock action. In dryland areas, where livestock are often the only source of livelihoods, 73% of rangelands are degraded.⁹

The livestock sector is responsible for 18% of human-induced GHG emissions measured in CO₂ equivalent. Cattle represent 65% of these emissions. Feed production and processing,



and enteric fermentation from ruminants are the main sources of emissions, followed by fossil fuel consumption and manure storage and processing.¹⁰

The sector accounts for over 8% of global human water use, mostly for the irrigation of feed-crops, and is probably the largest sectoral source of water pollution through run-off, which contributes to eutrophication of rivers and lakes, and to 'dead' zones in coastal areas.¹¹

The large-scale, prophylactic administration of antibiotics to animals raised in industrial systems is contributing to antibiotic resistance that makes human illnesses harder to treat.¹²

The EU has prohibited non-therapeutic agricultural use of antimicrobials that are important in human medicine but they are still massively used for non-therapeutic purposes in the USA and elsewhere.¹³

7 Globally, livestock feed absorbs 33% of all cereals produced, being consumed in roughly equal quantities in developed and developing countries (Scollan et al, 2010: 13)

8 (FAO, 2013: xx)

9 (Steinfeld et al, 2006: 23)

10 (FAO, 2013: xii, 15)

11 The pollution includes animal wastes, antibiotics and hormones, chemicals from tanneries, fertilizer and pesticides used for feed-crops, and sediments from eroded pastures. By compacting soil, livestock also reduce the replenishment groundwater. (Steinfeld et al, 2006: 24)

12 (ucsusa)

13 (Mellon et al, 2001)

Almost all these environmental and human costs are ‘externalized’. They are born not by the livestock sector but by communities living near intensive livestock and feed-crop production facilities and by society as a whole. And enormous quantities of nutritional energy and protein are lost in the conversion of feed-crops into meat in all livestock production systems, while hunger and malnutrition persist in many of the producing areas.¹⁴

Meanwhile, evolutions in the livestock sector result in the sector competing ever-more directly for scarce land, water and other natural resources in concentrated areas, marginalizing smallholders and pastoralists, increasing inputs and wastes, and concentrating the pollution created.¹⁵

Opportunities for and obstacles to change

Technologies and practices that can reduce GHG emissions (and other negative impacts) within existing production systems exist, but are not widely used. Emissions could be reduced by 30% if all producers in a given system, region and climate adopted the technologies and practice currently used by the 10% of producers with the lowest emission intensities.¹⁶

Major reductions in GHG emissions per unit of livestock produce can be achieved by improved diets, animal health and herd management in extensive cattle-grazing systems, and by genetic improvement. Improved management of pasturelands and restoring degraded pastures can increase carbon sequestration.¹⁷ In ‘industrial’ production systems, there’s potential in manure management (including biogas production), reducing energy use, and sourcing feed with lower emission intensities.

14 (Scollan et al, 2010: 13)

15 (FAO, 2013: xx-xxi) These evolutions are technical and geographical and they are shifting the balance of environmental problems caused. While extensive grazing still occupies and degrades vast areas, there’s an increasing trend towards intensification and industrialization. Production is moving nearer to urban and peri-urban areas to get closer to consumers and trade hubs where feed is imported. Pig and poultry production is growing more rapidly (mostly in industrial units) than that of cattle, sheep and goats (often raised extensively).

16 (FAO, 2013: xiii)

17 Soil organic carbon sequestration by the world’s permanent pastures could potentially offset 4% of the global greenhouse gas emissions. (Scollan et al, 2010: 6)

Water use and pollution could be reduced by regulations to limit use and discharge levels, zoning regulation, and taxes to discourage large-scale concentrations close to cities, and the participatory management of watersheds.

Land degradation and biodiversity loss can be reduced by soil conservation measures, silvopastoralism,¹⁸ better grazing management, and controlled exclusion from sensitive areas.¹⁹

Antibiotic resistance could be reduced if other countries adopt the EU policy of restricting non-therapeutic use.

While such practices and regulations are needed, the correct pricing of natural resources such as land, water and use of waste sinks is essential. Most frequently, these resources are free or under-priced, which leads to overexploitation and pollution. Often, perverse subsidies encourage livestock producers to engage in environmentally damaging activities.²⁰ Such subsidies need to be removed and ways found to 'internalize' currently-hidden costs. This could include full-cost pricing of water²¹ and grazing fees, for example.

The livestock industry is aware of these issues and the need to account more fully for its external impacts²² but both producers and input-suppliers can be expected to strongly resist many of the measures indicated above that would increase their costs at a time when many are heavily indebted having undertaken major investments expecting continuing subsidies, etc. Governments wishing to assure cheap food for their citizens may also resist, as may large food retailers. And emission accounting rules may need to be changed so that

18 Silvopastoralism is livestock raising combined with forestry and it already practised in parts of Latin America and Africa.

19 (FAO, 2013: 24)

20 Ibid. A particular example is the subsidisation by the US government of the production of cereals for animal feed (icsusa).

21 (Scollan et al, 2010)

22 The report to the International Meat Secretariat (Scollan et al, 2010) states that "the polluter pays principle suggests that farming, like any other industry, will need to account more fully for its external impacts ... production should reflect both financial costs plus the costs accruing to other parts of society."

countries importing high-emission feed would have an incentive for cutting back on the use of such feed.²³

In extensive grazing systems, incentives may be needed in the form of payments for environmental services such as regulation of water flows, soil conservation, conservation of natural landscape and wildlife habitats, or carbon sequestration.²⁴ In other situations financial incentives may be needed to enable farmers to undertake the necessary initial investments and accept the short-term risks involved in changing practices.²⁵ In some countries, incentives could be financed using funds presently devoted to subsidies.



But the potential benefits of all the above measures, if taken, could be wiped out if present trends of rising production in response to rising demand continue. It will therefore be necessary to also curtail rising demand.²⁶ That may happen naturally if prices rise to reflect true costs, but public education will also be needed to raise awareness of the unsustainable environmental and resource-use costs of large-scale meat production, and the adequacy (and eventual benefits) of diets with only modest

quantities of meat.

It may be difficult to change cultural expectations in emerging countries in the short term but there is already a distinct trend towards eating less meat in some European and other

23 (FAO, 2013: 90) There is a case for attributing emissions on a consumption basis. Consumption-based accounting places responsibility at the source of original demand for goods or services. This changes the question from “How many GHG emissions are produced in our country?” to “What quantity of GHG emissions is our country responsible for through our consumption?” (Scollan et al, 2010:17)

24 (FAO, 2013)

25 (FAO, 2013: 15) Regulation might include assigning mitigation targets for farmers/sectors, as well as more prescriptive approaches such as mandating the use of specific mitigation technologies and practices: Ibid p.87

26 A substantial reorientation of some feed-crop production towards food for direct human consumption may be needed if hunger-reduction objectives are to be met, implying significant reductions in demand for meat.

developed countries²⁷ where awareness of environmental and human health impacts of dietary choice is becoming more mainstream.

Conclusions; potential for NGO action

Environmental protection agencies, people living near intensive production facilities, some nutritionists, and sustainability-oriented livestock specialists are already calling for action.

Cities and many NGOs can also be expected to support action. Regulation and the withdrawal of subsidies will be resisted by the livestock industry, indebted producers and their political and financial backers, some economists and politicians in meat-exporting countries. The probable main challenges will be a lack of political will, 'free' trade agreements, and cultural expectations.

NGOs might advocate for the EU to tighten regulations related to the production of livestock within Europe, ban subsidies, and support public health campaigns to reduce the consumption of meat, especially beef and pork. In that context, NGOs could 'add value' at the EU level by working with other groups on:

- promoting the removal of subsidies that encourage large-scale production of feed-crops and meat, and replacing them by incentives to reduce environmental and other impacts;
- developing practical proposals for internalizing the presently-externalized costs of livestock production (including feed-crops);
- developing standards, certification and the labelling for sustainably-produced meat;
- promoting a Europe-wide public education campaign concerning the costs and unsustainability of large-scale meat production and the adequacy (and potential benefits) of diets with only modest quantities of meat;
- ensuring that EU development aid promotes only sustainable livestock production practices.

²⁷ (FAO, 2009: ch.2)

NGOs could, within their home countries, press governments to cooperate with the above, monitor and report on subsidies and the state of environmental damage at country level, and, most of all, organize relevant public education to reduce the demand for meat and increase pressure on governments and the EU to make livestock production sustainable and internalize all costs.

NGOs working in developing countries could promote sustainable livestock production practices in projects supported among smallholders and pastoralists, and help local partners to monitor and report on the environmental and other costs of livestock production.

The measures proposed would contribute a number of Agenda-2030 concerns: not only sustainable food production but also on climate, water, environment, biodiversity and health.