Livestock farming

Meat and greens

A lot can be done to make meat-eating less bad for the planet

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IN DECEMBER angry farmers drove their cattle to Manapparai, in the southern Indian state of Tamil Nadu, and blockaded the market. They were protesting against a decision by health inspectors to close their own market at Trichy, 35 kilometres (22 miles) away, after cases of foot and mouth. India is famously tolerant of cattle in the road. Now, cows were everywhere.

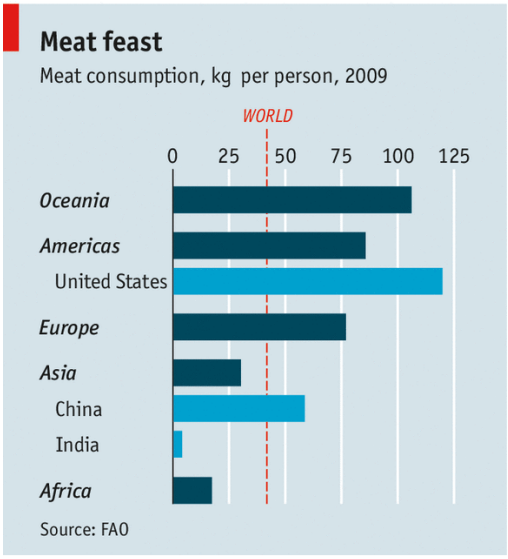
It was just one example of the tensions affecting the livestock business worldwide. In places like Tamil Nadu, one of India's richer states, middle-class supermarkets and food-safety rules coexist uneasily with older customs of selling live animals in cities and consumer preferences for local meat and milk. Europe has been transfixed after horsemeat was found in processed beef in Britain, Ireland and the Netherlands; French, Polish and Romanian suppliers were implicated. China is gripped by a donkey-meat scandal: the "Five Spice" donkey sold in Walmart stores had been adulterated with fox.

The new attention is warranted. Around the world 1.3 billion people, most of them poor, raise animals, accounting for a third of total agricultural GDP. More acres are given over to feeding animals than to any other single use. Meat provides a third of the protein in worldwide diets. But it is a mixed blessing. Animals are less efficient than plants at converting nutrients and water into calories. Meat accounts for a sixth of humanity's calorific intake but uses roughly a third of its crop land, water and grain. Producing a kilogram of grain takes 1,500 litres of water; a kilo of beef takes 15,000 litres.

Domestic animals also belch and fart amazing quantities of greenhouse gases—and when jungle is cut down for pasture, carbon emissions rise. In all, livestock farming produces 8-18% of greenhouse-gas emissions. It is the main contributor to the build-up of nitrogen and

phosphorus in the world's soils, producing too much ammonia (which is caustic), nitrous oxide (a greenhouse gas) and dead zones in oceans (the result of excess phosphorus).

A fifth of the world's pasture has been spoilt by overgrazing. If the livestock business repeats the growth of the past 40 years during the next 40 the results could be disastrous, with more jungle and savannah turned into pasture, and more rivers and watering holes drunk dry. If all that were not enough, domesticated animals form a reservoir of diseases that afflict humans (see article (http://www.economist.com/news/international/21594347-where-demand-meat-grows-so-does-risk-outbreak-zoonose)).



Many environmentalists say the only thing to do is to cut the business down to size. "Eat less meat," said Rajendra Pachauri of the Intergovernmental Panel on Climate Change, the UN gathering of scientists who track global warming. "You'll be healthier and so will the planet." Fat chance. Urbanisation and rising incomes in the developing world will lead to much of it approaching European and American levels of meat consumption (see chart). Even if parts of India remain vegetarian, worldwide meat-eating will probably double by 2050.

So what sort of livestock farming can satisfy growing demand while using land, water and crops more rationally? Recent papers by Mario Herrero of Australia's Commonwealth Scientific and Industrial Research Organisation and colleagues argue that the answer is intensive livestock farming, which is more efficient and environmentally friendlier than small-scale, traditional pastoralism of the sort beloved by many greens. But to avoid turning more wilderness into pasture and using more water that the world cannot spare, "factory farming" must be reformed.

A greener hoofprint

Among the lessons of the research is that white meat wins out over red for environmental reasons as well as health ones. It takes 2kg of feed to produce 1kg of chicken; 3kg for 1kg of pork. The ratio for lamb is between four and six to one; for beef, between five and 20 to one. And cows need five times as much feed to produce 1kg of protein as meat than to produce it as

milk.

Even without switching between types of protein, there is scope for big productivity gains in South and South-East Asia, Africa and the Middle East, where 45-80% of pig and chicken farms are smallholdings. In America and Europe 70-98% are run at industrial scale. A cow in America or Europe eats 75-300kg of hay and other dry matter per kilo of protein; in Africa, which has the largest number of traditional pastoralists, she needs 500kg or more. On the dry rangelands of Ethiopia and South Sudan, the figure is up to 2,000kg.

Switching from pastoralism to feeding cattle with grain would dramatically improve efficiency. Just how much can be seen from milk yields. Between 1950 and 2000, they doubled in the Netherlands, from 3,560 litres per cow per year to 7,180. In Africa the improvement was zero.

This switchover would also reduce the damaging build-up of nitrogen and phosphorus in soil, since intensive methods turn the nutrient in feed into meat more efficiently. And it would slash greenhouse-gas emissions. Cattle on dry rangelands produce 100 times as much per unit of meat as cattle in America or Europe. Three-quarters of the total comes from cattle, for 59m tonnes of beef a year. Poultry and pigs produce 10%—for four times as much meat.

Industrial-scale livestock farming can encourage the spread of diseases that humans share with animals. And animals may suffer in factory farms (though they bear a big burden of endemic diseases in pastoral systems). Such downsides are cited by environmentalists who would prefer less factory farming and more traditional pastoralism. But efficient livestock farming makes better use of scarce basic resources—and is far better for the planet.