Global meat production rose to 297 million tons in 2011, an increase of 0.8 percent over 2010 production levels. By the end of 2012, meat production is projected to reach 302 million tons, an increase of 1.6 percent over 2011. These are relatively low rates of growth compared with previous years: in 2010, meat production rose by 2.6 percent, and since 2001 production has risen by 20 percent. (See Figure 1.) According to the U.N. Food and Agriculture Organization (FAO), record drought in the American Midwest, disease outbreaks, and rising prices of livestock feed in 2011 and 2012 all contributed to the lower rises in production. Natural disasters in Japan and Pakistan also constrained output and disrupted trade.
increased by 15 percent overall—but consumption in developing countries increased by 25 percent during this time, while in industrial countries it increased by just 2 percent. The rise in consumption was not universal among developing countries; per capita meat consumption in Niger and many other low-income countries remains low. (See Figure 2.) And while the disparity between meat consumption in developing and industrial countries is shrinking, it remains high: the average person in a developing country ate 32.3 kg of meat in 2011, while in industrial countries people on average ate 78.9 kg. Meat consumption is projected to rebound to 2010 levels by the end of 2012, with per capita consumption in industrial countries lowering to 78.4 kg and that in developing countries rising to 32.8 kg.

![Figure 2. Per Capita Meat Consumption in Selected Countries, 1961-2009](source: FAO)

Pork was the most popular meat in 2011, accounting for 37 percent of both meat production and consumption, at 109 million tons. This was followed closely by poultry meat, with 101 tons produced. Yet pork production decreased by 0.8 percent from 2010, while poultry meat production rose by 3 percent, making it likely that poultry will become the most-produced meat in the next few years. Production of both beef and sheep meat stagnated between 2010 and 2011, at 67 million and 13 million tons, respectively.

A breakdown of meat production by geographic region reveals the dramatic shift in centers of production from industrial to developing countries over the last decade. (See Figure 3.) In 2000, for example, North America led the world in beef production, at 13 million tons, while South America produced 12 million tons and Asia, 10 million tons. By 2011, North America had lowered its beef output by 200,000 tons but had been overtaken by both South America and Asia, which produced 15 million and 17 million tons, respectively. FAO attributes the slowdown in growth in industrial countries to rising production costs, stagnating domestic meat consumption, and competition from developing countries. Over the last decade, meat production in Asia grew nearly 26 percent, that in Africa grew 28 percent, and output in South America grew 32 percent.
Widespread and intense drought in China, Russia, the United States, and the Horn of Africa contributed to lower meat production—and to higher meat prices—in 2010 and 2011. Severe drought, intense heat waves, and destructive wildfires in 2010 caused Russia to ban wheat exports. This exacerbated already-high livestock feed and meat prices, and the global effects of Russia’s drought were felt well into 2011. At the beginning of that year, China—the world’s largest producer and consumer of wheat—experienced its worst drought in about 60 years. This forced the country to increase its wheat imports, driving up grain and livestock feed prices worldwide. Drought conditions in 2011 also affected the Horn of Africa, the continent’s largest cattle-producing region, and deterioration of forage in Ethiopia, Kenya, and Somalia caused poor animal conditions and high mortality rates.

In the United States, Texas—the leading cattle-producing state—experienced its worst drought in recorded history. As a result, Texas reported agricultural losses of a record $5.2 billion, including $2.06 billion in livestock losses alone. The United States experienced moderate to extreme drought on 29 percent of its land in summer 2011, including many significant agricultural and grazing areas, bringing corn production to its lowest level in three years and driving up feed and beef prices. According to FAO, the 2011 drought left U.S. cattle herds at their lowest level since 1950. Drought and corn crop failures continue throughout the United States in 2012, causing the U.S. Department of Agriculture to estimate that by 2013 beef will cost 4–5 percent more than in 2010, pork 2.5–3.5 percent more, and poultry 3–4 percent more. The drought and limited livestock numbers in other major exporting countries kept international meat prices at near-record levels in the first quarter of 2012. (See Figure 4.)

The combination of high prices for meat products and outbreaks of new and recurring zoonotic diseases in 2011 curtailed global meat consumption. Zoonotic diseases, or zoonoses, are diseases that are transmitted between animals and humans. In 2011 alone, foot-and-mouth disease was detected in

©Worldwatch Institute

Source: FAO
Paraguay, African swine fever in Russia, classical swine fever in Mexico, and avian influenza (H5N1) throughout Asia.\textsuperscript{29} According to a 2012 report by the International Livestock Research Institute, zoonoses cause around 2.7 million human deaths each year, and approximately 75 percent of all emerging infectious diseases now originate in animals or animal products.\textsuperscript{30}

Many zoonotic disease outbreaks can be traced to concentrated animal feeding operations (CAFOs), also known as factory farms. These systems now account for 72 percent of poultry production, 43 percent of egg production, and 55 percent of pork production worldwide.\textsuperscript{31} And although factory farms originated in Europe and North America, they are becoming increasingly prevalent in developing countries.\textsuperscript{32} These systems contribute to disease outbreaks in several ways: they keep animals in cramped and often unsanitary quarters, providing a breeding ground for diseases; they feed animals grain-heavy diets that lack the nutrients needed to fight off disease and illness; and many CAFOs feed animals antibiotics as a preventative rather than a therapeutic measure, causing the animals—and the humans who consume them—to develop resistance to antibiotics.\textsuperscript{33}

The most recent figures from the U.S. Centers for Disease Control and Prevention (CDC) suggest that the national frequency of foodborne illness outbreaks has not improved over the past decade. According to the CDC, an estimated 48 million Americans became sick in 2011 from foodborne pathogens, of whom 128,000 were hospitalized and 3,000 died.\textsuperscript{34} The most recent statistics from the CDC report that disease outbreaks involving \textit{salmonella}, \textit{vibrio}, \textit{campylobacter}, and \textit{listeria} have all remained steady or increased in prevalence since 2007.\textsuperscript{35} Only incidences of \textit{E. coli} have declined within this time period and only marginally so.\textsuperscript{36} As the centers of meat production shift from industrial countries to developing ones, and as the methods of meat production become increasingly mechanized and concentrated, governments and corporations must face the real threat that zoonotic diseases are present within the food system.
But not all livestock are reared in industrial or mechanized environments. Nearly 1 billion people living on less than $2 a day depend to some extent on livestock, and many of these people are raising animals in the same ways that their ancestors did. Producing livestock—and their feedgrains—through environmentally sustainable practices can alleviate many of the pitfalls of meat production, including disease outbreaks and susceptibility to drought. Raising native breeds instead of commercial ones—the Milking Shorthorn over the Holstein cow, for instance—may cause slight drops in productivity, but these breeds are also generally less susceptible to heat waves, drought, disease, and native pests. Integrating livestock into farming systems by using manure as fertilizer or by grazing livestock on temporarily fallow fields boosts livestock health, soil fertility, and the farmer’s profit. And producing livestock within a local food system can help prevent those diseases that manifest during transport or within industrial slaughter facilities.

Lowering individual meat consumption would also alleviate the pressure to produce more and more meat for lower and lower prices, using rapidly dwindling natural resources. Reconnecting meat production to the land and its natural carrying capacity, as well as reducing meat consumption, can thus greatly improve both public and environmental health.

Danielle Nierenberg directs the Nourishing the Planet project at the Worldwatch Institute. Laura Reynolds is a research associate with the project.

Notes
2 Ibid.
4 Ibid.
5 Ibid.
6 Ibid.
7 Ibid., op. cit. note 3.
8 Ibid.; FAO, op. cit. note 1.
9 FAO, op. cit. note 1.
10 Ibid.
11 Ibid.
12 Ibid.
13 Ibid.
14 Ibid.
15 FAO, op. cit. note 3.
16 FAO, op. cit. note 1.
Ibid.
18 FAO, op. cit. note 3.
21 Ibid.
22 FAO, op. cit. note 1.
25 NOAA, op. cit. note 23.
28 FAO, FAO Food Price Index (Rome: 9 June 2012).
29 FAO, op. cit. note 1.
32 Ibid.
35 Ibid.
36 Ibid.