

Climate scientists have a beef with beef

By Geoffrey Mohan, Los Angeles Times on 07.31.14

Word Count **635**



Cattle in a feedlot that sits on the northwestern edge of Garden City, Kansas. Photo: Keith Myers/Kansas City Star/MCT

If you want to slow climate change, white meat may be the right meat, according to two studies that tally the environmental effect of the beef industry.

Raising cattle in the U.S. requires 28 times as much land and 11 times as much irrigation water, and pumps at least five times as much planet-warming gases into Earth's atmosphere than producing the equivalent calories of dairy products, poultry, pork or eggs, according to a study published online Monday in the journal *Proceedings of the National Academy of Sciences*.

And from 1961 to 2010, worldwide emissions of planet-warming gases from livestock increased 51 percent, with the bulk of the increases coming from developing nations that are rapidly adopting the U.S. model of meat consumption, according to another study published Monday in the journal *Climatic Change*.

"For people, the obvious answer is: whenever possible, replace beef with something else," said Gidon Eshel, a geophysicist at Bard College and lead author of the study in *Proceedings of the National Academy of Sciences*. "If you really need it to be from animal sources, that's still OK. You can still have bacon and eggs and whatever you want. As long as it's not beef, you have always made a significant step forward, because beef is so much more intensive than the rest."

The beef industry, not surprisingly, is not impressed.

“The PNAS study represents a gross over-simplification of the complex systems that make up the beef value chain, a point which the authors acknowledge,” Kim Stackhouse-Lawson, director of sustainability research for the National Cattlemen’s Beef Association, said in a statement. “The fact is the U.S. beef industry produces beef with lower greenhouse gas emissions than any other country.”

Indeed, emissions from developed countries, such as the United States, topped out in 1970 and have decreased 23 percent, according to the study published in *Climatic Change*. But emissions more than doubled in developing countries, largely the result of domestic consumption, said Ken Caldeira, a Carnegie Institution ecologist and co-author of the study, which estimated production of methane and nitrous oxide by 11 livestock populations in 237 countries.

Beef cattle produced more than half the emissions, followed by dairy cattle (17 percent), sheep (9 percent), buffalo (7 percent), pigs (5 percent) and goats (4 percent), according to the *Climate Change* study. The largest increases came in Congo, the Central African Republic and Oman, the study found.

“More and more of the developing world is adopting the bad habits of the developed world,” Caldeira said.

Caldeira said his study amounts to a broad “rule of thumb” estimate using rough emission factors developed by the Intergovernmental Panel on Climate Change. But its conclusions parallel those of several other studies, according to the report.

The Proceedings of the National Academy of Sciences study took a narrower but deeper look at the U.S. industrialized food chain and considered more factors, including the effects of grazing, raising feed crops and the use of irrigation water.

But the study does not claim to evaluate every factor that goes into producing meat. Several factors that vary widely introduce uncertainty into the measures, the authors acknowledge. Among them are wide ranges in how much feed is required by each animal per pound of weight gain, and the fraction of pasture in beef and dairy diets, which vary by geography and technological practices.

Eshel said the study should guide not just consumer choice but also government policies, such as grazing fees on public land.

“It comes to the normal question that almost all environmental questions come to, and that is the tragedy of the commons — as long as things that belong to all of us are free, we are not going to use them very judiciously and parsimoniously,” Eshel said. “We’re going to use them poorly and wastefully, as we have been.”

Quiz

- 1 What is the solution to the climate concerns raised due to beef production?
 - (A) making a switch to white meat
 - (B) making a switch to dairy products
 - (C) stopping its production in developing countries
 - (D) improving the beef value chain in developed nations

- 2 Select the sentence that BEST shows the effect of the beef industry on climate.
 - (A) And from 1961 to 2010, worldwide emissions of planet-warming gases from livestock increased 51 percent.
 - (B) "As long as it's not beef, you have always made a significant step forward, because beef is so much more intensive than the rest."
 - (C) Caldeira said his study amounts to a broad "rule of thumb" estimate using rough emission factors developed by the Intergovernmental Panel on Climate Change.
 - (D) Several factors that vary widely introduce uncertainty into the measures, the authors acknowledge.

- 3 The article introduces the emission of greenhouse gases by:
 - (A) providing a detailed description
 - (B) sharing a personal anecdote
 - (C) making comparisons
 - (D) stating facts

- 4 The article draws a comparison between which of the following?
 - (A) greenhouse gases emitted by developed and developing countries
 - (B) amount of beef consumed in developed and developing countries
 - (C) amount of nitrous oxide and methane produced
 - (D) raising cattle and irrigation water needed

Answer Key

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