

Eating Better: For Our Health and the Health of the Planet

We know that the foods we eat affect our health, but many of us are less aware of the fact that what we eat also affects the planet's health. A nutritional public health expert would advise you to eat less red meat and heavily processed foods — and so would an environmentalist!

Some of the foods that are most unhealthy for our bodies also have the biggest impact on the environment, particularly on climate change. With its commitment to promoting healthy, sustainable food systems, the American Public Health Association can play a vital role in educating people about the connection between healthy food and a stable climate.

IMPACTS

While there are no overall estimates of greenhouse gas emissions (GHGs) across the U.S. food system (from farm to fork to disposal), the following facts give a sense of the magnitude:

- An estimated one-third of world human-caused GHGs comes from agriculture and land use changes,¹ with much of the latter involving clearing land for pasture or to produce feed for livestock. Even in the United States, with our high emissions from industry and transportation, agriculture produces about 10 percent of GHGs.²
- Livestock production alone is responsible for about 18 percent of world human-caused GHG's, more than the contribution of transportation, according to the U.N. Food and Agriculture Organization.³

CAUSES

Following are five of the most important reasons why food has such a big impact:

1. **Cow belching:** It's not a joke! "Enteric emissions" from cows and other ruminants are a top source of methane and a major reason for livestock's large impact.^{3,4} Animal manure from "factory farms" and production of feed for industrially produced animals also produce significant emissions. While dairy and meat from other animals also contribute significantly, beef has the highest carbon footprint.^{5,6}
2. **Releasing trapped carbon:** When land is deforested, carbon that had been trapped in soil and plants gets released into the atmosphere, with surprisingly big impact.⁷ Extensive deforestation in tropical rain forests has been a particular concern; its role in food's carbon footprint is pronounced because much of the cleared land is used for animal pasture or for growing crops for animal feed, often for export. In contrast,

When it comes to food, carbon dioxide isn't the only greenhouse gas of concern: methane and nitrous oxide also play key roles. While these gases make up a smaller portion of total GHGs than carbon dioxide, they have greater global warming effect per pound.

sustainable farming that manages soil well can actually create an effective “carbon sink,” trapping carbon and thus reducing climate change.^{8,9}

3. **Using fossil fuels:** One estimate suggests that 13 calories of fossil fuel are expended for each calorie of food available to humans in the United States — and 25 calories per calorie of meat.^{10,11} Fuel-intensive practices include manufacturing fertilizers, farm mechanization, as well as processing, packaging, distribution and cooking. One study found that up to one-third of total energy inputs for food in Sweden went to making sweets, snacks and drinks — all foods with low nutritional benefit.¹²
4. **Food transportation:** “Food miles,” or the distance food travels, has received much attention. Today, food moves around the globe at significant fossil fuel cost, and agricultural imports and exports continue to rise.¹³ A study in Iowa found that while locally grown produce traveled on average 56 miles to institutional markets, conventional produce traveled 1,494 miles on average, or almost 27 times as far.¹⁴ Healthy local food economies have benefits for society, and may prove important in the long term as climate change and peak oil make “long distance food” too costly. But, the benefits of eating local in reducing food carbon footprints are not consistent, given the many tradeoffs involved [see box below].^{15,16,17,18,19}
5. **Nitrogen fertilizers:** Nitrogen fertilizers are a key contributor to climate change in their own right; they take a striking amount of energy to synthesize, and when more is applied than the soil can absorb, the runoff is not only damaging to ecosystems, but also leads to emissions of nitrous oxide, a powerful GHG. U.S. conventional farms use much more nitrogen than they need; reasons include artificially low prices and the need to remedy soil depletion from unsustainable methods.

Other factors to consider include the significant energy costs of refrigeration, freezing and home food preparation,^{20,21} as well as the fact that short-shelf-life foods may be especially likely to be wasted (overall in the United States, we waste over 25 percent of food produced).²²

WHAT CAN WE DO ABOUT IT?

There is a great need for more analysis of the “life cycles” of food products in the United States to better understand the GHG impacts of various foods and production/processing/distribution methods.

However, some of the steps we need to take are already clear:

INDIVIDUALS AND FOOD-PROVIDING BUSINESSES

- **Eat less ruminant (cow) meat.** This is probably the most important step you can take. An article in *The Lancet* suggests that U.S. meat consumption would need to drop by nearly two-thirds by 2050 to stabilize livestock-related greenhouse gas emissions [calculated].^{23,24} While you may not be ready for such significant cuts, as a

start consider a step like joining the Meatless Monday campaign to reduce your meat consumption by 15 percent.²⁵ Reducing meat consumption also benefits your health in numerous ways; the USDA recommends eating about 1/3 less meat than is currently available per capita.²⁶

- **Choose sustainably produced food**, including food that is seasonal, local and produced with fewer chemicals, to the extent feasible. Seek out the less-processed alternative. Eating lower-chemical and less-processed foods also has health benefits.²⁷ (While “sustainably produced” animal products are indisputably better from an environmental health perspective,²⁸ the evidence is mixed about whether or when these are better than industrially produced meat, dairy and eggs from a climate standpoint.”)
- **Reduce food packaging and plastic bags.** Buy food with less packaging and bring your own bags to the store. Bring your own mug, water bottle and utensils. Eat take-out less often.
- **Reduce home food-related energy use.** Get an Energy Star refrigerator, buy more long-shelf-life foods and fewer frozen foods. Reduce your trips to the store. Cook in bulk.
- **Eat less and waste less.** Each unnecessary calorie contributes unnecessary greenhouse gas emissions.

PUBLIC POLICY

- **Research:** Support research, including life cycle analysis, to learn more about the greenhouse gas emissions from different foods; and research on how to produce food more sustainably – as well as, from the other side, how best to adapt our agriculture and food systems to climate

Q: Which is better: local or organic?

A: It depends – on the season of year, what the product is, how the local item was produced, where the organic item came from and how it was transported -- and so on. Of course, most of this information is not yet available on food labels, so consumers are left to guess. Buying at places like farmers’ markets and Community Supported Agriculture programs helps you know more about the source of your food.

Tradeoffs between organic and local include:

- * How the food got there (for example, long-distance boats and trains may generally be more efficient than trucks)
- * Seasonality (locally grown greenhouse vegetables can take more energy than long-distance foods that are grown in season for their locations);
- * Production methods (local does not equal sustainable; less sustainably produced local foods may or may not be better than more sustainably produced items from afar.)

The ideal food from a greenhouse gas emissions standpoint would be local AND organic AND produced in season. It would be vegan, minimally processed, unpackaged, not produced with chemicals, have a long shelf-life, and require minimal refrigeration and cooking. And, this food would be so delicious that there would be no waste. It is rare to find all these qualities in any one food, but the more of them you can include, the better for climate – and, in general, for your own health.

change. Explore what it would take to develop food labels that reflect aspects of food carbon footprints.

- **Support local and sustainable food production** through incentives such as grants, tax rebates, support programs, etc. Make it less cost-effective to produce unsustainably. Consider changing farm policy to require companies to pay more of the costs of the greenhouse gas emissions and environmental damage they incur.
- **Encourage less energy use**, including by mandating energy efficiency in equipment, facilities and vehicles used in the food system, and by regulating reduced food packaging and use of plastic bags.
- **Raise awareness** about climate change consequences of various diet choices.
- **Conserve land:** promote conservation reserve lands and sustainable farming, including through farm bill policy; and increase disincentives for sourcing food and feed from previously forested lands.
- **Better incorporate food and agriculture needs into national climate change mitigation policy.**

¹ Intergovernmental Panel on Climate Change. Climate Change 2007: Synthesis Report. 2007. New York, NY: Cambridge University Press.

² U.S. Environmental Protection Agency. Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2006. 2008. Available at: <http://www.epa.gov/climatechange/emissions/usinventoryreport.html>. Accessed March 2008.

³ Steinfeld H, Gerber P, Wassenaar T, Castel V, Rosales M, de Haan C. Livestock's long shadow: Environmental issues and options. 2006. Rome: Food and Agriculture Organization of the United Nations (FAO).

⁴ Koneswaran G, Nierenberg D. Global Farm Animal Production and Global Warming: Impacting and Mitigating Climate Change. *Environmental Health Perspectives*. doi:10.1289/ehp.11034. Online 31 January 2008

⁵ Garnett T. Meat and dairy production & consumption: Exploring the livestock sector's contribution to the UK's greenhouse gas emissions and assessing what less greenhouse gas intensive systems of production and consumption might look like. Food and Climate Research Network Report; 2007.

⁶ Eshel G & Martin P. Diet, energy and global warming. *Earth Interactions*. May 2005.

⁷ Nabuurs GJ, Masera O, K A, Benitez-Ponce P, Boer R, Dutschke M, et al. Forestry. In: Climate Change 2007: Mitigation Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. [B Metz, OR Davidson, PR Bosch, R Dave and LA Meyer, editors]. 2007. New York, NY: Cambridge University Press.

⁸ U.S. Environmental Protection Agency (2008) Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2006. 2008. Available at: <http://www.epa.gov/climatechange/emissions/usinventoryreport.html>. Accessed March 2008.

⁹ Paustian K, Antle JM, Sheehan J & Paul EA. Agriculture's Role in Greenhouse Gas Mitigation. 2006. Arlington, VA: Pew Center on Global Climate Change.

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¹³ USDA. Value of U.S. trade—agricultural, nonagricultural, and total—and trade balance, by calendar year. Available at: <http://www.ers.usda.gov/Data/FATUS/>. Accessed: March 24, 2008.

¹⁴ Pirog R, Benjamin A. Checking the food odometer: Comparing food miles for local versus conventional produce sales to Iowa institutions. Leopold Center for Sustainable Agriculture. July 2003.

¹⁵ Collins A & Fairchild R. Sustainable food consumption at a sub-national level: An ecological footprint, nutritional and economic analysis. 2007. *J Environ Pol Plann* 9, 5-30.

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