Better Food: For the Health of People and the Planet

We know that the foods we eat affect our own health, but we may be less aware of how what we eat affects the planet's health. A nutritional public health expert would advise you to eat less red meat and heavily processed foods -- so would an environmentalist!

BOX 1 (somewhere on first page):
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,[1] 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 (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,[2] with much of the latter involving clearing land for pasture or to produce feed for livestock. Even in the U.S., with our high emissions from industry and transportation, agriculture produces about 10% of GHGs.[3]
- Livestock production alone is responsible for about 18% of world human-caused GHG's, more than the contribution of transportation, according to the U.N. Food and Agriculture Organization.[4]

BOX 2 (near beginning of 'causes' section):
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.

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.[4,5] 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.[6,7]
2) **Releasing trapped carbon**: When land is deforested, carbon that had been trapped across time in soil and plants gets released into the atmosphere, with surprisingly big impact.[8] Extensive deforestation in tropical rain forests has been a particular concern; it's part of food's carbon footprint because much of the cleared land is used for animal pasture or for growing crops for animal feed, often for export. In contrast, sustainable farming that manages soil well can actually create an effective "carbon sink," trapping carbon and thus reducing climate change.[9,10]
3) **Using fossil fuels:** One estimate suggests 13 calories of fossil fuel are expended for each calorie of food available to humans in the US -- and 25 calories per calorie of meat.[11,12] Burning these fossil fuels emits greenhouse gases. Fuel-intensive practices include manufacturing fertilizers, farm mechanization, as well as processing, packaging,

distribution and cooking.[11] A study found that up to a third of total energy inputs for food in Sweden went to making sweets, snacks and drinks, foods with low nutritional benefit.[13]

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.[14] 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.[15] 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 3].[16,17,18,19,20]
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,[3] 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.[4] 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.
6) **Other:** Other factors to consider include the significant energy costs of refrigeration, freezing, and home food preparation,[21,22] and the fact that short-shelf-life foods may be especially likely to be wasted (overall in the U.S. we waste over 25% of food produced).[23]

WHAT CAN WE DO ABOUT IT?

There is a great need for more analysis of the "life cycles" of food products in the U.S., to better understand the GHG impacts of various foods and production/processing/distribution methods. But even after that research is done, the "best" answer will often remain variable based on factors including location, the time of year, local conditions, weather, species/breed, energy efficiency of equipment, and so on, even down to exactly what was in a cow's feed.

And yet – some messages are reasonably clear:

INDIVIDUALS AND FOOD-PROVIDING BUSINESSES

1) **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].[24,25] 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%.[26] 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.[27,25]
2) **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.[28] (While "sustainably produced" animal products are indisputably better from an environmental health perspective,[29] the evidence is mixed about whether or when these are better than industrially produced meat, dairy and eggs from a climate standpoint.[4,5,6])

3) **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.
4) **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.
5) **Eat less and waste less.** Each unnecessary calorie contributes unnecessary greenhouse gas emissions.

PUBLIC POLICY

1) **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 change. Explore what it would take to develop food labels that reflect aspects of food carbon footprints
2) **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
3) **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
4) **Raise awareness** about climate change consequences of various diet choices
5) **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
6) **Better incorporate food and agriculture needs into national climate change mitigation policy.**

BOX 3 (somewhere near end)**:**

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 it 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.

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